

# **SELF STUDY REPORT**

**OCTOBER - 2016**



**BHASKARACHARYA COLLEGE OF APPLIED SCIENCES  
(UNIVERSITY OF DELHI)  
SECTOR-2, PHASE -1, DWARKA, NEW DELHI-110075**



**Submitted to  
National Assessment and Accreditation Council (NAAC)  
Bangalore**

# SELF STUDY REPORT

(OCTOBER 2016)

for

National Assessment and Accreditation Council  
(NAAC)



**BHASKARACHARYA COLLEGE OF  
APPLIED SCIENCES**

(University of Delhi)

**Sector-2, Phase-I, Dwarka, New Delhi-110075**

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# INTRODUCTION



## INTRODUCTION

*“Education is the manifestation of the perfection already in man. Religion is the manifestation of the divinity already in man. Therefore the only duty of the teacher in both cases is to remove all obstructions from the way.” - Swami Vivekananda*

This famous quote of Swami Vivekananda clearly describes the mission of Bhaskaracharya College of Applied Sciences that envisages establishing itself as a center of excellence in academics and research.

Bhaskaracharya College of Applied Sciences is a co-educational constituent college of the University of Delhi and 100% funded by Government of National Capital Territory of Delhi. The foundation of the college was laid in October 1995 at Pusa, New Delhi. The college was named after the great Indian mathematician of the 12<sup>th</sup> century, **Bhaskaracharya**. His Siddhanta Shiromani represents a significant contribution to mathematical and astronomical knowledge. The college was shifted to its present campus in Dwarka, New Delhi in 2003.

The objective of our institution is to provide quality education to the students in the field of basic and applied sciences. The institution grooms talented young students to be transformed into thinkers and researchers seeking opportunities in academics or industry.

In the beginning, the college offered only three Bachelor of Applied Science (B.A.Sc.) courses in Electronics, Instrumentation and Food Technology. Presently, the college runs eight honors courses in Biomedical Science, Computer Science, Electronics, Instrumentation, Food Technology, Microbiology, Physics and Polymer Science with approximately 1000 students enrolled in these courses. These courses are also supported by six allied departments namely Biology, Biochemistry, Chemistry, Human Communication, Mathematics and Physical Education.

The college has a team of highly qualified and multi-faceted faculty who along with well-trained technical and administrative staff members groom the students to become academically competent, technologically superior and ethically strong. Students are trained to think critically and creatively to become lifelong learners and contributors to the society. The training provided in the college helps the students to excel in their degree programs and to undertake higher studies in distinguished Indian and overseas

universities. The teaching pedagogy include both conventional chalk and talk approach as well as use of power point presentations, online video lectures and other modern methods.

Besides classroom teaching and learning, the teachers and students are actively involved in research as substantiated by the number of research projects being run in the college. Hundreds of undergraduate students have been trained under "DU Innovation Projects" scheme funded by University of Delhi since 2012. In the year 2015-16, twelve projects have been granted to our college under this scheme. These projects provide a platform for hands on training and exposure to research for our students.

Furthermore, the support provided by the "Star College Scheme" of Department of Biotechnology, Government of India to the four departments of the college: Biochemistry, Biomedical Science, Food Technology and Microbiology in the last six years have benefitted not only the students but also the faculty and laboratory staff members. The Department of Food Technology has been granted the Star Department Status under this scheme and has been allocated additional grant to strengthen its resources. Activities like invited lectures, workshops, training programs, etc. organized under the umbrella of the Star College scheme have provided the platform to interact with distinguished academicians and scientists across the country and to keep ourselves abreast with latest scientific developments.

Each department of the college also has its own academic society like DNAmics (Department of Biomedical Science), CS.net (Department of Computer Science), SPARKS (Department of Electronics), Ambrosia (Department of Food Technology), Sensors (Department of Instrumentation), Sukhsmjeev (Department of Microbiology), QUBIT (Department of Physics) and Pearls (Department of Polymer Science). These societies organize seminars, conferences, workshops, symposiums and industrial visits.

Further, the teachers are also conducting various short term and certificate courses for the students to provide them training in latest fields not included in their curriculum and also to industry professionals. Apart from teaching in the college, the faculty members are also invited as resource persons in workshops and other training programs organized by other institutions. The college also enhances the learning

curve of its faculty members by facilitating their participation in various courses, workshops and research activities not only in India but also abroad.

The infrastructure of the college ensures that young minds get nurtured in a stimulating environment. The college has Wi-Fi connected and projector enabled state of the art classrooms with adequate furniture, well-equipped sophisticated laboratories, three air conditioned computer laboratories with more than 100 computers, well stocked partially digitized library, an audio-visual room, a conference room, amphitheater, a room for extracurricular activities (ECA), spacious playground and manicured gardens. The college also has a canteen, safe drinking water facility and stationery- cum- photocopy shop. The college is very sensitive to the needs of differently abled members of the college community. The college has a ramp connecting the ground floor to the first floor of the college and special washrooms for their convenience.

The funding provided under “Star College Scheme”, "DU Innovation Projects “and funding to Department of Food Technology by Ministry of Food Processing Industry (MOFPI) has also augmented the infrastructure of the college. The college has procured various sophisticated instruments that help not only in the regular practical classes for the students but also in carrying out in-house projects.

The library is housed in a spacious and well-lit three storied building called the library block. It has a collection of 23280 volumes of books including reference books, 336 bound volumes of journals and 1238 CD-ROMs/DVD-ROMs. Apart from the in-house collection, the library also has full online access to thousands of journals that are being subscribed to by the Central Reference Library, University of Delhi. The library is also subscribing to N-LIST (National Library and Information Services Infrastructure of Scholarly Contents) Program, a collection of e-resources under UGC-INFONET Digital Library Consortium. Facilities of the library include two spacious reading halls with adequate furniture, open access to the documents, air-conditioned Internet facility section having 20 computers for the students. The library is fully automated using latest hardware and software with OPAC (Open Public Access Catalogue) facility. The entire library block is under CCTV cameras surveillance and has a wireless intranet. It also has a library blog, which is updated regularly.

Besides academics, the college also provides a strong platform to students for various extra-curricular and sports activities. This inculcates a culture of humility, service and teamwork among students. Students are encouraged to participate in various inter-college and intra-college competitions. Our annual inter-college cultural festival "SRIJAN" is organized every year, which provides an opportunity to students to explore their creative skills in art and culture. An inter-college choir competition "Songs of India" is also organized in association with the Cultural Council, University of Delhi. Many of our students have brought accolades to the college. The college annually brings out the college Magazine "Resonance", which gives students and staffs an opportunity to express their literary talent.

There are several clubs and societies in the college dedicated to support and hone the skills of our talented students. They can join clubs like Darpan (Dramatics and Fine arts club), Pranahi (Eco club), Rage (Dance club), Vyom (Astronomy club), Lit-Cultura (Literary club), Clickerati (Photography club), Music (Rock band group Dhriti and Choir group Moksha), Film, Yoga, Debate, Mountaineering and Trekking clubs. The college also has various cells like Career Counseling, Placement, Bhaskaracharya, Anti-tobacco, Women Development and Equal Opportunity and committees like Grievance Redressal, Gender Sensitizing, E-waste Management, ECA, Swachhta, Sports, Gandhian Study Centre, NSS and Vivekananda Vichar Manch.

The sports facilities consists of basketball court, volleyball court, cricket ground, football ground, lawn tennis court and two badminton courts. The facilities for indoor games like carrom, chess, table tennis and gymnasium have also been provided. The college organizes annual sports meet and various sports activities that encourage students as well as staff to participate in inter-college and open tournaments.

The college understands its social responsibility as an organization. Various initiatives to create awareness about clean environment are taken. Members are made aware about the management, reuse and disposal of hazardous e-waste and biological wastes. An e-waste bin has also been installed within the college premises for proper disposal of e-waste. The college has rain water harvesting unit as well as paper recycling unit. NSS unit also organizes tree-plantation drive from time to time.

The college also organizes various extension and out-reach activities. Frequent health check up and blood donation camps are organized. The expertise available in the college is also extended to the school students. In an attempt to encourage and attract school students towards research based scientific courses, the college has organized six Department of Science and Technology funded INSPIRE (Innovation in Science Pursuit for Inspired Research) science camps for the school students of class XII. These camps have benefited at least 600 school students. Besides lectures delivered by invited speakers and visits to reputed research organizations, students were given hands-on-sessions by the faculty members of the college.

The faculty members and the students of the college are well appreciated for their contribution and achievements. Many of our faculty members have been awarded Meritorious Teacher' award by Directorate of Higher Education, Government of NCT of Delhi. Several teachers and students are also appreciated for the research work carried out under DU Innovation Projects scheme by University of Delhi.

Each year the college also felicitates outstanding students (one male and one female student) with “Best Student Award” for their curricular and co-curricular achievements during their entire stay in the college. The college also acknowledges the accomplishments of its alumni by giving “Distinguished Alumnus” award every year to one of the alumni of the college.

# EXECUTIVE SUMMARY

## **EXECUTIVE SUMMARY**

### **Criterion – I Curricular Aspects**

Bhaskaracharya College of Applied Sciences was founded in 1994 with a vision to establish a center of excellence. The college aims to impart quality education to students through the best facilities and talented faculty members. The college strictly adheres to the curriculum and the guidelines prescribed by University of Delhi. For effective implementation of curriculum, various committees such as Academic Committee, Timetable Committee, College Monitoring Committee and Departmental Moderation Committee are constituted. The teachers are involved in continuous evaluation of students through regular tests, assignment and presentations etc.

The college campus is Wi-Fi enabled with ICT equipped classrooms, a seminar room and well equipped laboratories with state-of-art equipment that assist in systematic and effective translation of curriculum. There is a well stocked library with computer-equipped reading room for accessing various journals and e-books.

Besides curriculum, regular invited talks, seminars, symposium, workshops, etc. are organized in the college to enlighten not only the students but also the teachers on various aspects of teaching, learning and communication. The scheme of Innovation Projects of University of Delhi provided an opportunity to the students to carry out interdisciplinary research work under the guidance of teachers from different departments of the college and the mentorship of an eminent scientist from a research institute/university.

On the basis of informal inputs received from the stakeholders, the college enriches the curriculum by conducting series of workshops, seminars, conferences, departmental society activities, etc.

Various teachers of the college were involved in designing the complete course structure of many courses under FYUP and CBCS. Also, many of them are an integral part of several committees like Executive Council, Academic Council, Department Research Committee, etc. of University of Delhi. The different clubs and cells of the college ensure holistic development of students by conducting various activities and programs.



## **Criterion – II Teaching, Learning and Evaluation**

This criterion of the NAAC document focuses on the **“Teaching, Learning and Evaluation”** aspects of the college. This includes six sections viz. “Student Enrollment and Profile” “Catering Student Diversity” “Teaching-Learning Process, “Teacher Quality” “Evaluation Process and Reforms” and “Student Performance and Learning Outcomes” that are further divided into various subsections.

The section on **“Student Enrolment and Profile”** provides information on courses offered in the college, eligibility criteria for various courses and practices related to admission. The Principal and the Admission Committee comprising of the Convener and Teacher in-charges of all the eight main departments of the college review the admission process ensuring the transparency throughout the process. The admission schedule as laid down by University of Delhi is strictly followed. The committee is also responsible for advertising the information regarding the admission in leading newspapers and the college website besides the information available in the bulletin of University of Delhi. The committee determines the percentage cut-offs at the end of every list on the basis of seats available in respective courses. University of Delhi being a central university admits students from all over the country, which results in the enrollment of students from diverse backgrounds in the college.

The section on **“Catering Student Diversity”** includes efforts made by the college to cater the needs of differently-abled students and students from economically weaker sections. The college follows the policy of Government of India and reserves 3% seats for differently-abled students. Moreover, the college also has the infrastructure like ramps etc. to support these students. Fee concession is also provided to the students from economically weaker section of the society. The college has women development and equal opportunities cells which conduct various programs for the issues related to them.

The section on **“Teaching-Learning Process”** pertains to the efforts of the college for enhancing the teaching and learning process. The college strictly adheres to the academic calendar of University of Delhi. The academic and timetable committees of the college comprising members from all the departments prepare the workload and timetable of each department. The section also provides the details about the efforts made by the college for imparting knowledge and soft skills and bridging of knowledge gap. The college conducts orientation day in the beginning of the academic year for introducing the system followed by the college. Various

workshops, seminars, symposia are held to enhance knowledge and holistic development of the students. The faculty and the students of the college are also actively involved in various research projects like DU innovation projects and star college activities.

The campus is Wi-Fi enabled and classrooms are equipped with LCD projectors for teaching. Various departments of the college use virtual labs, in case it is not possible to conduct experiments in the laboratory. The library of the college is well equipped and subscribes to N-List (National Library and Information Services Infrastructure for Scholarly Contents) program of INFLIBNET. Our library also has its own blog, which is regularly updated to provide information related to library.

The section on **“Teacher Quality”** details the steps taken for faculty development. The college regularly conducts various seminars, workshops etc. on advanced topics where in experts from various fields deliver lectures and interact with teachers leading to enrichment. The college also encourages and recommends teachers for various faculty development programs such as workshops, orientation, refresher and winter courses. The faculty of the college has been awarded fellowships and grant in aid.

The sections on **“Evaluation Process and Reforms”**, **“Student Performance and Learning Outcomes”** include the mechanisms employed by the college for assessing the performance of the students and thereby, their learning outcomes. The performance of the students is directly dependent on the marks obtained in internal assessment, external examination and practical examinations conducted as per University of Delhi norms. There is also a system in place to redress the grievances of the students at various levels.

### **Criterion - III Research, Consultancy and Extension**

The college has initiated research and other societal benefit programs during the last few years. The faculty of the college is actively involved in various research projects funded by various agencies such as UGC, DST, and ICMR and also by University of Delhi under the Innovation Project Scheme. Besides, research fellows that are appointed in these projects, students of the college are also involved in Innovation projects. The faculty and the students of the college have been involved in 26 innovation projects funded by University of Delhi in the last four years. Approximately 260 undergraduate students have been trained in various aspects of research under these projects. Additionally, these students also receive a scholarship of Rs 1000/- per month for a period of one year. Some of the teachers are also

recognized as Ph.D. supervisors. The college fosters a conducive environment for such pursuits by disseminating information about various national and international scholarships to the students as well as teachers and by permitting teachers to attend seminars and conferences and granting leave for pursuing research. The college extends further support by providing infrastructural support and other e-resources towards this end. The involvement of students in research and other extension activities at undergraduate level also provides skill sets to the students besides their academic development. The research activities of the college are also showcased in several national and international conferences. Furthermore, our college has also been able to create scientific awareness in school children by organizing various DST sponsored INSPIRE camps and several workshops.

Consultancy and other extension activities are also conducted from time to time. Some of the teachers are the members of steering committees constituted by the University and have been actively involved in policy matters and syllabi modifications. The faculty members are also invited as resource persons to deliver lectures, syllabi modifications and paper setting in various institutions both at national and international levels. The college also runs several short-term courses like Bioinformatics and *in silico* drug discovery, Food Safety, Medical Nutrition Therapy, and Food Packaging as well in order to broaden the horizon of our students. The placement record of our students is also promising. Majority of our students prefer to go for higher studies not only in institutions in India but also abroad. Nevertheless, students interested in employment immediately after their graduation is also placed well with the continuous support of the Placement and Career Counseling Committee of the college. Their competence and expertise has certainly been cultivated at the college. The college has also taken keen interest in societal programs. The NSS team is actively involved in organizing various activities such as blood donation camps, plantation drives etc.

### **Criterion – IV Infrastructure and Learning Resources**

Criterion IV discusses the infrastructure and learning resources available in the college, which is further divided into four sections viz. i) Physical facilities ii) Library as a learning resource iii) IT infrastructure and iv) Maintenance of campus facilities.

The section on **Physical facilities** details the infrastructure available in the college for effective teaching and learning such as well-equipped laboratories including many sophisticated instruments, ventilated and well-lit classrooms equipped with projectors

and well-equipped computer laboratories for students. The college also has a fully air-conditioned audio-visual room with overhead projector and public address system with a seating capacity of more than 100 people and an open-air amphitheater. Various musical instruments are also available in the college. A multi gym, table tennis room, cricket ground, tennis courts, volleyball courts, badminton courts are also available for the students and staff of the college for various sports activities. There are separate common rooms for girls and boys. The college also has facilities for differently-abled individuals. There is a canteen for staff and students. A stationery shop in the campus provides books, notebooks, photocopying and binding facilities etc. to the staff and students. The college has a 140 KVA generator system for continuous power supply and eight RO plants and a water pumping system to meet the water demands of the college. The college also has a provision for water harvesting. There is a CGHS dispensary adjacent to the college and DGHS medical facility for staff and students.

The section “**Library as a Learning Resource**” covers all the facilities available in the centralized library of the college like good reading rooms, OPAC and e-resource facilities and large number of textbooks, reference books, newspapers, research articles and magazines etc.

“**IT infrastructure**” section provides details about the availability of well-equipped computer laboratories, relevant software, Wi-Fi and LAN facilities. It also includes information about the availability of printers, scanners, projectors, CCTV cameras and hardware installed in various departments of the college.

The last section “**Maintenance of Campus Facilities**” explains the institutional mechanism for maintenance and upkeep of the building, furniture, laboratory equipment, computers etc.

### **Criterion – V Student Support and Progression**

The criterion on “**Student Support and Progression**” consists of three sections namely “Student Mentoring and Support”, “Student Progression” and “Student Participation and Activities”.

The college attempts to provide every possible support to the students including the basic facilities, sports and other academic expenses. The students are regularly mentored by the Principal, Vice Principal and faculty members during the course of their study. They are made aware of the scope of higher studies, job prospects besides

various summer training and other skill development programs thereby assisting them to make right choices about their career. The students also undergo short-term trainings and internships in the prestigious research organizations and industries related to their area of discipline and interest.

The financial support given to students in the form of fellowships provides motivation to perform in different spheres of their life. The support is also given to economically weaker section in terms of both remedial classes and financial aid.

The students are also encouraged to participate in various co-curricular and extra-curricular events not only within the college but also in other colleges and universities. The annual inter-college cultural festival, ‘**SRIJAN**’ provides the students a platform to participate in a number of cultural and literary events like Singing (Solo and Group), Dance (Solo and Group), Debate, Street Plays, Graffiti, Quiz competitions, Rangoli, etc. Moreover, the active participation of students in bringing out the college magazine hones the literary and other creative skills of the students.

### **Criterion – VI Governance, Leadership and Management**

The criterion starts with the vision of the college “ज्ञान विज्ञान सहितं” i.e. “Knowledge with Experience”, which is also reflected in its logo. The criterion describes the organizational structure and decision-making process of the college. Effective leadership continuously inculcates the sense of responsibility and accountability amongst all. The active involvement of each level of management i.e. the Governing Body, Principal, Vice Principal, Bursar, Staff Council and its various committees, Teacher-in-charges and Departmental Committees helps in the effective decision-making process.

The environment is for decentralized governance with multilateral dialogue at each level, autonomy to the departments, academic and administrative transparency and grooming leadership help to achieve goals of the institute. Instances of court cases filed by and against the institute are also tabulated in this criterion.

This criterion helps gather data on the policies development and practices in the matters related to academic and professional development programs like beginning of new courses, planning human resources like faculty empowerment and upgrading the professional competence of the staff, recruitment and their welfare schemes, training, community engagement and performance appraisal. The college plans to formulate its

quality policy based on zero tolerance for academic slackness, non-compliance with DHE, University of and University Grants Commission (UGC) advisories and indifference towards student welfare.

The financial management including sources of General Investment Account (GIA), budgeting and optimum utilization of finance including mobilization of resources is the key issue in this criterion. Policies on purchases based on General Financial Rules (GFR) 2005, audit of accounts, audited income and expenditure statement of academic and administrative activities of the previous four years are also provided under this criterion.

### **Criterion -VII Innovation and Best Practices**

This criterion consists of three sections i.e. “Environment Consciousness”, “Innovations” and “Best Practices” followed in the college. The college is well versed with the importance of maintaining clean and green campus. It has an active “Eco Club” that regularly conducts programs to create awareness among the students and staff. The college takes due steps for e-waste management, water harvesting, plantation and energy conservation. The college regularly updates the students about the new developments in research and industry by inviting speakers from diverse fields. The college has been granted various projects under the University of Delhi Innovation Project Scheme for Inter- disciplinary Research. The Departments of Biochemistry, Biomedical Science, Food Technology and Microbiology under the Star College Scheme organize several workshops and seminars. The college has well-equipped and latest infrastructural facilities including ICT enabled classrooms. All the staff members and students have access to Wi-Fi network. The college library and the department of Polymer Science maintain a blog to provide updated information. The best practices of the college also include well-equipped and updated infrastructural facilities for quality education and regular and intensive interactions between students and faculty with academia and industries. The hands-on-training is provided to facilitate the students to achieve both conceptual knowledge as well as practical skills. The alumni of the college are actively associated in guiding the students. The career-counseling cell has organized several sessions for students on how to face interviews and preparation of curriculum vitae. Students also undergo summer training, internships and participate in projects in R&D institutes and industry.

# **PROFILE OF THE COLLEGE**



## **PROFILE OF THE COLLEGE**

### **1. Name and Address of the College:**

<b>Name:</b>	<b>Bhaskaracharya College of applied Sciences (University of Delhi)</b>	
<b>Address:</b>	Sector – 2, Phase I, Dwarka	
<b>City: New Delhi</b>	<b>Pin:110075</b>	<b>State: Delhi</b>
<b>Website:</b>	www.bcas.du.ac.in	

### **2. For Communication:**

Designation	Name	Telephone with STD Code	Mobile	Fax	Email
Principal	Dr. Balaram Pani	O: 011-25087597	9654066364	011-25081015	bhaskaracharya.college@gmail.com principal@bcas.du.ac.in
Vice Principal	Dr. Shalini Sehgal	O: 011-25087597	9810586489	011-25081015	shalini.sehgal@bcas.du.ac.in
Steering Committee Co-ordinator	Dr. Shalini Sehgal	O: 011-25087597	9810586489	011-25081015	shalini.sehgal@bcas.du.ac.in

### **3. Status of the Institution**

- i. Affiliated College
- ii. Constituent College
- iii. Any other (specify)

✓

### **4. Type of the Institution**

- a. By Gender
  - i. Men
  - ii. Women
  - iii. Co-education
- b. By Shift
  - i. Regular
  - ii. Day
  - iii. Evening

✓

✓

### **5. It is recognized minority institution?**

- Yes
- No

✓

**6. Sources of funding:**

- i. Government
- ii. Grant-in-aid
- iii. Self-financing
- iv. Any other

✓

**7. a. Date of establishment of the college: 04/10/1995**

**b. University to which the college is affiliated/or which governs the college (if it is a constituent college)**

UNIVERSITY OF DELHI
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**c. Details of UGC recognition:**

Under Section	Date, Month & Year	Remarks (If any)
i. 2(f)	15/07/1998	Refer -Annexure-IIa
ii. 12(B)	15/07/1998	Refer -Annexure-IIb

**d. Details of recognition/approval by statutory/regulatory bodies other than UGC (AICTE, NCTE, MCI, DCI, PCI, RCI etc.)**

Under Section/ clause	Recognition/Approval details Institution/Department Programme	Day, Month and Year (dd-mm-yyyy)	Validity	Remarks
i. Clause 20 (1), Chapter 4 of AICTE Act, 1987	AICTE approval for B.Tech. courses in Computer Science, Electronics, Food Technology, Polymer Science and Instrumentation (only for the batch admitted in 2013)	Vide letter dated 29/04/2015 from AICTE	for students admitted in 2013- 14.	(Pl. refer Annexure IIIa & IIIb)

**8. Does the affiliating university Act provide for conferment of autonomy (as recognized by the UGC), on its affiliated colleges?**

Yes ☐ No ☒

**9. Is the college recognized?**

**a. by UGC as a College with Potential for Excellence (CPE)?**

Yes ☐ No ☒

**b. for its performance by any other governmental agency? NO**

Yes ☐ No ☒

**10. Location of the campus and area in sq.mts.**

Location*	Urban
Campus area in sq. mts.	<b>39,408.30 sq. mt.</b>
Built up area in sq. mts.	<b>10,143.84 sq. mt.</b>

(\*Urban, Semi-urban, Rural, Tribal, Hilly Area, Any others specify)

**11. Facilities available on the campus** (Tick the available facility and provide numbers or other details at appropriate places) or in case the institute has an agreement with other agencies in using any of the listed facilities provide information on the facilities covered under the agreement.

**A. Auditorium/seminar complex with infrastructural facilities**

One AudioVisual room with seating capacity of 100. One Conference room with seating capacity of 25 with wall mounted LCD projector, and an open air amphi-theater.

**B. Sports facilities**

Facility	Number/Dimension
Football	01
Cricket	01
Basketball	01
Badminton	02
Lawn tennis	01
Table tennis room	01
Running Track	200 meter

\* Playground: Yes

\* Swimming pool: No

\* Gymnasium: Yes

**C. Hostel: Not Available**

\* Boy's hostel – NIL

\* Girl's hostel – NIL

\* Working women's hostel – NIL

**D. Residential facilities for teaching and non-teaching staff (give numbers available-cadre wise):**

\* Principal Bungalow – 01

\* Non-teaching staff residences – 08

**E. Cafeteria – Yes**

**F. Health Centre**

- WUS Health Centre is a Contributory Health Service Scheme and with its four operational units in North, South, East and West Delhi, it caters to health related needs of the employees, their family members and students through regular membership.
- CGHS dispensary is present adjoining college to cater emergency needs.
- First aid facility is available in college.

**G. Facilities like banking, post office, book shops**

- On request, fee collection facility is provided by the bank in the college.
- Also bank employees are available in the college premises during college admissions.
- Photostat cum stationary shop is available in the college

**H. Transport facilities to cater to the needs of students and staff – None**

**I. Animal house – None**

**J. Biological waste disposal –Yes**

**K. Generator or other facility for management/regulation of electricity and voltage:**

One 140 KVA DG set with AMF panel.

Computers and high end equipments are connected with UPS and stabilizers.

**L. Solid waste management facility – Not available**

**M. Waste water management – Not available**

**N. Water harvesting – Yes**

**12. Details of programmes offered by the college (Give data for current academic year)**

S.No.	Programme Level	Name of the Programme/Course	Duration	Entry Qualification	Medium of instruction	Sanctioned/ approved Student strength	No. of students admitted 2015-16
1	Under-Graduate B.Sc. (H)	Biomedical Science	3 years	Class XII	English	46	40
2		Computer Science	3 years	Class XII	English	46	55
3		Electronics	3 years	Class XII	English	46	43
4		Food Technology	3 years	Class XII	English	46	50
5		Instrumentation	3 years	Class XII	English	46	69
6		Microbiology	3 years	Class XII	English	32	42
7		Physics	3 years	Class XII	English	32	31
8		Polymer Science	3 years	Class XII	English	46	43

**13. Does the college offer self-financed Programmes?**

Yes ☐ No ☒

If yes, how many

**14. New programmes introduced in the college during the last five years if any?**

Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>	Number	<input type="text"/>
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**15. List the departments:**

Faculty	Departments	UG
Science	1. Biomedical Science	✓
	2. Computer Science	✓
	3. Electronics	✓
	4. Food Technology	✓
	5. Instrumentation	✓
	6. Microbiology	✓
	7. Physics	✓
	8. Polymer Science	✓

**16. Number of Programmes offered under** (Programme means a degree course like B.A., B.Sc., M.A., M.Com.)

a. Annual system

b. Semester system

c. Trimester system

**17. Number of Programmes with**

a. Choice Based Credit System

**18. Does the college offer UG and/or PG programmes in Teacher Education?**

Yes ☐ No ☒

**19. Does the college offer UG or PG programme in Physical Education?**

Yes ☐ No ☒

**20. Number of teaching and non-teaching positions in the Institution**

Positions	Teaching faculty						Non-teaching staff**		Technical staff	
	Professor		Associate Professor		Assistant Professor					
	*M	*F	*M	*F	*M	*F	*M	*F	*M	*F
Sanctioned by the UGC/University/State Government			76*****				51		127	
Recruited			6	16	14	10	16	7	27	2
Yet to recruit			30***				16*****		98	
Sanctioned by the Management/society or other authorized bodies	N/A									
Recruited										
Yet to recruit										

\*M-Male \*F-Female \*\*Including Contractual Staff

\$ Promotional Post

\*\*\*The vacant posts are being filled as ad-hoc, contract and daily wages from time to time.

\*\*\*\*The remaining 12 non-teaching posts are filled through outsourcing.

\*\*\*\*\*As per 100 point roster prepared as duly approved by University of Delhi.

Note1: In some papers, college engages ad-hoc and guest teachers, as and when required against the vacant teaching posts.

Note2: Vacant posts are under process to be filled as per DU norms.

**21. Qualifications of the teaching staff:\***

Highest qualification	Professor		Associate Professor		Assistant Professor		Total
	Male	Female	Male	Female	Male	Female	
Permanent Teachers							
D.Sc./D.Litt.							
Ph.D./D.Phil.			7	15	9	7	38
M.Phil.							
PG			0	01	02	03	06
M.Tech			0	0	02	0	02
Temporary Teachers (Ad hoc)							
Ph.D.					12	6	18
M.Phil.					0	0	0
PG					04	06	10
M.Tech					04	04	08
Part-Time Teachers (Guest )							
Ph.D.							07
M.Phil.							00
PG							05

\*as per last semester of academic session 2015-16.



22. Number of Visiting Faculty / Guest Faculty engaged with the College: **12**
23. Furnish the number of the students admitted to the college during the last four academic years.

Categories	Year1 (2015-16)		Year2 (2014-15)		Year3 (2013-14)		Year4 (2012-13)	
	Male	Female	Male	Female	Male	Female	Male	Female
SC	37	08	46	17	60	08	39	22
ST	03	04	06	05	09	02	02	07
OBC	67	20	112	20	82	18	111	18
General	156	77	103	50	142	58	152	112
Others*	00	01	00	01	03	01	02	01

\*Foreign Students or PwD

24. Details on students enrollment in the college during the current academic year:

Type of students	UG
Students from the same State where the college is located	231
Students from other states of India	141
NRI students	–
Foreign students	01
Total	373

25. Dropout rate in UG and PG (average of the last two batches)

UG	21.83%	N/A	
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26. Unit Cost of Education

(Unit cost = total annual recurring expenditure (actual) divided by total number of students enrolled)

(a)	Including the salary component	Rs. 1,35,536/-
(b)	Excluding the salary component	Rs. 18,605/-

**27. Does the college offer any programme/s in distance education mode (DEP)?**

Yes

☐

No

☒

**28. Provide Teacher-student ratio for each of the programme/course offered: 1:12**

**29. Is the college applying for:**

Accreditation: Cycle 1

☒

Cycle 2

☐

Cycle 3

☐

Cycle 4

☐

Re-Assessment:

☐

(Cycle 1 refers to first accreditation and Cycle 2, Cycle 3 and Cycle 4 refers to re-accreditation)

**30. Number of working days during the last academic year 2015-16**

247

**31. Number of teaching days during the last academic year 2015-16**

(Teaching days means days on which lectures were engaged excluding the examination days)

181

**32. Date of establishment of Internal Quality Assurance Cell (IQAC): N.A.**

**CRITERION - I**

**CURRICULAR ASPECTS**

## **CRITERION – I**

### **CURRICULAR ASPECTS**

**1.1.1 State the vision, mission and objectives of the institution, and describe how these are communicated to the students, teachers, staff and other stakeholders.**

**VISION:**

“A commitment to mentor the students to achieve excellence through holistic education”

**MISSION:**

The mission of the College is to create and sustain the conditions that enable students to experience an unparalleled educational journey that is intellectually, socially, and personally transformative. We aim to support and promote both the academic as well as personal development of the learners. The diverse profiles of the learners are valued and encouraged through various academic and co-curricular activities. The college firmly believes in the transformative power of education. We strive to educate the young citizens and create citizen-leaders for the society, who will also contribute to the nation building. The college prepares its students for not only successful careers but also a fulfilling life.

**Objectives:**

The main objective of the institution is to excel at imparting curricular, co-curricular and extra-curricular education and training to its students. The goals of the college are as follows:

- To provide holistic education and allow each student to realize his/her potential through academics and extra-curricular activities and thereby transforming them into thinkers and researchers.
- To excel in imparting co-curricular and extra-curricular education and training to the students.
- To motivate students to become value-oriented individuals and be sensitive to the needs of the society.

- To motivate the faculty and the learners to take quality initiatives in academic, research and extension activities and help to generate suitable human resources for the development of our nation.
- To foster a scientific temperament and encourage students to adopt a rational approach to solve problems.
- To mentor students through continuous assessment.

**Communication to Stakeholders:**

The College Governing Body and Staff Council are two main important stakeholders of the college. The objectives of the college are displayed on notice boards in the college premises, on the college website, during orientation program and also making announcements in the class rooms from time to time thus effectively being communicated to all stakeholders.

**VALUES:**

- Academic excellence and integrity is strongly embedded in the curriculum and practice.
- Outstanding teaching and service is the main motto of the college staff.
- An effort is made to inculcate innovative research and professional leadership among the students.
- Integration of teaching, research, and service is thoroughly practiced in the college.
- Individual and collective excellence thrives in the college.
- Diversity, equity and social justice are some of the values that the college strongly advocates and follows.
- Life long learning is another objective of importance.

**1.1.2 How does the institution develop and deploy action plans for effective implementation of the curriculum? Give details of the process and substantiate through specific example(s).**

The University of Delhi (DU) has laid down the guidelines which are strictly adhered to while preparing plan of action of the college and implementation of the curriculum.

To fulfill this purpose, college has made following provisions:

**a) Academic Committee**

Staff council, an official body of University of Delhi in the college, constitutes various committees including academic committee. This committee consists of teachers-in-charges of all the departments of the college.

The teaching workload proposed by the academic committee is discussed and approved by the Staff Council and subsequently by the college Governing Body (G.B.) as per approved syllabi and guidelines of University of Delhi. Appointment of teachers is done as per the DU guidelines, as mentioned in the Ordinance XVIII.

**b) Industrial Training Procedure**

A large number of students of various departments like Instrumentation, Polymer Science, Food Technology have undergone industrial training to bridge the gap between the theoretical and practical knowledge. This provides the students:

- Hands on experience on latest technology.
- Exposure of industry environment and work culture helps them in professional up gradation of their skills.

**c) Time Management**

Since the courses are being run in semester mode, judicious utilization of time becomes extremely important. Therefore, the college undertakes administrative measures for effective implementation of curriculum.

- The workload for next semester is taken at the end of the previous semester to allow the sufficient time for the Academic Committee to work upon the same.
- A block period of one hour per week is scheduled for co-curricular/administrative activities to avoid academic loss.
- Time table is prepared well in advance before the commencement of the semester. It is displayed on the notice board and college website for easy access.

**d) Student Advisory Committee**

Student Advisory Committee interacts with students from time to time and addresses their grievances. During such interactions, informal feedback is also taken for various aspects of the college functioning as such deliberations help in further improvement of teaching learning process and understand the needs of the students. The feedback is also taken by the participants of various events like seminar / workshop / conferences / invited talks / popular lectures etc.

**e) Funds Allocation**

- The funds are utilized in very systematic manner to equip laboratories with instruments, to upgrade infrastructure for co-curricular activities and increase number of books in the library, as a result college has well equipped laboratories in all the disciplines.
- Funds from DBT and UGC and other funding agencies are utilized for conducting seminars and conferences which enables students to know about latest research endeavors in various fields. This also provides an opportunity to students to interact with eminent scientists and academicians.
- The Central Purchase Committee of the college facilitates the purchase of equipments, chemicals and other requirements for research activities following purchase rules prescribed under GFR.

**Table 1.1 Shown below indicates the funds received and expenditure done in years 2012-2015.**

All figures in Rs.						
S.No.	Year	Total Funds Received from			Total funds received during the Year (col 3 + 4+ 5)	Total expenditure incurred out of column no-6 by college/ university during the year
		U.G.C	G.I.A.	Other/ Own Resource		
1	2	3	4	5	6	7
1	2012-13	300000.00	129801988.05	3324677.38	133426665.43	101903426.64
2	2013-14	0.00	159535861.55	7497869.24	167033730.79	120705759.06
3	2014-15	2289600.00	135818619.85	6890065.88	144998285.73	121310179.40
4	2015-16	0.00	192719204.45	6032669.88	198751875.33	143496914.85



### **1.1.3 What type of support (procedural and practical) do the teachers receive (from the University and/or institution) for effectively translating the curriculum and improving teaching practices?**

The University of Delhi supports and ensures that the curriculum is effectively translated by the faculty members by their active participation in the process of restructuring existing courses or introducing new courses.

The college faculty members are members of various academic bodies of University of Delhi and they all play a vital role in framing their respective syllabi. DU prepares an Academic Calendar that specifies all important schedules including date of commencement of examinations. The college receives regular circulars, letters and emails from DU with regard to academic activities. The Principal informs the concerned faculty about such intimations. Thus, the faculty members get all information from DU through college.

The college encourages its faculty to participate in course revision or related workshops and meetings. DU also encourages faculty members to go abroad to acquire knowledge globally under Faculty Training Programme. One of the Faculty member (Dr. Uma Dhawan) of the college obtained Masters in Bioinformatics with distinction from the University of Edinburgh, UK under Faculty Training program of University of Delhi (*Universitas 21* Fellowship).

The college encourages the faculty members to organize / participate in National and International conferences, workshops and seminars for not only getting wider exposure to the latest trends in their fields but also to upgrade their knowledge and deliver high quality teaching skills.

The college also supports faculty members to enhance teaching learning process through various interactive sessions, field trips etc. Participation in Refresher and Orientation courses provides them a platform to interact with experts in their fields.

The college library has a large collection of books, access to the thousands of journals and e-resources which help the faculty to update teaching.

Every department and classroom is equipped with LCD projectors to enable the faculty members to deliver the content by integrating ICT for effective implementation of the curriculum.

The college has also provided Internet and Wi-Fi facility to each department. The college supports every faculty member at every platform for effective implementation of academic transaction.

The aim of the institution is to educate the students by effective utilization of facilities. The College provides the following facilities /infrastructure:

- Seminar room and classrooms are well equipped for ICT based teaching.
- Seminars/workshops/conferences/talks etc. are conducted regularly by experts from various fields to enlighten the students and teachers.
- Participation in different training sessions, seminars, workshops and orientation courses especially on the latest aspects in their field of specialization plays a very important role in improving teaching skills of faculty.

**1.1.4 Specify the initiatives taken up or contribution made by the institution for effective curriculum delivery and transaction on the Curriculum provided by the affiliating University or other statutory agency.**

Well qualified and experienced faculty ensure effective curriculum delivery because of various initiatives made by institution like,

- Frequent use of ICT for efficient and better understanding of subject areas of respective disciplines.
- Well equipped laboratories to impart practical knowledge
- Instruments/Apparatus are serviced on regular basis to ensure their availability to students.
- Easily accessible library facilities for students and staff members.
- Wi-Fi enabled college campus allows easy access to all the journals/books subscribed by the University of Delhi.
- Seminars/workshops/conferences/talks etc. by the experts on areas related to curriculum are conducted on regular basis.
- Continuous evaluation of students through regular tests, assignment, and presentation aids the efficient curriculum delivery.

- Four virtual labs were set up under the aegis of Star College Scheme for the Life Sciences.
- Industrial Training and Visits are organized by departments which aid in curriculum delivery.

**1.1.5 How does the institution network and interact with beneficiaries such as industry, research bodies and the university in effective operationalization of the curriculum?**

The strong alumni network is a continuous source of information relating to latest development in the industry, research, and development and other areas. The college always welcomes them to share their views with students and faculty either in person or through electronic means. Every year, the college arranges formal alumni meet so that the alumni visit the college to interact with students and faculty.

- College has been organizing Seminars/workshops/conferences/talks etc. by the experts from various industries in the field of Instrumentation, Electronics, Food Technology, Computer Sciences, etc. for information on the latest development in these respective fields.
- Industrial training initiatives taken for students and industrial visits are organized by departments help to build an industry-academia interface.
- Views expressed by the industries are communicated to the University authorities to incorporate changes in curriculum.
- Various research projects undertaken in the college also allow frequent interaction with various research bodies.

**1.1.6 What are the contributions of the institution and/or its staff members to the development of the curriculum by the University? (Number of staff members/departments represented on the Board of Studies, student feedback, teacher feedback, stakeholder feedback provided, specific suggestions etc.)**

Since the inception of college, the faculty members have been actively involved in the course designing time to time and the faculty members have always been members of committee of courses of University of Delhi.

List of faculty members along with committee in which they have contributed is mentioned in table below:

Faculty Name	Designation	Member
<b>Dr. Anita Sondhi</b>	Associate Professor (Department of Biochemistry)	1.) Faculty of Interdisciplinary and Applied Sciences (FIAS), University of Delhi, from April 2016 to March 2019 2.) Faculty of Interdisciplinary and Applied Sciences (FIAS), University of Delhi, from April 2010 to March 2013
<b>Dr. N. S. Abbas</b>	Associate Professor (Department of Biology)	1.) Member of Faculty of Sciences, University of Delhi from 2012 to 2014.
<b>Dr. Geeta Bhatt</b>	Associate Professor (Department of Instrumentation)	1.) Academic Council Member in University of Delhi (2015-2017). 2.) Faculty of Inter - Disciplinary and Applied Sciences, University of Delhi (since April 2013) 3.) Invited Member, Committee of Courses, Department of Electronic Science, University of Delhi.
<b>Dr. Uma Chaudhry</b>	Assistant Professor (Department of Biomedical Science)	1.) Member, Committee of Courses for Hons., Post-graduate and Research Studies in Biomedical Sciences (3 <sup>rd</sup> July, 2007 to 2 <sup>nd</sup> July, 2009). 2.) Member, Departmental Research Committee of Dr. B. R. Ambedkar Center for Biomedical Research, University of Delhi (1st February, 2008 onwards) 3.) Member, Committee constituted by Dr. B. R. Ambedkar Center for Biomedical Research, University of Delhi for implementation of choice-based credit system (2015-16) for B.Sc. (Hons.) Biomedical Science course at University of Delhi 4.) Member, Committee constituted by Dr. B. R. Ambedkar Center for Biomedical Research, University of Delhi for implementation of Four Year Undergraduate Programme (2013-2014) for B.Sc. (Hons.) Biomedical Science course at University of Delhi.
<b>Dr. Shivani G. Varmani</b>	Assistant Professor (Department of Biomedical Science)	1.) Member, Committee constituted by Dr. B. R. Ambedkar Center for Biomedical Research, University of Delhi for implementation of choice-based credit system (2015-16) for B.Sc. (Hons.) Biomedical Science course at University of Delhi 2.) Member, Committee constituted by Dr. B. R. Ambedkar Center for Biomedical Research, University of Delhi for implementation of Four Year Undergraduate Programme (2013-2014) for B.Sc. (Hons.) Biomedical Science course at University of Delhi.

Faculty Name	Designation	Member
<b>Dr. Uma Dhawan</b>	Assistant Professor (Department of Biomedical Science)	Core Member of the special committee of courses in the restructuring of the syllabi for three-year semester mode, four-year undergraduate program and CBCS of Biomedical Science of University of Delhi.
<b>Dr. Sangeeta Srivastava</b>	Associate Professor (Department of Computer Science)	1.) Member of the Committee of Post-Graduate and Honors Courses of Computer Science Department, University of Delhi 2.) Member of the committees for designing the syllabus and guidelines of BSc (H) CS of Computer Science Department, University of Delhi since 1999 onwards
<b>Ms. Manu Kataria</b>	Associate Professor (Department of Computer Science)	Member of the committees for designing the syllabus and guidelines of BSc. (H) CS of Computer Science Department, University of Delhi since 1999 onwards
<b>Mr. Bhavya Deep</b>	Assistant Professor (Department of Computer Science)	1.) Member of Faculty of Mathematical Sciences, University of Delhi since April 2013 for a period of 3 years 2.) Member of the committees for designing the syllabus and guidelines of BSc. (H) CS of Computer Science Department, University of Delhi since 1999 onwards
<b>Ms. Arti Batra</b>	Assistant Professor (Department of Computer Science)	Member of the committees for designing the syllabus and guidelines of BSc (H) CS of Computer Science Department, University of Delhi since 2013 onwards
<b>Dr. Avneesh Mittal</b>	Assistant Professor (Department of Electronics)	Curriculum Committee of the University of Delhi to design syllabus for 4 year UG programme in Electronics (FYUP).
<b>Dr. Jitender Kumar</b>	Assistant Professor (Department of Electronics)	Curriculum Committee of the University of Delhi to design syllabus for 4 year UG programme in Electronics (FYUP).
<b>Dr. Shalini Sehgal</b>	Associate Professor (Department of Food Technology)	1.) Member of Committee of Courses and Studies in Home Science for Honours, Post Graduate and Research Studies 2009-2011, University of Delhi. 2.) Member of Committee of Courses of BSc. (H) and B.Tech. Food Technology 2015-2016, University of Delhi. 3.) Member of syllabus designing committee of B.Sc. (H) Food Technology Semester Mode, Four Year UG Programme (FYUP) and CBCS for B.Sc.(H) Food Technology

Faculty Name	Designation	Member
<b>Dr. Eram Rao</b>	Associate Professor (Department of Food Technology)	1.)Member of syllabus designing committee of B.Sc. (H)Food Technology Semester Mode, FYUP and CBCS for B.Sc.(H) Food Technology 2.)Inspection Committee for starting B.Sc. Food Technology at IHE and LIC
<b>Dr. Rizwana</b>	Associate Professor (Department of	1.) Member of syllabus designing committee of B.Sc. (H)Food Technology, FYUP and CBCS for B.Sc.(H) Food Technology
<b>Dr. Vandita Gupta</b>	Associate Professor (Department of Food Technology)	1.) Member of syllabus designing committee of B.Sc. (H)Food Technology, FYUP and CBCS for B.Sc.(H) Food Technology
<b>Dr. Menakshi Garg</b>	Assissant Professor (Department of Food Technology)	1.)Member of syllabus designing committee of B.Sc. (H)Food Technology, FYUP and CBCS for B.Sc.(H) Food Technology
<b>Dr. Ruchi Gulati Marwah</b>	Assistant Professor (Department of Microbiology)	Member of courses in : 1.) History and scope of microbiology Sem I (DCI and DCII) in the erstwhile FYUP 2.) Microbial Physiology and metabolism Sem III (DCI) in the erstwhile FYUP
<b>Dr. Purnima Anand</b>	Assistant Professor (Department of Microbiology )	Member of courses in: 1.) Bacteriology Sem I (DCI) in the erstwhile FYUP 2.) Bacteriology and Virology (DCII) in the erstwhile FYUP
<b>Dr. Pawas Goswami</b>	Assistant Professor (Department of Microbiology)	Member of courses in: 1.) Medical Microbiology Sem VI (DCI) in the erstwhile FYUP 2.) Food Microbiology Sem V(DCI) in the erstwhile FYUP
<b>Dr. Sidhharth Sirohi</b>	Assistant Professor (Department of Polymer Science)	Member of syllabus designing committee of B.Sc. (H) Polymer Science, FYUP and CBCS for B.Sc.(H) Polymer Science
<b>Dr. Sushmita Dey Sadhu</b>	Assistant Professor (Department of Polymer Science)	Member of syllabus designing committee of B.Sc. (H) Polymer Science, FYUP and CBCS for B.Sc.(H) Polymer Science
<b>Dr. Saroj Kumar Shukla</b>	Assistant Professor (Department of Polymer Science)	Member of syllabus designing committee of B.Sc. (H) Polymer Science, FYUP and CBCS for B.Sc.(H) Polymer Science

**1.1.7 Does the institution develop curriculum for any of the courses offered (other than those under the purview of the affiliating university) by it? If 'yes', give details on the process (Needs Assessment, design, development and planning) and the courses for which the curriculum has been developed.**

No, the college offers only those courses that have been granted by the University of Delhi. The curriculum followed has been designed and approved by the University.

**1.1.8 How does institution analyze/ensure that the stated objectives of curriculum are achieved in the course of implementation?**

The following measures are taken by the college to achieve stated objectives of curriculum-

- Appointment of well-qualified teaching staff.
- Students are trained during the course of study in a specific area through theory, practical, hands-on training, workshops and seminars.
- Providing adequate infrastructural facilities.
- Giving exposure to students via industrial visits and training.
- Presentations / seminars / assignments / class tests / quiz competitions are conducted regularly and internal assessment of the student performance is done at the end of the semester which is duly verified and signed by each student.
- Student feedback is taken informally from time-to-time.

**1.2 Academic Flexibility**

**1.2.1 Specifying the goals and objectives give details of the certificate/diploma/skill development courses etc., offered by the institution.**

- Department of Food Technology of the college organizes a short term course - **Better Process Control School** to train the manufacturers of acidified foods and low acid canned foods regarding safety regulations of USFDA. Three such schools have been organized till date, the latest was held on 18<sup>th</sup>-21<sup>st</sup> March, 2016. Bhaskaracharya College of Applied Sciences is the only college offering

this course currently in India and neighbouring countries for the food industry professionals. The U.S. Food and Drug Administration (FDA) India Office has successfully partnered with Bhaskaracharya College of Applied Sciences for these three Better Process Control Schools (BPCS).

- Department of Instrumentation organized a Two Day workshop on **Line Follower Robotics** in collaboration with EFY Group, publishers of Electronics for You magazine during 11-12 March, 2014.
- Department of Polymer Science organized a two day national symposium on **Innovations in Polymers towards Sustainability and Growth** in association with National Academy of Sciences and Polymer Processing Academy during 2<sup>nd</sup> -3<sup>rd</sup> March, 2012.
- A two day Workshop on **Experiments and Research Applications with National Instruments LabVIEW** was organized by Department of Instrumentation and Electronics jointly on 2<sup>nd</sup> -3<sup>rd</sup> February, 2012.
- A three day Entrepreneurship Awareness Camp (EAC) was organized for the students during 4<sup>th</sup> to 6<sup>th</sup> January, 2012. This camp was sponsored by Department of Science & Technology, Govt. of India. A total of 74 students participated in EAC.
- Department of Biomedical Sciences is running an add-on course **Bioinformatics and *in-silico* Drug Discovery since 2012.**
- Department of Microbiology and Biomedical Sciences jointly organized **National Symposium on Infectious Diseases: Advancements in Diagnostics, Therapeutics and Vaccines** during 20-21 March, 2014.
- Department of Electronics organized a one-day workshop on **“Training on ExpEYES Design Kit”** on January 28, 2012 held at Bhaskaracharya College of Applied Sciences.

**1.2.2 Does the institution offer programmes that facilitate twinning/dual degree? If ‘yes’, give details.**

No.



**1.2.3 Give details on the various institutional provisions with reference to academic flexibility and how it has been helpful to students in terms of skills development, academic mobility, progression to higher studies and improved potential for employability. Issues may cover the following and beyond:**

- The College is an applied science college and presently running B.Sc. (H) courses, B.Tech and choice based credit system (CBCS) courses. The students are also offered short term courses by some departments to improve their skills and employability.
- Under CBCS system, the students are provided with an opportunity to opt for Generic Elective papers from any of the running courses: Physics, Chemistry, Human Communication, Mathematics, Electronics, Instrumentation, Food Technology, Polymer Science, Computer Science, Microbiology and Biomedical Science.
- The students from all the departments are actively involved in research projects funded by University of Delhi under the Innovation Project Scheme.
- Project related laboratory work to have hands-on training.
- Relevant literature survey of the scientific problem to upgrade their knowledge in the specified area and to develop innovative ideas.
- Write / develop manuscript to enhance skills pertaining to scientific writing.
- Exhibition of their project results in various conferences in the form of poster and oral presentations which improve their presentation skills.
- Frequent visits to various industries, academic institutions and government establishments provide motivation to the students.
- College also promotes students to join various summer internship programs during the semester break.
- The students from almost all the courses take active part in seminars/conferences organized by their respective departments of the college.

- In all the departments of this college, there is a rich culture of inviting eminent persons (National and International) from different backgrounds such as sciences, academics, society and bureaucracy. This enables the students to attain the directions for their future endeavors.

**1.2.4 Does the institution offer self-financed programmes? If 'yes', list them and indicate how they differ from other programmes, with reference to admission, curriculum, fee structure, teacher qualification, salary etc.**

No

**1.2.5 Does the college provide additional skill oriented program, relevant to regional and global employment markets? If 'yes' provide details of such program and the beneficiaries.**

Yes, the syllabus of Choice Based Credit System (CBCS) provides ample scope for enhancing the employability of students through skill oriented courses which focus on hands-on-training, competencies, skills, etc. Furthermore, the students have flexibility to opt these courses accordingly from a pool of skill-based programs. The students of semester mode have the option of summer training/ internship to improve their skills.

Another example is the Better Process Control School (BPCS) which is a certification course for thermal processing systems, acidification and container closure evaluation programs for low-acid canned foods and acidified foods. The U.S. Food and Drug Administration (FDA) India Office has successfully partnered with Bhaskaracharya College of Applied Sciences to complete three Better Process Control Schools (BPCS). The BPCS is conducted at the college for the manufacturers of low acid canned and acidified foods. Food professionals from across the India from reputed food industries such as MTR, Gits, Haldiram, ITC etc. have participated in the same. Instructors for this school are drawn from the Food Technology Department of our college and experts from food industry. The course can be designed as per the requirement of the organization or specific industry based on their process and container closure system. In the past, the team from Bhaskaracharya College has conducted one such course at Negumbo, Srilanka for their food industry under

the coordinator-ship of Dr. Shalini Sehgal (Associate Professor, Dept. of Food Technology).

**1.2.6 Does the University provide for the flexibility of combining the conventional face-to-face and Distance Mode of Education for students to choose the courses/combination of their choice? If ‘yes’, how does the institution take advantage of such provision for the benefit of students?**

The University of Delhi does not provide such flexibility for the courses running in the college.

Moreover, University of Delhi has facilitated e-learning through vle.du.ac.in. The students can take advantage of this e-learning. The faculty of college has developed following e-lessons and study material is being uploaded by their parent department on University of Delhi website.

- E-lesson “**Nutrient Uptake and Transport**” (Subject: Microbiology, paper: Microbial Physiology And Metabolism-I), web link: <http://vle.du.ac.in/mod/resource/view.php?id=12684>; ISSN 2349-154X under VLE (an online environment of e-resources for undergraduate and postgraduate level, an initiative of Institute of Life-Long Learning, University of Delhi).
- E-lesson “**Modes of Viral Transmission**” (Subject: Microbiology, Paper: Virology) VLE (<http://vle.du.ac.in/mod/resource/view.php?id=12684>; ISSN 2349-154X), accepted on 8/02/2015.
- E-lesson “**Chromatographic Techniques**” VLE (<http://vle.du.ac.in/mod/resource/view.php?id=12684>; ISSN 2349-154X) submitted.
- E-lesson “**Preservation of Foods by Physical Methods-Radiation**” (Subject: Food Technology ,Paper : Food Microbiology), UGC-e-pathshala (An MHRD, under its National Mission on Education through ICT (NME-ICT) [http://epgp.inflibnet.ac.in/view\\_f.php?&category=43#](http://epgp.inflibnet.ac.in/view_f.php?&category=43#)

### **1.3 Curriculum Enrichment**

#### **1.3.1 Describe the efforts made by the institution to supplement the University's Curriculum to ensure that the academic programmes and Institution's goals and objectives are integrated?**

Institution has taken various steps for facilitating and effective implementation of the curriculum to the students, which are as follows:

- Well maintained seminar room and classrooms for effective and efficient ICT based teaching.
- Well-equipped laboratories to impart practical knowledge.
- Instruments / Apparatus are serviced on regular basis to ensure their availability for students.
- Seminar/workshop/conferences/talks etc. are conducted regularly in which experts enlighten students and teachers on various aspects of teaching, learning and communication.
- Well organized and easily accessible library is available for students and teachers.
- Detail information of the available books is on the library software (OPAC).
- Books recommended by teachers for curriculum are purchased on the priority basis.
- Availability of Internet facility in the library facilitates students and faculty members to surf the latest scientific and technical literature.
- Wi-Fi enabled college campus (which is part of University LAN) allows easy access to all the journals/books subscribed by the University.
- The college is also a member of INFLIBNET and faculty can access the subscribed journals sitting at home.
- The college also has facility for "National Library and Information Services infrastructure for Scholarly Content (N-LIST)" college component of the UGC-INFONET Digital Library Consortium (formerly funded by the MHRD under its National Mission on Education through ICT). This N-LIST program

provides access to more than 6000+ e-journals (with back files for 10 years) and 135000 + e-books. The resources are accessible from <http://nlist.inflibnet.ac.in>.

- Continuous evaluation of students through regular tests, assignment, presentations aids the efficient curriculum delivery.
- Three virtual labs were set up under the Star College Scheme. These are uploaded on college website for wider access.
- Industrial training and industrial visits organized by departments which are very helpful to students in delivery of curriculum.
- Department of Polymer Science has developed a blog “<http://polybcas.blogspot.in>” ([bcas.du.ac.in/courses\\_ps.htm](http://bcas.du.ac.in/courses_ps.htm)) to share the relevant information of the departmental events/activities, which is linked to the college website and being administrated by the department. The students can also give their feedback and alumni can share the experience through this platform in effective and easier way.
- The Department of Biochemistry, Biomedical Science, Food-Technology and Microbiology have organized various activities - talks, lectures, trips, hands-on training under the DBT Star College Scheme to improve the understanding of the curriculum of students.
- The Library of the college has developed a blog “[bcaslib.blogspot.in](http://bcaslib.blogspot.in)” dedicated to the students, where students can get information about the library, policies and procedures, list of books, minutes of the library committee meetings, newspaper clippings, previous years’ question papers and some online tools.

Moreover, University of Delhi has introduced a scheme of Innovation Projects in colleges in which the students of the college work/research with their teachers under the scheme to enhance the Interdisciplinary Studies as mentioned below.

### **Delhi University Innovative Projects during 2012-13**

The following five Innovation Projects were approved for funding by University of Delhi to faculty of the college

- Study of Rise in Consumption of the Mobile phones/Electronic Gadgets in Delhi region and Material Analysis projecting potential Electronic Waste and their impact on Environment.
- Determine the Speciation of some selected Heavy Metals from e-waste and their impact on Ground Water.
- Development and Study of alternate packaging materials from agro wastes and its application in Food Packaging.
- Development of Cost-Effective Nutritious Multi Cereal Bar and its Sustainable Packaging Using Nano-Biopolymer.
- Studies to assess the quality of fruits and vegetables with respect to microbial load and the remedial measures for their control

### **Delhi University Innovative Projects during 2013-15**

The following nine Innovation Projects were approved for funding by University of Delhi to faculty of the college

- Low-cost electricity generation using Bio-Photovoltaic Technology – a Green Energy Initiative
- Agro Waste Material Management: From Waste to Wealth
- Public Awareness and Evaluation of Probiotics sold in Delhi
- Screening and Enrichment of Polymer degrading micro-organisms and their application in Environmental Engineering
- To prepare edible packaged low cost healthy snack from fruit and vegetable waste and its effect on healthy respondents
- Assessment of brominated flame retardants in mobile phones, their consumption pattern in North India and carbon footprints from electronic waste
- Understanding the Burden of Vitamin B12 and Folate Deficiency in Young Indians
- Lifestyle Interventions in Stress Management: A study among Delhi Youth

- Genetic curation of ataxia phenomes for establishment of predictive and rapid diagnostic paradigm

### **Delhi University Innovative Projects during 2015-16**

The following twelve Innovation Projects were approved for funding by University of Delhi to faculty of the college pertaining to various areas of applied sciences:

- Development of Norms of Selected Autonomic Nervous System Function, Lipid Profile, Electrolyte and Selected Respiratory Variables of College Students with and without Sports Background
- Development of an intelligent, eco-friendly multilayer package and nutritious snack from Fruits and Vegetable seeds and peels
- Development of Novel Eco-Friendly Printable Packaging Films for Industrial Applications
- To understand the role of maternal factors in childhood obesity and promote metabolic fitness
- To explore the potential of biosimilars as cost-effective therapeutic products
- Clean Electricity Generation from waste water samples collected from Delhi-NCR using Microbial Fuel Cell Technology-A Green Energy Initiative.
- Agro Waste based Green Nano-Composite: Development and Applications
- Exploring the Involvement of Mechanotransduction Network in Inter-individual Differences through Ayurgenomics Approach
- Identification of Genetic Factors for Coronary Artery Disease and Its Association with other Atherogenic Risk Factors in Young Indians
- Development of wireless sensor for detection and real time monitoring of Microorganisms
- Study and Design of Framework for Cloud Implementation in Large University/ Higher Education
- Development of cookies with biodegradable packaging material for diabetics.

### 1.3.2 What are the efforts made by the institution to enrich and organize the curriculum to enhance the experiences of the students so as to cope with the needs of the dynamic employment market?

The college organizes seminars, workshops and industrial visits in collaboration with industries and R & D organization to help students to gain latest know how of their subject.

The purpose is to improve critical thinking and 'hands on' experimental work in the cutting edge-technologies needed for modern biological studies at undergraduate (college) level in life sciences and as a result of such experiences, more students will take up life science as a career. The following visits were organized by the college during last four years:

- Dept. of Microbiology and Food Technology organized industrial visits to Yakult plant in 2012 and 2014.
- Dept. of Microbiology organized industrial visit to Mother Dairy in 2013.
- Dept. of Polymer Science visited Indian Oil Corporation Ltd. Panipat polymer manufacturing plant on March 18, 2014 to see latest technology used for manufacturing of polymers.
- An industrial visit of Polymer Science students was organized to U Flex Industries Ltd. (Noida, India) on October 7, 2015
- Department of Polymer Science also organized visit of students to 8th Rubber Expo (held at Pragati Maidan, New Delhi on January 15-17, 2015).
- Polymer Science students visited 4th Polyurethane Exhibition and Conference (PU Tech 2014) on March 12-14, 2014 held at India Expo Center, Greater Noida. The Exhibition and Conference was being organized by Indian Polyurethane Association.
- A workshop on **“Acute Myeloid Leukemia: molecular aspects”** was organized in 2015 by the college to help students to learn aspects of Biochemistry and Biomedical Science involved.



- A seminar on “Industrial Analysis of Foods” was organized in August 2014 in collaboration with FICCI Research & Analysis Centre (FRAC) for Food Technology students.
- A Training Course on “Scientific Writing and e-Resources in Food Technology” was organized by Food Technology –Under the aegis of Star College Scheme, Department of Biotechnology on January 19, 2015.
- Two workshops on “**Wireless Robotics**” and “Embedded Systems and Robotics” were organized in March 2015 and September 2013 for instrumentation students.
- An “Alumni Meet” was organized by the department of Food Technology on March 14, 2015.

During the last years, the following leading scientists, academicians and delegates from India and abroad visited the college and addressed the students and faculty of the college.

- Prof. Dinesh Singh, the then Pro-Vice Chancellor, University of Delhi, Delhi
- Prof. Deepak Pental, Former Vice Chancellor, University of Delhi, New Delhi.
- Dr. R. K. Khandal, Director, Shri Ram Institute for Industrial Research, New Delhi.
- Prof. Monika Datta, Department of Chemistry, University of Delhi, Delhi.
- Dr. S. C. Bhatla, Dean, Faculty of Science, University of Delhi, Delhi
- Dr. Mukesh Kumar, Deputy Director General, Indian Council of Medical Research, New Delhi
- Dr. A. Mukhopadhyay, DST, New Delhi
- Prof. Karmeshu, School of Computer and Systems Sciences, JNU, New Delhi.
- Prof. Avinashi Kapoor, Dean, Inter Disciplinary and Applied Sciences, University of Delhi, New Delhi
- Dr. Amit Roy, Director, Inter University Accelerator Center, New Delhi.

- Prof. S. Natesh, Department of Biotechnology, Delhi
- Sh. Rintu Nath, Vigyan Prasar, Noida, UP.
- Dr. Anuj Sinha, Vigyan Prasar, Noida, UP.
- Dr. B.C. Sabata, Department of Environment, Govt. of NCT of Delhi New Delhi.
- Dr. Ashok Jain, EMPI, New Delhi
- Dr. Gauhar Raza, NISCAIR, New Delhi.
- Dr. B. D. Malhotra, Delhi Technological University, New Delhi
- Dr. Rathansre, Nehru Planetarium, New Delhi
- Dr. Jan Wildenhain, University of Edinburgh, United Kingdom
- Dr. Madhu Chopra, Dr. B R Ambedkar Center for Biomedical Research, University of Delhi
- Prof. J.S. Viridi, Head, Department of Microbiology, University of Delhi
- Dr. A. K. Puniya, National Dairy Research Institute, Karnal
- Dr. Amarjeet Singh, Indraprastha Institute of Information Technology, Delhi
- Mr. Promit Biswas, All India Institute of Medical Sciences, New Delhi
- Dr. Saleem Javed, Jamia Milia Hamdard University, New Delhi.
- Prof A.K. Bakshi, Vice-Chancellor, Rajarshi Tandon Open University, Allahabad.
- Dr. P. Thavamani, IRMRA, Mumbai
- Dr. Ruchin Shrivastava, Bayer Material Science Pvt. Ltd.,
- Dr. Joseman Jacob, Centre for Polymer Science and Engineering, IIT Delhi,
- Dr. Kinkar Mukherjee, Reliance Industries, Mumbai.
- Prof. (Ms) Ashum Gupta, Director of Gandhi Bhawan, University of Delhi
- Prof. Rajiv Vora, Chairman of Swaraj Peeth.

- Prof. Pralay Kanungo, Chairperson, School of Political Science, Centre of Social Studies, JNU, New Delhi
- Prof. Aswini Ray, Retd. Prof. in International Relations, School of Political Science, Centre of Social Studies, JNU, Delhi
- Mr. Jules Jalenques, International SalesInterscience, France
- Dr. Hirotoishi Tamura, Kagawa University, Japan
- Prof. S.M.S. Chauhan, Head, Department of Chemistry, University of Delhi.
- Prof. A. K. Ghosh, Centre for Polymer Science and Engineering, IIT Delhi,
- Dr. V. B. Lall, SCJ Polymers, Delhi
- Prof. G. L. Verma, Head, Department of Applied Chemistry and Polymer Technology, Delhi Technological University, New Delhi.
- Prof K. Sreenivas, Director, University Science Instrumentation Centre, University of Delhi, Delhi
- Prof. Antal Veba , Faculty of Engineering, University of Szeged, Szeged, Hungary
- Prof. Emo Gyimes , Faculty of Engineering, University of Szeged, Szeged, Hungary
- Dr.Shivaji Basu, Head, GAIL Polymer Technology Centre, Noida.

**1.3.3 Enumerate the efforts made by the institution to integrate the cross cutting issues such as Gender, Climate Change, Environmental Education, Human Rights, ICT etc., into the curriculum?**

The various clubs look after issues of social aspects of students to sensitize them towards various aspects of environment and society. The following program were organized by these clubs and departments of the college

- The Eco club organized an Awareness Campaign on “**Disposal of Waste**” in August in association with RAMY Foundation and MCD in session 2012-13. Eco Club along with the NSS started off the Cleanathon drive where students were inspired to keep their surroundings clean.

- On the occasion of International Ozone Day, various students of the Eco club attended the workshop on “**Ozone and its impact**” at the Delhi Secretariat in session 2012-13. A Declamation competition on “Ozone: Good and Bad” was conducted.
- Rain water harvesting (RWH) seminar was organized by Eco club the college to educate students about necessity of RWH and the various techniques to do so in session 2012-13. Also an environment related quiz competition was organized in session 2012-13.
- Eco club organized a trip to Biodiversity Park for students in the 2013-14 session.
- Eco club also runs its paper recycling unit and recycles both side used papers. The recycled paper is used within the college for various competitive and decorative purposes.
- Eco club” initiated ‘**Swachh Bharat Abhiyan**’ on the occasion of Gandhi Jayanti on October 2, 2014 in the college.
- The college organized a seminar on Human Rights on 13th March 2012 in collaboration with National Human Rights Commission, Govt. of India. The relevance of this program can be gauged from the fact that Sh. Jaideep Singh Koccher, Joint Secretary, National Human Rights Commission, who himself was present during the event, sent a congratulatory letter to the college appreciating the sincere efforts of the college.
- Department of Electronics organized National Conference entitled **E-Waste Sustainability: Needs and Solutions for its Management** jointly with **GIZ-IGEP** (Indo-German Environment Partnership) on 7-8 March 2013.
- A compulsory paper of environmental studies has also been included in the curriculum for students of each department.

The NSS unit of the college is involved in organizing blood donation camps, tree plantation and cleanliness drives on regular basis.

- NSS Unit of college conducted a variety of program to sensitize youth and empower society in session 2013-14 which including collection of cloth and

stationery drives and distribution of these items to four slums across Delhi namely, Palam slums, Dwarka Sector-2 , *Rain Basera* and Narayana slums.

- NSS Unit of college organized three plantation drive in 2015 and 2016 in its premises
- Two students of NSS unit represented National Youth Festival held in Ludhiana. Fifty volunteers of NSS unit participated in “Vishwa Ekta Diwas” held at Yamuna Sports Complex on December 20, 2013.
- NSS volunteers also participated at a program organized by Selection Commission at India Gate and Yuva Meet 2014.
- The Women Development Cell is actively making efforts towards sensitizing students on social and political status of the women in society by conducting various events like posters competition, debate, street play, silent march etc.
- The Equal Opportunity Cell of the college is dedicated towards making the continuous efforts for promoting the feeling of oneness in students of all communities by ensuring their access to resources and infrastructure with dignity.

#### **1.3.4 What are the various value-added courses/enrichment programmes offered to ensure holistic development of students?**

The college has various clubs, cells and center which ensure holistic development of students through various program and activities. The Gandhian study center, Vivekanada Vichar Manch, Bhaskaracharya Cell and Literary club of the college are constituted to inculcate the moral and ethical values among students to promote Gandhian values among students through Nukkad natak, drama, talks, lecture by eminent persons on regular basis. The activities of these clubs, cells and center are summarized below:

- A three day Entrepreneurship Awareness Camp (EAC) was organized for the students during 4<sup>th</sup>-6<sup>th</sup> January, 2012. This camp was sponsored by Department of Science & Technology, Govt. of India. A total of 74 students participated in EAC.

- To enhance awareness about the efficacy of healthy lifestyle, Yoga Club of the college invited eminent yoga experts from Bhartiya Yog Sansthan and organized a demonstration on '**Sukshmkriya and Laughter Yoga**' on January 30, 2013.
- The college faculty and staff celebrate **International Yoga Day** every year.
- The *Gandhi Study Circle* of the college organized a seminar on Gandhism on February 24, 2012 which gave the students an insight into the preaching of the Mahatama and their relevance in their day to day life.
- The Literary Club of the College organized a Poets' Meet in which eminent poets associated with Sahitya Academy had poetry sessions in session 2012-13
- The Literary Club organized a creative writing event- "As you see it" which got huge participation in 2014.
- The Literary Club also organized Abhivyakti'14, the Annual Literary Festival of the Club on the March 24, 2014. In this interactive session on 'Word Power and Vocabulary Building' was organized.

### **1.3.5 Citing a few examples enumerate on the extent of use of the feedback from stakeholders in enriching the curriculum?**

On the basis of informal inputs received from the stakeholders, the college enriches the curriculum by conducting series of workshops, seminars, conferences, departmental society activities etc. There are few such examples such as Better Process Control School and seminars organized in the college time to time.

### **1.3.6 How does the institution monitor and evaluate the quality of its enrichment programs?**

The college monitors and evaluates the quality of its enrichment programs by constant interaction with its stakeholders by seeking feedback through the college website, departmental blog such as the blog of Department of Polymer Science polybcas.blogspot.com and college library blog bcaslib.blogspot.com .It is also done by interacting with students through interactions with students and teachers from time to time. The evaluation is also monitored through the alumni meet .The large number

of applications for all the courses highlights the popularity of the enrichment programs.

**1.4.1 What are the contributions of the institution in the design and development of the curriculum prepared by the University?**

- Pl. refer to section 1.1.6

**1.4.2 Is there a formal mechanism to obtain feedback from students and stakeholders on Curriculum? If 'yes', how is it communicated to the University and made use internally for curriculum enrichment and introducing changes/new programmes?**

Feedback from students, industry experts and alumni is obtained informally.

**1.4.3 How many new programmes/courses were introduced by the institution during the last four years? What was the rationale for introducing new courses/programmes?**

In the last four years, the college has proposed three new courses namely B.Sc. (H) Chemistry, B.Sc. (H) Zoology and B.Sc. (H) Botany. All these courses have been duly approved by the University of Delhi as per the guidelines and also by the Directorate of Higher Education, Govt. of NCT Delhi.

Rationale for introducing new courses:

- The proposed courses (B.Sc. (H) Chemistry, B.Sc. (H) Zoology and B.Sc. (H) Botany) pertain to the most basic section of the Natural Sciences and college strongly promotes basic sciences as these are the fundamental to all the applied sciences.
- Various universities in India and abroad offer post-graduate and doctoral programs in these courses, Hence, these courses provides an attractive career option to a large number of students having plenty of opportunities in academics, industries, academic research etc.
- These courses indirectly create awareness in the society regarding the most fundamental problems of mankind such as pollution, waste disposal,

environmental friendly technologies, extinction of species, shortage of food, human health, green environment, fuels, energy resources etc.

- The college offers only science courses and keeping in mind the present and future global value of these courses and the infrastructure available at the college, the proposed courses are an essential requirement.



## **CRITERION – II**

# **TEACHING, LEARNING AND EVALUATION**

## **CRITERION – II**

### **TEACHING-LEARNING AND EVALUATION**

#### **2.1 Student Enrolment and Profile**

##### **2.1.1 How does the college ensure publicity and transparency in the admission process?**

The college strictly adheres to the guidelines issued by University of Delhi for admissions each year. To publicize and maintain transparency the information related to admissions are advertised in leading newspapers. The same information is also uploaded on the websites of University of Delhi and college. The cutoffs and criteria decided for the admissions are announced on the same platforms. Details of the admission cutoffs for 2015-16 are provided in Table 2.1.1.

For smooth induction of students, the staff council of the college has a duly constituted Admission committee comprising of Teachers-in-charge of all the departments along with other members. The committee reviews the seats available and decides the cut-offs accordingly.

The Sports and ECA Committees also follow the guidelines issued by University of Delhi for admissions under these quotas and organize trials for selection of the students under these categories.

The college has a Public Relations and a Grievance Committee responsible to address grievances regarding admission. Applicants if not satisfied with the decisions of this Committee may appeal to the DUAGC (DU Admission Grievance Committee). The names and phone numbers of the members of both these committees are available in the prospectus and are also displayed on the college website and notice board.

Withdrawal of the admission and refund of fees are done as per the rules and regulations laid down by University of Delhi. Adherence to all these practices ensures that the entire admission process is carried out in a transparent manner and as per the norms of University of Delhi.

**Table 2.1.1 Admission Cutoffs for the year 2015-2016**

<b>Course and (No. of Seats)** Gen/SC/ST/OBC/PH*</b>	<b>Requirement of Subjects Studied and Passed</b>	<b>Minimum Percentage Required</b>	<b>Basis of Selection</b>	<b>First Cut off</b>
<b>B.Sc. (H) Biomedical Science (45) 23/7/3/12/1*</b>	Physics, Chemistry, Biology/ Biotechnology	An aggregate of at least 55% in Physics, Chemistry, Biology/ Biotechnology (PCB/Bt). At least 50% marks in English (compulsory subject). Students having PCB/Bt with Mathematics (at least 60% marks) will be given an advantage of 3% over and above their PCB/Bt aggregate.	Aggregate marks in three science subjects (PCB/BT) would be considered. Students having PCB/Bt with Mathematics (at least 60% marks) will be given an advantage of 3% over and above their PCB/Bt aggregate	<b>95% PCB/BT</b>
<b>B.Sc. (H) Computer Science (45) 23/7/3/12/1*</b>	Mathematics, one language and two other subjects listed as academic subjects	Should have secured (a) 60% or more marks in Mathematics (b) 55% or more marks in aggregate of four subjects including Mathematics, one language and two other subjects listed as academic subjects by the respective Boards	Selection will be made on the basis of best four academic subjects including Mathematics (only one language to be considered). The students who have studied Physics, Chemistry / Computer Science and Mathematics will be given 5% additional weightage	<b>97% PCM</b>
<b>B.Sc. (H) Electronics (45) 23/7/3/12/1*</b>	Physics, Chemistry, Mathematics	55% or more marks in the aggregate of 3 science subjects (PCM) and passing on compulsory language i.e., English with 50%.	Marks in the aggregate of three science subjects (PCM)	<b>95% PCM</b>
<b>B. Sc. (H) Food Technology</b>	Physics, Chemistry,	55% or more marks in the aggregate of 4 subjects as mentioned in column 3 (Practical & Theory together	Selection will be made on the basis of marks in the aggregate of 4	<b>95% PCM/PCB</b>

<b>Course and (No. of Seats)** Gen/SC/ST/OBC/PH*</b>	<b>Requirement of Subjects Studied and Passed</b>	<b>Minimum Percentage Required</b>	<b>Basis of Selection</b>	<b>First Cut off</b>
<b>(45) 23/7/3/12/1*</b>	Mathematics, or Biology/ Biotechnology (PCB/PCM)	and passing in one compulsory language (i.e. English). The overall percentage in 4 subjects in relevant column 3 should be 55% and one compulsory language should be 50%	Sciences subjects as mentioned in column2.	<b>(whichever is higher)</b>
<b>B.Sc.(H) Instrumentation (45) 23/7/3/12/1*</b>	Physics, Chemistry and Mathematics	55% or more marks in the aggregate of 3 science subjects (PCM) and passing one compulsory language i.e., English with 50%.	Marks in the aggregate of three science subjects (PCM)	<b>93% PCM</b>
<b>B.Sc. (H) Microbiology (31) 16/5/2/8/1*</b>	Physics, Chemistry, Biology / Biotechnology	55% or more marks in the aggregate of three science subjects (Theory and Practical together) and passing one compulsory language i.e., English with 50%	Marks in the aggregate of three science subjects (PCB)	<b>91% PCB</b>
<b>B.Sc. (H) Physics (31) 16/5/2/8/1*</b>	Physics, Chemistry, Mathematics	55% or more marks in the aggregate of 3 science subjects (PCM) and passing on compulsory language i.e., English with 50%.	Marks in the aggregate of three science subjects (PCM)	<b>93% PCM</b>
<b>B. Sc. (H) Polymer Science (45) 23/7/3/12/1*</b>	Physics, Chemistry, Mathematics	55% or more marks in the aggregate of 3 science subjects (PCM) and passing on compulsory language i.e., English with 50%.	Marks in the aggregate of three science subjects (PCM)	<b>94% PCM</b>

**2.1.2 Explain in detail the criteria adopted and process of admission (Ex. (i) merit (ii) common admission test conducted by state agencies and national agencies (iii) combination of merit and entrance test or merit, entrance test and interview (iv) any other to various programmes of the Institution.**

Admissions in all the courses are done as per the rules of University of Delhi. For undergraduate courses, the admission is purely on the merit basis i.e. on the marks obtained in class XII. Regarding the admission criteria, kindly refer to the table 2.1.1.

Every year separate cutoff lists are decided for each course and various categories (UR, OBC, SC, ST, Differently-abled or PWD, Sports/ECA and Armed Forces) and are displayed on the notice board, college and University of Delhi websites as well as leading newspapers. The college offers reservation for admission into its courses as per the norms of University of Delhi (27% OBC, 15% SC, 7.5% ST, 3% Differently-abled or PWD, 5% to Sports and ECA, and also to Armed force candidates).

The Extra Curricular Activities (ECA) committee for admission consists of a panel of teachers from ECA committee of the college as well as external experts from prestigious cultural and other University Personnel, who select eligible candidates on the basis of guidelines of University of Delhi under different categories viz., dance, dramatics, vocal and instrumental music. The whole committee conducts the trials in the college on the specified dates as announced through college website.

**2.1.3 Give the minimum and maximum percentage of marks for admission at entry level for each of the programmes offered by the college and provide a comparison with other colleges of the affiliating university within the city/district.**

Every academic year, the minimum and the maximum percentage of marks vary for each course. Details regarding the cut-offs for academic sessions 2014-15 and 2015-16 for the different courses offered by the college are mentioned in the Tables 2.1.2 - 2.1.9.

**Table 2.1.2 Cut-Off for Academic Sessions 2014-15 and 2015-16 for B.Sc. (H) Biomedical Science**

COLLEGE	GEN				OBC				SC				ST			
	2014-15		2015-16		2014-15		2015-16		2014-15		2015-16		2014-15		2015-16	
	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
Acharya Narendra Dev College	95	89	96	93	90	83	90	83.66	88	80.66	88	78	80	64	75	68.66
Bhaskaracharya College of Applied Sciences	95	90	95	94	94.67	81	94	81.66	94	74	92	78	92	68	91	66
Shaheed Rajguru College of Applied Sciences	94	88.6	96	94	90.0	80.0	94	81.66	88.0	79.0	92	78	80.0	78.0	91	66

**Table 2.1.3 CUT-OFF for Academic Sessions 2014-15 and 2015-16 for B.Sc. (H) Computer Science**

COLLEGE	GEN				OBC				SC				ST			
	2014-15		2015-16		2014-15		2015-16		2014-15		2015-16		2014-15		2015-16	
	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
Acharya Narendra Dev College	95-100	93-98	95	93	91-96	88-93	93	85	88-93	77.33-82.33	85	84.25	80-85	63-62	80	58
Atma Ram SanatanDharam College	98-100	91-96	99	91	97-99	88-93	98.5	84.3	93-95	73-78	96	74	92-94	60-65	88	65
Bhaskaracharya College of Applied Sciences	98.5-99	92-97	97	91	99-99.5	86.25-91.25	96.5	85	97-97.5	71-76	95	73	96-97	60-65	94	67
Deen Dayal Upadhyaya College	96	92	96	94	95	86	95	87	93	72	90	73	85	63	80	65
Keshav Mahavidyalaya	96-98	94-98	97	92.25	94-96	88-92	93	86	87-90	83-87	87	81	85-87	58-63	85	55
Ram Lal Anand College	94-99	89-94	94	91.25	92-97	87.67-92-67	92	87	91-96	74-79	91	74.5	91-96	70-75	91	60
Shaheed Rajguru College of Applied Sciences for Women	94-99	85	94	87	90-95	73-78	90	75	85-90	62-67	90	72	80-85	55-60	85	56
Shyama Prasad Mukherjee College	97-100	86-91	97-100	86-91	92.25-95	78-83	92.25-95	78.83	92.25-95	74	92.25-95	74	92.25-95	71.5-76.5	92.25-95	71.5-76.5

**Table 2.1.4 CUT-OFF for Academic Sessions 2014-15 and 2015-16 for B.Sc. (H) Electronics (13 colleges)**

COLLEGE	GEN				OBC				SC				ST			
	2014-15		2015-16		2014-15		2015-16		2014-15		2015-16		2014-15		2015-16	
	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
Acharya Narendra Dev College	95	89	95	90.33	92	85	90	81	85	76	84	72	75	55	70	61
Atma Ram SanatanDharam College	98	88-88.67	96	90	96	85-85.67	94	83	94	71.76-72	90	72	94	67	90	50
Bhaskaracharya College of Applied Sciences	96.33	88	95	88	95	82	93	81.66	94.66	70	90	70	93	50	90	55
Deen Dayal Upadhyaya College	96	88	94	91	90	84	90	83	90	69	85	70	80	61	75	40
Keshav Mahavidyalaya	95	89	95	89.66	90	85	91	84	85	75	85	78	70	55	75	55
Shaheed Rajguru College of Applied Sciences for Women	94	80	93	85	90	74	90	72	85	60	83	60	80	55	80	59

**Table 2.1.5 CUT-OFF for Academic Sessions 2014-15 and 2015-16 for B.Sc. (H) Food Technology**

COLLEGE	GEN				OBC				SC				ST			
	2014-15		2015-16		2014-15		2015-16		2014-15		2015-16		2014-15		2015-16	
	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
Bhaskaracharya College of Applied Sciences	95	88	95	91.33	94	83	94	84	93	74	93	73	80	58	90	63
Shaheed Rajguru College of Applied Sciences for Women	94	84	93	90	90	76	90	82	85	78	87	75	80	58	85	59

**Table 2.1.6 CUT-OFF for Academic Sessions 2014-15 and 2015-16 for B.Sc. (H) Instrumentation (2 Colleges)**

COLLEGE	GEN				OBC				SC				ST			
	2014-15		2015-16		2014-15		2015-16		2014-15		2015-16		2014-15		2015-16	
	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
Bhaskaracharya College of Applied Sciences	95	82	93	81	94	78	90	76	92	65	89	67	90	45	87	50
Shaheed Rajguru College of Applied Sciences for Women	91	70	91	79.5	87	65.6	87	62	82	58	85	57	80	55	80	55

**Table 2.1.7 CUT-OFF for Academic Sessions 2014-15 and 2015-16 for B.Sc. (H) Microbiology**

COLLEGE	GEN				OBC				SC				ST			
	2014-15		2015-16		2014-15		2015-16		2014-15		2015-16		2014-15		2015-16	
	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
Bhaskaracharya College of Applied Sciences	92	88	91	91	90	86	89	86	87	65	86	78	85	45	84	45
Gagri College	90.33	90.33	94.6	94.6	85	85	92	90	80	80	89	83	80	80	89	78
Institute of Home Economics	92	88	92	91.5	87	82	87	84.33	87	68	87	80	87	68	87	80
Ram Lal Anand College	90	86	90	88.66	88	80	88	83	88	77	88	70	88	68	88	68
Swami Shradhanand College	92	79	90	88	90	79.33	88	84.33	87	70	86	73.55	87	68	86	65



**Table 2.1.8 CUT-OFF for Academic Sessions 2014-15 and 2015-16 for B.Sc. (H) Physics**

COLLEGE	GEN				OBC				SC				ST			
	2014-15		2015-16		2014-15		2015-16		2014-15		2015-16		2014-15		2015-16	
	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
Acharya Narendra Dev College	94	92	96	94	88	88	92	91.33	80	80	85	76	70	65	76	68
Atma Ram SanatanDharam College	96	91-95.67	96	94	94	88-93.67	94	91.33	92	75	90	77	92	57	90	47
Bhaskaracharya College of Applied Sciences	93.66	91	93	93	92	86.25-91.25	91	81	91	78	89	74	88	55	86	63
Deen Dayal Upadhyaya College	94	93	96	95.33	88	88	92	92	82	81	85	83	78	60	78	69
Gargi College	95	95	96	95	92	92	91	91	89	89	89	78	89	89	89	74
Keshav Mahavidyalya	94	93	95	95	90	90	92	90.5	80	78	84	77	70	70	80	66
Kirori Mal College	95.66	95.66	97	95.66	94.66	94.66	96	94.33	89	88.33-89	93.67	90.33	86	80	85.33	76
Swami Shradhanand College	95	89.33	91	91	90	87	86	86	90	75	86	75.66	90	60	86	68.66

**Table 2.1.9 CUT-OFF for Academic Sessions 2014-15 and 2015-16 for B.Sc. (H) Polymer Science**

COLLEGE	GEN				OBC				SC				ST			
	2014-15		2015-16		2014-15		2015-16		2014-15		2015-16		2014-15		2015-16	
	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
Bhaskaracharya College of Applied Sciences	95	82	94	87	94	78	92	80	90.66	62	89	71	90.33	48	88	50

**2.1.4 Is there a mechanism in the institution to review the admission process and student profiles annually? If 'yes' what is the outcome of such an effort and how has it contributed to the improvement of the process?**

Yes, every year the Principal along with the members of Admission Committee review the admission process. On the basis of the number of cancellations and previous years data, cut off lists are decided for the admission process for the new session. These practices help streamline the admission process.

**2.1.5 Reflecting on the strategies adopted to increase/improve access for following categories of students, enumerate on how the admission policy of the institution and its student profiles demonstrate/reflect the National commitment to diversity and inclusion**

- \* **SC/ST**
- \* **OBC**
- \* **Women**
- \* **Differently-abled**
- \* **Economically weaker sections**
- \* **Minority community**
- \* **Any other**

Being a central university, University of Delhi admits students from across the nation. As a result, a range of diversity is witnessed in the student profile seeking admission in the college.

Admissions in the reserved categories are done as per the norms of University of Delhi. The students of SC/ ST/ OBC categories who are eligible in General Category are not admitted in the reserved category.

**SC/ST:** 22.5% of the total seats are reserved for candidates who belong to Scheduled Caste/ Scheduled Tribes of which 15% seats are reserved for Scheduled Caste and 7.5% for Scheduled Tribe candidates (interchangeable, if necessary).

**OBC:** 27% of the total seats are reserved for candidates who belong to OBC Non-Creamy Layer.

**Women-** 2% relaxation was offered for females seeking admission in B.Sc. (H)/ B. Tech Electronics till academic sessions 2013, but it was discontinued from 2014 onwards as per guidelines issued by University of Delhi.

**Differently-abled:** 3% of total seats are reserved for candidates under this category.

**Economically weaker sections:** Students having a valid certificate in this category can avail the fee concession provided by the college.

**Minority community:** Since the college is not a minority college, therefore, no relaxation is provided under this category. However, they are counseled and encouraged to take admission if they fulfill the admission criteria.

**Sports/ECA:** Not more than 5% of the total number of seats can be filled on the basis of sports and extra-curricular activities. The schedule of trials for admission in this category is notified on the college notice board. Selection is done as per the rules of University of Delhi.

**Foreign Nationals:** 5% seats are reserved for Foreign Nationals in first year of each course. Students seeking admission under this category are required to register themselves with Foreign Students Registry, University of Delhi. The rest of the procedure is followed uniformly across all the colleges under University of Delhi.

**2.1.6 Provide the following details for various programmes offered by the institution during the last four years and comment on the trends.i.e. reasons for increase/decrease and actions initiated for improvement.**

University of Delhi has centralized registration form for admissions to undergraduate courses and candidates can apply in any course and college of his/her choice. The college used to receive a soft copy as CD of applications for courses offered in all the colleges from the University till 2014-15. However, in academic year 2015-16, the college was not provided with any CD and the admissions were done on the basis of a receipt available with the applicants as a proof of submission of their application. The criteria for the admission process were based on the student having applied for a course to University of Delhi and he/ she met the cut-off for a course.

During the last few years, the courses of the college have become more popular among students and there has been an increasing trend in the students who are interested in getting admission to these courses, which is most evident by the higher

cut-offs of various courses. The details of the students admitted in the various undergraduate programmes run by the college are given in the Tables 2.1.10 - 2.1.13.

**Table 2.1.10: Details of Under Graduate Programmes in CBCS for the Academic Year 2015-2016**

Programmes/ Courses	Number of applications	Number of students admitted	Demand Ratio
1. B.Sc. (Hons.) Biomedical Science	*	40	NA
2. B.Sc. (Hons.) Computer Science	*	55	NA
3. B.Sc. (Hons.) Electronics	*	43	NA
4. B.Sc. (Hons.) Food Technology	*	50	NA
5. B.Sc. (Hons.) Instrumentation	*	69	NA
6. B.Sc. (Hons.) Microbiology	*	42	NA
7. B.Sc. (Hons.) Physics	*	31	NA
8. B.Sc. (Hons.) Polymer Science	*	43	NA

**Table 2.1.11: Details of Under Graduate Programmes for the Academic Year 2014-2015**

Programmes/ Courses	Number of applications	Number of students admitted	Exam. appeared
1. B.Sc. (Hons.) Biomedical Science	*	46	41
2. B.Sc. (Hons.) Computer Science	*	39	30
3. B.Sc. (Hons.) Electronics	*	67	53
4. B.Sc. (Hons.) Food Technology	*	46	42
5. B.Sc. (Hons.) Instrumentation	*	41	34
6. B.Sc. (Hons.) Microbiology	*	40	38
7. B.Sc. (Hons.) Physics	*	30	26
8. B.Sc. (Hons.) Polymer Science	*	51	47

**Table 2.1.12: Details of Under Graduate Programmes for the Academic Year 2013-2014**

<b>Programmes/ Courses</b>	<b>Number of applications</b>	<b>Number of students admitted</b>	<b>Exam. appeared</b>
1. B.Sc. (Hons.) Biomedical Science	*	39	32
2. B.Tech (Computer Science)	*	52	51
3. B.Tech (Electronics)	*	39	37
4. B.Tech (Food Technology)	*	46	42
5. B.Tech (Instrumentation)	*	108	95
6. B.Sc. (Hons.) Microbiology	*	35	31
7. B.Sc. (Hons.) Physics	*	24	23
8. B.Tech (Polymer Science)	*	40	39

**Table 2.1.13: Details of Under Graduate Programmes for the Academic Year 2012-2013**

<b>Programmes/ Courses</b>	<b>Number of applications</b>	<b>Number of students admitted</b>	<b>Exam. appeared</b>
1. B.Sc. (Hons.) Biomedical Sciences	*	69	59
2. B.Sc. (Hons.) Computer Science	*	67	60
3. B.Sc. (Hons.) Electronics	*	39	26
4. B.Sc. (Hons.) Food Technology	*	71	67
5. B.Sc. (Hons.) Instrumentation	*	62	47
6. B.Sc. (Hons.) Microbiology	*	36	30
7. B.Sc. (Hons.) Physics	*	53	46
8. B.Sc. (Hons.) Polymer Science	*	69	58

\*Data not available due to centralized DU registration form for the admissions. NA= not available

Other than the undergraduate programmes, a certificate course in Russian Language was run in the college. The details of the applicants for this course, number of

students admitted and the demand ratio is given in Table 2.1.14. Currently, there are no postgraduate and other higher degree courses being offered by the college.

#### **2.1.14: Details of other programmes during 2012-2016**

<b>Programme/ Course</b>	<b>Number of applications</b>	<b>Number of students admitted</b>	<b>Demand Ratio</b>
Certificate (Russian) 2012	21	21	1:1

## **2.2 Catering to Student Diversity**

### **2.2.1 How does the institution cater to the needs of differently-abled students and ensure adherence to government policies in this regard?**

The college is sensitive to the needs of the differently-abled candidates and caters to them accordingly. First and foremost, the college adheres to the policy set by the Government of India to reserve 3% seats for differently-abled students each year. The college has ramps for safer and convenient mobility of students with special needs. A wheelchair is also available in the college premises. Some of the washrooms are also designed to meet their needs. During admissions a special assistance cell addresses to the queries of these students.

The college also has an Equal Opportunity Cell (EOC) for students with different needs, which is a statutory body comprising a convener and three to four teaching staff representatives from different departments along with differently-abled students. The cell organizes lectures and other activities throughout the year in order to tackle social taboos attached with disabilities, create more awareness and also to help build self-confidence in these students. Students admitted under this category are also offered fee concession to motivate and support their studies (as per the norms of University of Delhi).

### **2.2.2 Does the institution assess the students' needs in terms of knowledge and skills before the commencement of the programme? If 'yes', give details on the process.**

The college makes an effort to plan ahead in understanding and assessing the students' needs before the commencement of academic session. Newly admitted students are in a transition phase, from school to the college; hence an interactive

orientation program is conducted at the beginning of the academic session for the newly admitted students. The Principal addresses the students and acquaints them about the college, courses, infrastructure available, library facility, placement cell opportunities, student internships, examination pattern and extracurricular activities and all other experiences that they shall be learning in the college. Each department also organizes orientation programme to establish understanding with the new batch of students. Faculty members informally interact and welcome them aboard, specific details of the course are explained and the information regarding departmental activities, internal assessment formats and attendance criteria etc. are provided to make them aware of the new environment as well as make them comfortable. During the orientation program, students also introduce themselves and an opportunity is given to share their abilities, fears, needs and future goals. This interactive programme helps teachers to realize the needs of the students with respect to their knowledge and skills. Further, through this orientation program, new entrants learn to cope with the demands of academic reading and writing and equip themselves with skills and strategies for dealing with their own concerns. Right at the onset of the academic programme, students are sensitized towards issues related to gender, sexuality, community service, anti-tobacco campaign, anti-ragging to name a few. This orientation helps students to feel at ease with the new surroundings, acquaint themselves with teachers and staff and get more sense of familiarity with code of conduct and ethics of the college to make the new beginning hurdle free.

**2.2.3 What are the strategies adopted by the institution to bridge the knowledge gap of the enrolled students (Bridge/Remedial/ Add-on/Enrichment Courses, etc.) to enable them to cope with the programme of their choice?**

Besides classroom teaching all faculty members interact with students to clear their doubts and help them to build self-confidence and self-reliance. The college has organized remedial classes for slow learners to help them cope with academic difficulties.

**2.2.4 How does the college sensitize its staff and students on issues such as gender, inclusion, environment etc.?**

The college has different clubs and committees for creating awareness regarding

issues related to gender, equality and environment. For sensitizing about gender issues, Women development cell and Gender sensitizing committee of the college regularly organize workshops and lectures to make students aware of gender-related issues and also to build and enhance self-esteem and self-confidence among girl students. Few of the activities conducted by the students are as follows.

1. The cell jointly with 'Centre for Social Research' conducted a signature campaign against female feticide on 8<sup>th</sup> August 2012.
2. Two A 'Self-defense' workshops were also organized for girl students in association with Delhi Police on 21<sup>st</sup>, 22<sup>nd</sup> and 24<sup>th</sup> January 2013 and from 3<sup>rd</sup> to 16<sup>th</sup> February 2016.

With regard to Government of India guidelines, the college has an "Internal Complaints Committee" to prevent discrimination and sexual harassment against women. The college has a strong culture of maintaining and promoting harmony among students and employees. As per the University guidelines, an Anti-discriminatory committee has been formalized to cater to the needs of these issues.

The college has an active 'Eco Club' that disseminates information regarding environment, its concerns, and conservation through various activities. The club organizes seminars and competitions to create more awareness among students. Each year the club organizes "Ecofest" in the college and different events are organized to inculcate 'eco-sense' in students. One special and unique initiative taken by Departments of Instrumentation and Electronics along with the club is to install a collection bin for gathering electronic wastes such as used mobiles, CDs, dead batteries and other electronic waste. The Eco club in conjunction with other clubs also prepared a hand papermaking project, which was greatly appreciated by all the visitors.

NSS unit of the college organizes plantation drive to further enhance the environmental awareness among students and faculty. To beautify the college campus and maintain its green surroundings, the college has a 'Garden Committee' that takes care of diversity of flora of the campus. Each year a separate budget is allocated for the proper maintenance of these plants. The college maintains the greenery and symbolically the colour theme of college building is also green. Further, it has been a tradition of our college to welcome all the guests and visitors with assorted saplings of



different plants and herbs grown in the college nursery.

The college has a “Swachhta Committee” to look into the cleanliness of the whole campus. Students are informed about the importance of waste segregation and are encouraged to practice it. Various cleanliness drives have been organized in the college such as plastic free campus drive, cleanliness drive to name a few.

#### **2.2.5 How does the institution identify and respond to special educational/ learning needs of advanced learners?**

The college holds the unique distinction of offering most applied science courses in University of Delhi. Most of students are with exceptional caliber and others show promise for the future. These students are identified during the subsequent academic sessions by the respective faculty. They are further guided and mentored in their chosen fields of interest. Teachers in their respective capacities help them think out of the box, prepare for higher education, different entrance exams and fellowships. They are also motivated and supported to ‘push the envelope’. The college also promotes research at the undergraduate level and has various research initiatives, viz., DBT-sponsored STAR college activities, DST-initiated INSPIRE programs, DU Innovation Projects. This allows students to get an opportunity to put down their ideas into action, have a more hands-on experience of how actual research is carried out and in the process build a researchers’ mindset from an early age.

In each of these innovation projects, ten undergraduate students from different courses are given an opportunity to carry out these projects under the supervision of teachers. As per University of Delhi guidelines, a stipend of Rs 1000/- per month per student is also given. Students get an opportunity to showcase their research and analytical skills by presenting the research findings on several scientific and academic platforms.

#### **2.2.6 How does the institute collect, analyze and use the data and information on the academic performance (through the programme duration) of the students at risk of drop out (students from the disadvantage dsections of society, physically challenged, slow learners, economically weaker sections etc. who may discontinue their studies if some sort of support is not provided)?**

The college has constituted an 'Internal Grievance Redressal' committee to look into the specific needs of these students. The highly qualified and empathetic teachers mentor these students, which instills a sense of confidence and belongingness among them. The college uses statistical software to record the academic performance of all students and it helps to analyze the result and performance of all students in detail. Students from economically weaker sections of the society are offered a concession in the fee to support their college education. The '**Equal Opportunity Cell**' of the college also constantly monitors the needs of such students.

## **2.3 Teaching Learning Process**

### **2.3.1 How does the college plan and organize the teaching, learning and evaluation schedules? (Academic Calendar, Teaching Plan, Evaluation)**

University of Delhi has specified that each faculty member shall engage in teaching, conduction and evaluation of examination. These guidelines streamline the teaching, learning and evaluation schedule to a large extent.

Academic committee of the college takes care of the workload of the teachers. The Teacher-in-Charge of all the departments along with Librarian and Physical Education teacher are members of this committee. The committee meets prior to the commencement of each academic session to discuss and decide the workload of each semester based on the guidelines of University of Delhi. The Staff Council and Governing Body of the college then approve the workload. Subsequently, the 'Time-table Committee' finalizes the schedules for each department. The time-table is duly approved and displayed in each department, notice boards and on the college website.

The college strictly follows the Academic calendar as issued by the University each academic year. The academic calendar for the year 2015-16 is as shown on next page. In order to assess performance of the students, a well-defined evaluation system as per the ordinance VIII of the University is followed. The evaluation for each paper comprises of 25% internal assessment and 75% end semester examination. Papers with practical component also have practical examination at the end of each semester. Continuous evaluation is also carried out in various practicals conducted in CBCS according to University of Delhi guidelines. Internal assessment ensures continuous evaluation of students' learning curve.

## Academic Calendar



**UNIVERSITY OF DELHI**

दिल्ली विश्वविद्यालय

**Most Urgent/Out Today**

No. Aca.I/299/Academic Calendar/1194

14<sup>th</sup> June, 2016

16

### **NOTIFICATION**

The following Academic Calendar to be followed for the Under-graduate and Post-graduate courses for the academic year 2016-2017, is hereby notified for necessary compliance by all concerned:

<b>SEMESTER I/III/V/VII</b>	
Classes Begin	20 <sup>th</sup> July, 2016 (Wednesday)
Mid-Semester Break	11 <sup>th</sup> October, 2016 (Tuesday) to 16 <sup>th</sup> October, 2016 (Sunday)
Classes begin after Mid-Semester Break	17 <sup>th</sup> October, 2016 (Monday)
Dispersal of Classes, Preparation leave and Practical Examinations begin	12 <sup>th</sup> November, 2016 (Saturday)
Theory Examinations begin	24 <sup>th</sup> November, 2016 (Thursday)
Winter Break	17 <sup>th</sup> December, 2016 (Saturday) to 1 <sup>st</sup> January, 2017 (Sunday)
<b>SEMESTER II/IV/VI/VIII</b>	
Classes Begin	2 <sup>nd</sup> January, 2017 (Monday)
Mid-Semester Break	13 <sup>th</sup> March, 2017 (Monday) to 19 <sup>th</sup> March, 2017 (Sunday)
Classes begin after Mid-Semester Break	20 <sup>th</sup> March, 2017 (Monday)
Dispersal of Classes, Preparation leave and Practical Examinations begin	27 <sup>th</sup> April, 2017 (Thursday)
Theory Examinations begin	9 <sup>th</sup> May, 2017 (Tuesday)
Summer Vacation	20 <sup>th</sup> May, 2017 (Saturday) to 19 <sup>th</sup> July, 2017 (Wednesday)

**REGISTRAR**

Copy to:

- (1) The Dean Students' Welfare/The Proctor/The Dean (Examinations)
- (2) All Deans/Heads/Principals/Directors/Prof.-in-Charges
- (3) The Chairman, Delhi University Sports Council/The Director-SOL/NCWEB
- (4) The OSD (Admission), University of Delhi, Delhi-110007.
- (5) The Joint Dean, University Information Centre
- (6) The JR-VCO, JR (Teaching)
- (7) The DR – SDC/AR-Colleges/SDC/Registrar-Office
- (8) The PS to VC/PVC/DC/DSC/Registrar

**DEPUTY REGISTRAR (ACADEMIC)**

University of Delhi, Main Campus, Delhi-110 007 (India)  
Tel. 27667725/27662880; Fax : 27666350; Website : [www.du.ac.in](http://www.du.ac.in)

In the academic year 2015-16, three types of degree programs exist simultaneously i.e. old three-year semester system, FYUP system and CBCS system. There is slight variation in internal assessment and final examinations of these systems as directed by the University.

### **2.3.2 How does Internal Quality Assurance Cell (IQAC) contribute to improve the teaching learning process?**

The college does not have a formal IQAC, but the faculty members participate and attend various short-term programmes organized by UGC-ASC like CPDHE, University of Delhi, Jamia and JNU to upgrade and achieve quality in teaching.

The Principal also interacts with the faculty of the each department regularly in order to enhance the academic quality.

### **2.3.3 How is learning made more student centric? Give details on the support structure and systems available for teachers to develop skills like interactive learning, collaborative learning and independent learning among students.**

Learning is quicker and lasting if a passion for it is inculcated in the students. Teachers of the college are qualified and motivated enough to create a conducive environment for learning and flourishing for the students. *Inquisitiveness*, out of the box thinking and ideation are encouraged in classroom teaching. Since technology can also enhance the teaching-learning experience it is used appropriately and accordingly.

- Students are encouraged to spend time in the college library, where they also have access to e-resources like N-list (National Library and Information Services Infrastructure) and DU Journals to learn independently.
- Different workshops, seminars, invited talks are regularly held in the college along with the industrial visits to enable students to know the latest in their field.
- Interdepartmental functions and symposiums help in interactive and collaborative learning.

- The college has made free of cost Wi-Fi Internet facility available to all the students. The students are also provided with Laptop to access e-resources and for project presentation.

### **2.3.4 How does the institution nurture critical thinking, creativity and scientific temper among the students to transform them into life-long learners and innovators?**

Foundation for critical thinking, creativity, developing scientific temper and scientific approach to solve day-to-day problems can be placed and cemented in the classroom. Teachers carry out their duties keeping in mind their contribution to a student's life cover as academicians, facilitators, guides and catalysts. This holistic approach to teaching learning set the right tone for life-long active learning for the students.

- To inculcate innovative thinking, students are encouraged to take up internships in industries and research institutes to carry out assigned projects during summer and winter vacations.
- To enrich the scientific temper of the students, they are involved in various DU innovation projects, Star College scheme etc.
- Workshops and hands-on training programmes are held in various DU innovation projects.
- Eminent scientists are invited to share their expertise.
- Besides classroom teaching, there are several clubs, societies and cells that contribute to all-round development of the students. Vivekananda Vichar Manch and Bhaskaracharya Cell contribute towards critical thinking of the students.
- Each department has its own society that organizes festivals and other academic activities to encourage students to think beyond the curriculum.
- Special assignments and projects are given to the students that stimulate imagination and nurture their thinking and creativity.
- The college also brings out its annual college magazine "Resonance", where students showcase their creative skills, express views on contemporary and imminent issues and share anecdotes, write articles and poems etc.

- Students also participated in 'Gyanodya' scheme of the University.

Various clubs, societies and cells as listed below have strong student representation and contribution:

- Eco Club
- Debate and Quiz Club
- Dance Club
- Dramatics and Fine Arts Club
- Music Club
- Film Club
- Astronomy club
- Departmental Societies
- Vivekananda Vichar Manch
- Women Development Cell
- Bhaskaracharya Cell
- Mountaineering and Trekking Club
- Gandhi Study Circle
- Magazine Student Editorial Board

These clubs, cells, and societies organize various talks, activities, seminars and workshops that enable students to inculcate and strengthen curricular, co-curricular and extracurricular skills.

**2.3.5 What are the technologies and facilities available and used by the faculty for effective teaching? (e.g. Virtual Laboratories-learning resources from National programme on technology enhanced learning (NPTEL) and national mission on education through information and communication technology (NME-ICT) open educational resources, mobile education etc.**

Apart from teaching with traditional chalk and board method, the following technological tools have been incorporated to enhance the effective learning for students:

- Students of the college can avail the Wi-Fi facilities offered in the college. All the classrooms and laboratories also have ICT facilities, whereby audio-visual learning techniques are used to impart class room lectures.
- The college has developed four virtual labs for the experiments not feasible to be conducted at the college level. These include handling of pathogens and carcinogens. These are available on the college website as well. The college also organized a virtual learning environment (VLE) workshop titled “Shaping, teaching and learning with VLE” on September 6, 2014 for enhancing the ICT skills of its faculty.
- The college has also provided 209 desktop computers and 368 laptops for students and staff.
- The library organizes orientation program and lectures on e-learning. The students are also encouraged to use e-resources like quizzes, lectures etc. available through Institute of lifelong learning (ILLL), and University of Delhi website. Many of the teachers have also participated in the development of ILLL resources for students.
- In order to broaden the academic horizons, quality of learning and understanding of the students, LCD projectors have been provided in the classrooms, which help them to prepare and present projects, group discussions as well as interactive sessions.
- Video lectures and other e-resources on the open web are also made available to the students in addition to educational or inspirational films and documentaries.
- The college also has an access to N-List for its students and the staff through personalized Id and password, which helps them to have ready access to a number of web resources like e-books and e-journals.

### **2.3.6 How are the students and faculty exposed to advanced level of knowledge and skills? (Blended learning, expert lectures, seminars, workshops etc.)**

There is a strong emphasis on exposure to advanced knowledge and skills for both faculty and students. Following are a few practices that are carried out in the college:

- Personal efforts are made by the faculty to update themselves with the latest and advanced knowledge in their area of expertise. This is achieved through regular training and learning. Faculty also attend orientation and refresher courses conducted by various research institutes and universities for which necessary leaves are sanctioned by the college. The college also procures latest editions of books and journals.
- Educational visits to industries and research organizations of repute are also conducted.
- Various departments of the college regularly organize lectures, seminars and workshops that provide ample opportunities to teachers and students to upgrade their knowledge and learn about diverse areas of interest. It also provides a platform for interaction with eminent people, corporate leaders and academic experts. Such interactions not only enhance learning but also provide opportunities for networking and collaborations as well.

### **2.3.7 Detail (Process and number of students benefitted) on the academic, personal and psycho-social support and guidance services. (Professional counseling/ mentoring/ academic advice) provided to students.**

The college has various committees and cells that provide platform for the students on academic, personnel psycho-social support and professional counseling. The committees include the following:

- Grievance cell: Queries of the students are promptly taken up by the college on a priority basis and resolved by adapting various mechanisms like meetings with concerned committees, Teacher-in-Charges, Vice-Principal and Principal. Students are updated with University of Delhi guidelines periodically.
- Students' advisory committee: The committee holds regular meetings with student representative council that consists of all the class representatives in



the college in order to resolve their day-to-day problems. It also facilitates the disbursement of the fee concession to the needy students of the college.

- Gender sensitizing committee: This committee is actively involved in maintaining discipline and decorum to ensure a secure environment for all. This committee ensures sensitization of students with respect to rights and privileges of women.
- Anti-discriminatory cell: The cell ensures no discrimination among the students of various castes and religions.
- Equal opportunity cell: The cell looks after the needs of the Differently-abled students. It facilitates various programs and opportunities available for them.
- Placement cell: Students are encouraged to pursue higher studies. However, some of the students who are interested in jobs immediately after their graduation are guided to apply for jobs to various industries via the University Central Placement Cell. Time-to-time placement assistance is also provided to these students by organizing campus placements and interactions with industries by placement cell of the college.
- Career counseling cell: This cell has been set up in the college to prepare students to face the upcoming challenges in their career and to help students chalk out academic roadmaps for themselves. The cell has representation from faculty members from all the Departments.
- A lecture on “Effective Communication” was organized on 29<sup>th</sup> September, 2014 by Dr. Jyoti Doval, Marketing and Business Communication, Apeejay School of Management, Dwarka.
- Students participate in various events to enhance their academic, personal and psycho-social capabilities. Some of the students attended a workshop on “Business Plans” held at Apeejay School of Management, Dwarka on October 14, 2014 and bagged second prize for their business idea.
- The course curriculum of our college helps students in clearing entrances for further studies. Students have cleared and got selected through various

entrance examinations (for M.Sc., MSc.-PhD., M. Tech., Law, MCA and MBA etc.) in premier institutes/universities.

**2.3.8 Provide details of Innovative teaching approaches/methods adopted by the faculty during the last four years. What are the efforts made by the institution to encourage the faculty to adopt new and innovative approaches and impact of such innovative practices on student learning?**

The college has adopted various innovative methods of teaching and learning.

- Four virtual experiments in life sciences have been developed under the aegis of DBT sponsored Star College Scheme to help students understand and practice various practicals. These experiments involve the use of pathogenic organisms and hazardous chemicals.
- Some of the faculty members are actively involved in generating e-contents of the course curriculum in collaboration with ILL, DU.
- Learning of students is also enhanced using documentaries, movies, active participation in debates, time-to-time project presentations and group discussion.
- The college provides Wi-Fi facility to the students so that they can access e-lectures and other online contents.
- Students are also assessed through various MCQs designed by the faculty time to time.

Efforts made by the institution to enhance teaching skills of the faculty:

- Virtual Learning workshop: Two days intensive hands-on workshop on “Shaping, Teaching and Learning with VLE” was organized by the college in collaboration with Institute of Informatics and Communication (IIC), University of Delhi, South Campus on September 6, 2014. The main focus of the workshop was on blended learning as a new pedagogical tool.
- The college encourages the faculty members to attend workshops to enhance teaching and learning process. Dr. Siddharth Sirohi of Polymer Science Department attended a pedagogy workshop during 10-12 March, 2016 for Science teachers organized at IISER Pune under the aegis of Star college

scheme. The three day workshop was aimed to attain the participants in designing and developing research based pedagogical tools (RBPTs) and to develop strategies to assess the learning outcome amongst the students. Dr. Shalini Sehgal of Department of Food Technology and Dr. Uma Chaudhry of Department of Biomedical Science participated in the International Training Program on Leadership and Career Development for Women Scientists & Technologists held from 28th August to 1st September 2015 at IISER Pune. The workshop helped them to explore various funding opportunities for women scientists, to understand leadership and networking skills and techniques to publish research in peer reviewed journals among others.

### **2.3.9 How are library resources used to augment the teaching- learning process?**

The college library is well stocked with latest editions of books and journals. It also subscribes to different newspapers, magazines etc. for general reading to enhance general awareness and assist curriculum. The college library has a subscription to N-LIST programme of INFLIBNET for an easy access to latest empirical research and e-resources that include e-books and e-journals for the students. The library has its own blog (<http://bcaslib.blogspot.in/>) that is regularly updated to provide the latest information to the students. Twenty one computers are installed in the library premises to address the needs of students and faculty for teaching-learning process. Each student can get issued upto four books and faculty can have twelve books from the college library. Students can further augment their learning by visualizing the CDs available with books from the publishers. A limited photocopy facility is also available for the students adjacent to the library block.

### **2.3.10 Does the institution face any challenges in completing the curriculum with the planned time frame and calendar? If yes, elaborate on the challenges encountered and the institutional approaches to overcome these.**

The college does face a few challenges in the completion of curriculum despite following a planned time frame and calendar. This situation primarily arises because of two factors:

- The University follows semester system which sometimes puts considerable pressure on the system to achieve quality teaching and learning within the defined time frame.
- In each semester, various co-curricular and extra-curricular activities like seminars, invited lectures, workshops and symposium etc. are organized simultaneously during the same academic session.

The challenges thus faced are taken care by arranging extra classes. A period is scheduled in the time-table for carrying out various co-curricular and extra-curricular activities so that least disturbance is caused to the academic schedule. Despite all other activities, it is ensured that full justice is done in delivering the curriculum effectively to the students.

#### **2.3.11 How does the institute monitor and evaluate the quality of teaching and learning?**

The following measures are undertaken to ensure that the classes are held and attended regularly:

- The time-table of each department is displayed on notice boards outside the classrooms and departments and also on the website of the college.
- Monthly attendance of the students is displayed on notice board and website of the college for all concerned.
- Regular meetings are held with the Principal, Teacher-in-Charge and class representatives of each department in order to solve the problems of students, if any.
- Total transparency is maintained in preparing internal assessment marks by taking signatures of the concerned students.

### **2.4 Teacher Quality**

#### **2.4.1 Provide the following details and elaborate on the strategies adopted by the college in planning and management (recruitment and retention) of its human resource (qualified and competent teachers) to meet the changing requirements of the curriculum**

The college strongly believes that faculty members are instrumental in shaping the characters of not only the students but the institute per se. Therefore, utmost care is taken in the recruitment of the faculty. Faculty members are appointed in the college on ad-hoc or regular basis as per the guidelines of UGC and University of Delhi. Faculty members are recruited taking into consideration the academic load of the departments. The workload of all the departments is calculated by the Academic Committee of the college every semester. The Governing Body (GB) of the college does the appointments through duly constituted panels consisting of members including the Principal, representatives of the GB and the University, teachers of the college and distinguished academicians as approved by the University and a Liaison officer (SC/ST/ OBC). Merit and area of specialization are the main criteria for the selection of the candidate. Roster requirements (seats reserved for SC/ ST/ OBC/ differently-abled) are well taken into consideration while making appointments. The University approves the advertisement after verifying the roster positions. Eventually, approval from the DHE is also sought for funding. The eligibility criteria, date of interview etc. for regular appointments are publicized in national dailies and updated through the websites of the college and the University.

The college follows the UGC norms for an appointment and cannot offer additional perks etc. for retention or recruitment of a faculty. So, there are no strategies for their retention. The qualification wise distribution of faculty members is as follows:

**Table: 2.4.1 Qualification wise distribution of Faculty Members at BCAS**

Highest qualification	Professor		Associate Professor		Assistant Professor		Total
	Male	Female	Male	Female	Male	Female	
Permanent Teachers							
D.Sc./D.Litt.							
Ph.D./D.Phil.			7	15	9	7	38
M.Phil.							
PG			0	01	02	03	06
M.Tech			0	0	02	0	02

**2.4.2 How does the institution cope with the growing demand/ scarcity of qualified senior faculty to teach new programmes/ modern areas (emerging areas) of study being introduced (Biotechnology, IT, Bioinformatics etc.)? Provide details on the efforts made by the institution in this direction and the outcome during the last three years.**

As it has been reiterated in the previous section, maintaining high teaching standards is the primary goal of the college. To accomplish this goal, the college has adopted following strategies:

- During the recruitment, meritorious teachers in all emerging areas of specialization are brought in from various institutes and universities of repute in order to cater for the growing needs of the various departments in the college.
- Teachers are highly encouraged and facilitated to attend orientations programmes, refresher courses, workshops, National and international conferences, summer schools, winter schools. They are given duty leave, financial support as per University of Delhi rules.
- The college encourages senior faculty to give their insights at different platforms along with young faculty for the requisite innovations.
- The college provides support to develop laboratories to cater the needs of the new programs.
- The college organizes various workshops, symposium, seminars, deliberations and conferences in emerging areas of science like proteomics, genomics, statistics, molecular modeling, material science, conducting polymers, packaging, infectious diseases, etc. It provides an excellent platform for not only the students but also to the faculty to learn beyond the books.
- The curricula have also been regularly updated and restructured to bring in latest areas like bioinformatics, biotechnology, IT inbuilt into the programmes. Regular updation and enhancement of knowledge are promoted across all sections of the college. In one such initiative Dr. Uma Dhawan has visited the University of Edinburgh, UK to do Masters in Bioinformatics under Faculty Training Programme of University of Delhi.

- The college has **STAR STATUS** for the Department of Food Technology by DBT and the department was given an additional grant of Rs. 10.5 lakhs by virtue of its attaining star department status for further upgradation of the laboratories. Departments of Biochemistry, Biomedical Science and Microbiology are also part of this scheme, which is regularly monitored by DBT. The college has developed state of the art laboratory facilities in the four departments with Rs. 56.61 Lakhs Grant-in-Aid (GIA) received from the DBT.

**2.4.3 Providing details on staff development programmes during the last four years elaborate on the strategies adopted by the institution in enhancing the teacher quality.**

**a) Nomination to staff development programmes 2012-2016**

<b>Academic Staff Development Programmes</b>	<b>Number of faculty nominated</b>
Refresher courses	13
HRD programmes	5
Orientation programmes	7
Staff training conducted by the university	4
Staff training conducted by other institutions	4
Summer / winter schools, workshops, etc.	31

**b) Faculty Training programmes** organized by the institution to empower and enable the use of various tools and technology for improved teaching learning

- Teaching learning methods/approaches:**

The college organized a workshop titled “Shaping, Teaching and Learning with VLE” jointly with the Institute of Informatics and Communications, University of Delhi ,South Campus on September 6, 2014 for the skill upgradation of the faculty.

- Handling new curriculum:**

The college strongly believes that its workforce is its major strength. Teachers are motivated to do brainstorming sessions and restructuring the course curriculum as per guidelines of UGC and University of Delhi. In the recent

past, the college and the university have accepted and adopted newer systems of learning and teaching including the transition from annual to semester mode, the introduction of FYUP and now CBCS. Most of the faculty members not only played a pivotal role in restructuring and designing the undergraduate programme but also have been instrumental in adoption and implementation of these newer systems. Many of the faculty members have attended workshops on foundation courses for the smooth introduction of these subjects in the curricula.

- **Content/knowledge management:**

The college library and Department of Polymer Science have developed a blog for the benefit of students and also for other to retrieve relevant information. Library stocks latest journals that help students to update their scientific know-how and utilize it in the preparation of their assignments.

- **Selection, development and use of enrichment materials:**

With the help of DBT Star College funding, faculty members have developed four virtual labs, which can be used as a supporting teaching tool for better understanding of the students.

- **Assessment:**

The college faculty was trained in developing online assessments for students using MOOC platform during the VLE workshop on ‘Shaping, Teaching and Learning with VLE’ organized by the college in collaboration with Institute of Informatics and Communications, University of Delhi on 6<sup>th</sup> September, 2014. A hands-on session was conducted on “Creating my first online resource” during the workshop that helped the faculty to design online assessments for the students.

- **Cross-cutting issues:**

The college understands that the gender equality is extremely important for any organization and in this regard the college has conducted several activities for the staff and the students.

Debate club organized invited lectures on Good Governance by Dr. Shriram Oberoi and Dr. S. S. Rana, on 22<sup>nd</sup> December, 2014 and 30<sup>th</sup> October, 2015



respectively.

Another important element of this issue is climate protection under which tree plantation drive was held on 12<sup>th</sup> February 2016 on the occasion of Basant Panchmi. The celebration started with Vedic havan followed by plantation drive by final year students of the college. A total of 48 students planted a tree with an oath to nurture the same during their stay in the college and also to plant a tree on each of their upcoming birthdays.

- **Audio Visual Aids/multimedia:**

Audio visual education or multimedia-based education (MBE) is also followed in the college where particular attention is paid to the audio and visual presentation of the material with the goal of improving comprehension and retention. Teachers regularly append their lectures with short clippings to make the concepts of the various topics even clearer. These audio-visual aids enhance faculty's ability to present the lesson in simple, effective and easy to understandable form for the students. It is important to create awareness for the faculty to inculcate audiovisual resource as main teaching pedagogy in curricula and the college is actively facilitating it. Recently the college organized a seminar on "Polymer Processing, Modification and Characterization" during which the invited scientist from DRDO explained the application of self-healing polymers in conferring protection to bullets in the war like situations, mainly through audio-visual tools.

- **OER's:**

The faculty is encouraged to prepare e-content, question banks and practical manuals for many faculty members have contributed to content development for Institute of Lifelong Learning, University of Delhi and IGNOU.

**c) Percentage of faculty**

- Invited as resource persons in Workshops / Seminars / Conferences organized by external professional agencies = 13%
- Participated in external Workshops / Seminars / Conferences recognized by national/ international professional bodies = 52%
- Presented papers in Workshops / Seminars / Conferences conducted or

recognized by professional agencies = 34.7%

**2.4.4 What policies/systems are in place to recharge teachers? (e.g.: providing research grants, study leave, support for research and academic publications teaching experience in other national institutions and specialized programmes industrial engagement etc.)**

The college understands the constant need for improving academic skills, talents and knowledge of their teaching staff. The college makes every sincere effort to help upgrade and recharge the skills of its entire faculty. Following initiatives are practiced and promoted:

- Teachers have been granted study leave to pursue their research work as per norms of University of Delhi.
- The college supports and promotes faculty to undertake research at different levels. Many of the faculty members work on projects funded by different funding agencies like University of Delhi, UGC and DST.
- The college also houses a project assessment committee facilitating the research projects.
- The college is supportive in providing conducive space, environment and state of art instrument facility to its teachers for them to work and excel in research and academics.
- Committee looking after the financial assistance for attending conferences is in place to look after academic growth of the faculty.
- The college encourages the faculty members to attend the orientation and refresher courses as well as seminars and workshops etc.
- The faculty is also relieved to take up any assignments offered by the University and other Institutions for the individual and institutional growth.
- Faculty members are encouraged to take higher assignments for their academic and administrative growth. Some of the faculty members have gone on deputation for such activities.

**2.4.5 Give the number of faculty who received awards / recognition at the state, national and international level for excellence in teaching during the last four years. Enunciate how the institutional culture and environment contributed to such performance/achievement of the faculty.**

The college nurtures excellent work environment for the teachers wherein the teachers are constantly motivated to perform better, learn new skills, innovate, carry out research, publish papers and attend value adding programme for their professional well-being and constant academic growth.

- Every year Meritorious Teacher' award is given by Directorate of Higher Education, Government of NCT of Delhi in order to encourage the teachers. Till date following teachers have been awarded:
- Dr. Shalini Sehgal, Associate Professor, Department of Food Technology conferred first time in the college with the Best Teacher Award (2011-2012).
- Dr. Geeta Mongia, Associate Professor, Department of Electronics (2012-13).
- Dr. Geeta Bhatt, Associate Professor, Department of Instrumentation (2013-14).
- Dr. Anand Bharadvaja, Associate Professor, Department of Physics (2014-15).
- Dr. Ranjeet Thakur, Librarian of the college has been conferred on 'Distinguish Faculty Award' on the occasion of Diamond Jubilee celebrations of Delhi Library Association (DLA) on 10<sup>th</sup> March, 2015.
- Dr. Rizwana, Department of Food Technology and Dr. Anand Bharadvaja, Department of Physics, Dr. S.K. Shukla, Department of Polymer Science received the Teaching Excellence Award for innovation from University of Delhi during the academic session 2014-15 for the innovation project 'Agro-Waste Material Management: From Waste to Wealth'.

**2.4.6 Has the institution introduced evaluation of teachers by the students and external Peers? If yes, how is the evaluation used for improving the quality of the teaching-learning process?**

Selection committee comprising a subject expert and head from the parent institute evaluates teachers for promotion. There are several informal occasions where the Principal interacts with the students. The aim of this interaction is to seek feedback

for the improvisation in the teaching methodology. The suggestions are constructively taken and being worked upon at both individual and departmental level along with the Principal. The college strongly intends to formalize the system to achieve higher standards in teaching and learning.

## **2.5 Evaluation Process and Reforms**

### **2.5.1 How does the institution ensure that the stakeholders of the institution especially students and faculty are aware of the evaluation processes?**

The college follows the norms of University of Delhi for examinations and evaluation process. Students are informed about the course structure, attendance scheme and the evaluation process to be followed during the entire duration of the course on the orientation programme held on the first working day of the college. Individual teachers also apprise students regarding the mode of evaluation for their respective papers in class. Syllabi of all the courses including evaluation scheme are uploaded on the college website.

### **2.5.2 What are the major evaluation reforms of the university that the institution has adopted and what are the reforms initiated by the institution on its own?**

The college has adopted the guidelines for evaluation as provided by University of Delhi. This includes 25% for internal assessment. A lot of emphasis is given on ensuring the transparency of the evaluation system for internal assessment. The marks are shown to the students for verification and they are given time to report any discrepancy in their marks to the office or the concerned teacher. These marks are monitored by the departmental moderation committee and then by the college moderation committee. Thereafter the final internal assessment marks are submitted to the University.

Under the erstwhile FYUP programme initiated by the University, student participation in co-curricular activities was also used as one of the criteria for evaluation. The evaluation under the choice based credit system (CBCS) that is introduced this academic year also has internal assessment and semester end examinations. The continuous assessment is done by conducting tests, assignments, seminars and presentations.

The faculty is also involved in the central evaluation process of the end semester examinations. It is ensured that the evaluation schedule of University of Delhi is circulated through e-mail among the faculty members so that the faculty is made aware in advance about the dates of evaluation and contributes to the fullest in its effective implementation.

### **2.5.3 How does the institution ensure effective implementation of the evaluation reforms of the university and those initiated by the institution on its own?**

The college strictly follows the University of Delhi guidelines for evaluation and any reforms in the evaluation process and makes all possible efforts to ensure its effective implementation. This is ensured by the Principal through the Staff Council and Academic Committee. As attendance is one of the criteria of evaluation, attendance record of students is uploaded on the college website on a monthly basis. This acts as an alarm for the students who are not regular in attending classes and also ensure transparency of the system. The internal assessments are shared with the students and also displayed on the notice boards of the college. Students are required to verify the internal assessment records before it is sent to the University. The college appoints the external and the internal examiners for the practical examinations. The faculty members are granted duty leave for participation in departmental meetings at the University related to evaluation.

### **2.5.4 Provide details on the formative and summative assessment approaches adopted to measure student achievement. Cite a few examples which have positively impacted the system.**

In each course of our college, 25% marks are for internal assessments, which could be considered as our formative assessments. In the three-year semester and CBCS system, weightage of 5 marks is given to attendance ensuring maximum participation of the students in classes. A weightage of 10 marks each are designated for the class test and assignments/presentations. In erstwhile FYUP, 10 marks are designated for class test and 15 marks for assignment or presentations.

Internal assessments include tests, seminars, assignments, mock practical or presentations conducted by teachers on a regular basis to judge the capability of students. This exercise helps in identifying strong and weak points of students as far as knowledge and expression is concerned.

Summative assessment, which carries 75% of the marks, is carried out in the form of semester end examinations conducted by University of Delhi. It is a general observation that the above mentioned measures improve student performances.

**2.5.5 Detail on the significant improvements made in ensuring rigor and transparency in the internal assessment during the last four years and weightages assigned for the overall development of students (weightage for behavioural aspects, independent learning, communication skills etc.**

The college ensures that the students are made aware of the internal assessment marks and the evaluation criteria. The assessment and the evaluation records are made available to each student. Independent learning and communication skills are encouraged among the students. The college has progressed towards uploading the students' attendance on the college website. Assignment and test or project marks are shown to the students. They can check their marks and approach the concerned faculty directly in case of any discrepancy. The faculty also discusses the progress of the students so as to improve their performance.

The criteria for internal assessment marks are provided in the college prospectus to enhance transparency and rigor with a view to focusing on individual and original work.

**2.5.6 What is the graduate attributes specified by the college/ affiliating university? How does the college ensure the attainment of these by the students?**

Graduate attributes targeted for the students include disciplinary expertise and technical knowledge, which is imparted through effective implementation of course structure and evaluation schemes. Students are made competent in the discipline of their choice. They are promoted to develop communication skills and teamwork through various assignments or presentations, competitions (debates, declamations, quizzes, sports etc.) held during their course of stay in the college. Attributes of creativity and innovation are developed by allowing the student participation in various in-house and innovation projects. Participation is encouraged in various extra- and co-curricular activities held by the college clubs (photography, yoga, astronomy, film etc.) that provide an opportunity for interaction amongst the students, further enhancing their communication skills, spirit of teamwork and an overall boost to their

confidence levels and personality development. Ethics and social responsibilities are imbibed in the students by ensuring their participation in NSS where activities like blood donation and tree plantation are carried out on regular basis. Overall, the attributes of disciplinary expertise, competence, communication skills, teamwork, creativity, innovation, ethics and social responsibility are generated amongst the students.

### **2.5.7 What are the mechanisms for redressal of grievances with reference to evaluation both at the college and University level?**

A multilevel approach is used to address the grievances related to the evaluation at the college level. Any grievance regarding evaluation and assessment is first handled by the concerned teacher. If the student is not satisfied, then the matter is discussed at the department level. For redressal of grievance at the University level, college forwards the application for re-evaluation of answer sheets. The University has the provision of providing the students with a copy of answer sheet if desired so. Overall, college acts as a forwarding authority of grievance, which is then addressed by the University.

## **2.6 Student performance and Learning Outcomes**

### **2.6.1 Does the college have clearly stated learning outcomes? If 'yes' give details on how the students and staff are made aware of these?**

Yes, the college has clearly stated learning outcomes for each academic program and each course in its vision and mission statement. Further, each subject has its own learning objectives corresponding with the level of learning envisaged by University of Delhi. Self-reliance and skills in communication, coordination, planning, management, academic writing and presentation are to be acquired by the students through these programmes. These learning outcomes are communicated to the students right from the beginning of the academic programmes during the orientation sessions.

The college ensures the effective communication of these learning objectives to faculty members through departmental meetings. Subsequently, the students gain knowledge about the subjects through lectures, practical, audio-visual demonstrations, student-teacher interactions, quizzes, seminars, workshops. The college also encourages the students to take part in industrial training and internship to ensure an

interface with industry. It has been ensured that all employees have clearly understood the desired learning outcomes with regard to its meaning, relevance and their commitment to it.

**2.6.2 Enumerate on how the institution monitors and communicates the progress and performance of students through the duration of the course/programme? Provide an analysis of the students results/achievements (Programme/coursewise for last four years) and explain the differences if any and patterns of achievement across the programmes/courses offered.**

In order to evaluate the performance of students, the faculty members adopt various mechanisms viz., a comprehensive internal assessment comprising of written assignments, presentations, tutorial tests, viva voce, group discussions, etc. Besides, attendance is a major component to evaluate the sincerity of the students therefore, the monthly attendance is communicated to students and also uploaded on the college website.

**2.6.3 How are the teaching, learning and assessment strategies of the institution structured to facilitate the achievement of the intended learning outcomes?**

The college aims to help students to reach their potential through the provision of a supportive, vibrant and challenging learning environment.

The college assesses the learning outcomes of students by conducting periodical class tests, oral presentations, classroom group discussions, mid-semester evaluation and viva voce component in all the practical examinations. The class tests, projects, assignments are taken and evaluated and students are given valuable feedback in time. Ample library resources (e-resources/print) are supplied to the students to supplement their texts.

Each department assesses the performance of students on a regular basis and takes remedial measures to overcome barriers to learning. Whenever inability on the part of the student to meet the requirements of the academic curriculum is identified, the student is helped with remedial coaching, individualized academic advising, parent-teacher meetings and opportunities for writing supplementary examinations. Strict



adherence to attendance rules inculcates discipline and regularity amongst students. Finally, examinations of both theory and practical evaluate the depth of knowledge, provide extramural accreditation and infuse confidence.

Field visits, project works and educational trips give students the practical exposure and help them to apply classroom knowledge to real-life settings. Academic growth is facilitated through various talks, workshops, seminars, conferences organized by the departments as well as by college societies. In order to facilitate the holistic development of students, the college provides various opportunities to students through department associations and cultural and sports activities. Participation in these forums aids students to develop organizational and social skills, teamwork as well as leadership.

**2.6.4 What are the measures/ initiatives taken up by the Institution to enhance the social and economic relevance (student placements, entrepreneurship, innovation and research aptitude developed among students etc?)of the courses offered?**

There are various committees constituted by the college to enhance the social and economic relevance. The college at the time of the admission and also during the course provides counseling for shaping their career. They are guided regarding the future prospects of various courses being offered by the college.

The students are encouraged and motivated through personality development activities. Students are motivated to participate in activities for social and community services like NSS and Eco Club. The college provides an excellent platform for enhancing knowledge and skills of students in the fields of science and technology and self-development.

**2.6.5 How does the institution collect and analyzed data on student performance and learning outcomes and use it for planning and overcoming barriers of learning?**

The college maintains a data of the students in which the demographic details, the learning outcome of the student including both internal evaluation and end semester academic performance are recorded in a systematic manner. These data are further evaluated carefully and intently analyzed course-wise and marks obtained by the

students through faculty meetings, meeting with the Principal and discussion with students.

The college has taken following steps to overcome barriers:

- Timely redressal of students' grievances.
- Personalized attention during tutorials.
- Providing model question papers of various subjects to the students.
- Returning evaluated assignments and tests to students to make them understand their relative strengths and weaknesses.
- Minimum attendance limit for students to minimize absenteeism.
- Remedial classes for weak students to solve their problems.

#### **2.6.6 How does the institution monitor and ensure the achievement of learning outcomes?**

The college monitors and ensures the achievement of learning outcomes through the continuous internal evaluation and results of semester end examinations.

The learning outcomes are monitored in the following ways:

- Attendance records are maintained and students as well as parents are made aware of the shortage, if any.
- Internal assessment is an integral part of monitoring. Due weightage is given to class participation, communication, discipline, attendance, self-learning, cognitive ability, etc.
- Projects and assignments are allotted to students and their progress is monitored. There is also viva voce that is conducted after completing the assigned work.
- Practical sessions are conducted for students and their ability to experiment is monitored.
- University Examinations are also a way of monitoring the learning outcomes of the students.
- Regular faculty meetings to oversee the progress of syllabi.

- Remedial classes are given by the faculty whenever necessary.
- Extra classes are taken if needed to ensure timely completion of syllabus.
- Time tables are prepared well in advance before the semester begins to avoid delays.

**2.6.7 Does the institution and individual teachers use assessment/ evaluation outcomes as an indicator for evaluating student performance, achievement of learning objectives and planning? If ‘yes’ provide details on the process and cite a few examples.**

**Any other relevant information regarding Teaching-Learning and Evaluation which the college would like to include.**

The college and individual teachers use assessment for evaluating students' performance achievement of learning objective and planning.

Student's performances are directly dependent on marks obtained in internal assessment, external examination, and practical examinations. These examinations are conducted as per guidelines of University of Delhi.

In addition to the marks scored by the students in the examination, participation, creativity and innovative ideas of the students and peer teamwork in various activities are also strong parameters for evaluating student performance.

The college students have been University rank holders and have been placed well in their career The faculty is also proactive in getting information/methods of best teaching practices followed across the country and tries to inculcate in the young minds of our students.

## **CRITERION - III**

# **RESEARCH, CONSULTANCY AND EXTENSION**

## CRITERION – III

### RESEARCH, CONSULTANCY AND EXTENSION

#### 3.1 Research, Consultancy and Extension

##### 3.1.1 Does the institution have recognized research center/s of the affiliating University or any other agency/organization?

The college does not have a recognized research center of the affiliating University. However, the institution values research work carried out by faculty and students and has made attempts to develop in-house research facilities in the campus. Each department has three laboratories equipped with adequate infrastructural facilities. Research facilities have also been upgraded with the financial help from the World Health organization (WHO), University Grants Commission (UGC), Department of Science & Technology (DST), Department of Biotechnology (DBT), Ministry of Science & Technology, Govt. of India, Ministry of Food Processing Industries (MOFPI) and University of Delhi.

**Table 3.1: List of research laboratories along with the Affiliating University/ Agency/ Organization**

S. No.	Research Laboratory	Affiliating University/ Agency/ Organization	Research Guide/ co-supervisor Coordinator/ Principal Investigators	Students involved in research	No. of students
1.	Library	IGNOU	Dr. Ranjeet S. Thakur	MLIS (Master of Library and Information Science)	04 submitted
2.	Electronics	University of Delhi	Dr. Manoj K. Khanna	Ph.D	01 registered
3.	Polymer Science	Sharda University	Dr. S. K. Shukla	Ph.D	01 student working
4.	Biomedical Science	University of Delhi	Dr. Uma Chaudhry	Ph.D	02 submitted 01 registered
5.	Biomedical Science	University of Delhi	Dr. Uma Dhawan	M. Sc.	01 submitted

6.	Psychology	University of Delhi	Dr. Madhulika Bajpai	Ph.D	01 submitted
7.	Food Technology	Amity University	Dr. Shalini Sehgal	Ph.D	01 registered (co- guide)
		University of Delhi		MSc.	01 submitted
		IGNOU		PGDFSQM	01 submitted 01 registered
8.	Food Technology	Amity University	Dr. Rizwana	Ph.D	02 (co-supervisor)
9.	Biology	IGNOU	Dr. N. S. Abbas	Ph.D.	1 submitted

**3.1.2 Does the Institution have a research committee to monitor and address the issues of research? If so, what is its composition? Mention a few recommendations made by the committee for implementation and their impact.**

The college earlier had a Project Assessment Committee for UGC which has been restructured and renamed as Research and Project Assessment Committee. The committee so far supported the interested faculty to submit their minor and major research projects in UGC. The Principal and four faculty members from various departments were the members. The recently formed Research and Project Assessment Committee has four members and is responsible to regulate guidelines for the smooth conduct of research in the college.

**3.1.3 What are the measures taken by the institution to facilitate smooth progress and implementation of research schemes/projects?**

- There has been a steady rise in the number of faculty members and students undertaking research work that has a clear reflection of the support provided by the college.
- The Principal investigators of various projects are provided with complete autonomy regarding expenditure that includes procurement of equipment, stationary and other laboratory items; travel and selection of staff in their respective projects.

- Funds received from DBT, UGC and other funding agencies for the purpose of conducting seminars and conferences are also distributed among various departments.
- Faculty members are encouraged to generate funds through extramural programmes of UGC, DBT and other funding agencies.
- The college campus is Wi-Fi enabled allowing access to all the journals/books subscribed by University of Delhi.
- The college subscribes to N\_LIST programme of INFLIBNET and faculty can access the subscribed journals sitting at home. The college also has facility for “National Library and Information Services infrastructure for Scholarly Content (N-LIST)” component of the UGC-INFONET Digital Library Consortium (formerly funded by the MHRD under its National Mission on Education through ICT). The N-LIST programme provides access to more than 6000+ e-journals (with back files for 10 years) and 135000+ e-books. The resources are accessible from <http://nlist.inflibnet.ac.in>.
- Appropriate leave is granted to faculty keen on completing their Ph.D. programme or higher degrees programs. Some of the faculty members are even themselves recognized Ph.D. supervisors. Ph.D. students are permitted to work towards their Ph.D. programme with in-house infrastructure facilities.
- Accounts section of the college facilitates timely release of funds granted by funding agencies, audit it and submit utilization certificate and statement of expenditure to the funding agencies.

#### **3.1.4 What are the efforts made by the institution in developing scientific temper and research culture and aptitude among students?**

The college has been able to inculcate research aptitude among undergraduate students in order to enhance teaching-learning process. The following steps are taken by the college in this respect.

- Students are encouraged to work on different projects with the faculty of the college during summer vacations. It provides them with exposure to diverse research possibilities and at the same time they are able to learn new

laboratory techniques, collect data through field studies, conduct surveys, habit of reading research journals and provides them an opportunity to execute their innovative ideas. Till date, a total of 260 undergraduate students have completed 26 DU Innovation projects under the supervision of college faculty members. Along with this two project staffs have worked in extramural research projects of faculty members.

- Students are encouraged to undertake summer training projects in reputed research and development organizations and industries. Promoting their active participation in various research projects has also been commendable feature of our college.
- The college has organized various workshops and seminars in order to generate research interests among the students. Faculty members and the invited speakers share their research findings with the students, as a way of encouraging students to do research.
- The college has access to a number of peer-reviewed research journals through INFLIBNET and DU network via services such as SCOPUS, Science Direct etc. Students are also encouraged to write articles, essays, experiences and scientific observations etc. and the some of the articles are published in the college magazine annually.
- The college organizes educational trips for the students every year to expose them to real time applications and latest research infrastructure in various industries and institutes. Moreover, the college has also organized several DST funded INSPIRE camps to create scientific awareness among school students as well.

**3.1.5 Give details of the faculty involvement in active research (Guiding student research, leading Research Projects, engaged in individual/ collaborative research activity, etc.**

Faculty members are involved in several research projects as well as guiding students (Refer Table 3.1 and 3.2). Most of the teachers in the college are also involved as supervisors/ co-supervisors in guiding M.Tech. , M.Sc. students of other institutes and UG students of college under Innovation schemes. Most of the faculty members have



undertaken research projects through various funding agencies as listed.

**Table 3.2: List of Departments with number of Research Projects**

S. No.	Department	Name of the faculty	Number of Research Projects
1.	Biology	Dr. N. S. Abbas	01
2.		Dr. Anil K. Bali	01
3.	Biomedical Science	Dr. Uma Chaudhry	03
4.		Dr. Shivani G. Varmani	03
5.		Dr. Uma Dhawan	02
6.	Chemistry	Dr. Lalit Kapur	01
7.		Dr. Balaram Pani	04
8.	Computer Science	Mr. Bhavya Deep	01
9.		Ms. Arti Batra	01
10.	Electronics	Dr. Manoj K. Khanna	03
11.		Dr. Geeta Mongia	01
12.		Dr. Inderbir Kaur	02
13.		Dr. Avneesh Mittal	01
14.		Dr. Manoj Tiwari	01
15.		Dr. Jitender	01
16.		Dr. Amit Kumar	02
17.	Food Technology	Dr. Rizwana	03
18.		Dr. Shalini Sehgal	05
19.		Dr. Eram S. Rao	02
20.		Dr. Meenakshi Garg	04
21.	Human Communication	Dr. Madhulika Bajpai	01
22.	Instrumentation	Dr. Geeta Bhatt	02
23.	Library	Dr. Ranjeet Singh Thakur	01
24.	Mathematics	Dr. Ragini Jindal	01
25.		Dr. Neeru Sharma	01
26.	Microbiology	Dr. Vijay K. Nalla	01
27.		Dr. Purnima Anand	03
28.		Dr. Ruchi Gulati	02
29.		Dr. Pawas Goswami	02
30.	Physics	Dr. Anand Bhardvaja	03
31.		Dr. Vandana Batra	01
32.		Dr. Vikas Tyagi	01
33.		Dr. Parthasarthy Pal	01
34.	Polymer Science	Dr. S. K. Shukla	04
35.		Dr. Susmita D. Sadhu	03
36.		Dr. Siddharth Sirohi	02

**3.1.6 Give details of workshops/ training programmes/ sensitization programmes conducted/ organized by the institution with focus on capacity building in terms of research and imbining research culture among the staff and students.**

Please refer to departmental ERDs for list of workshops/ training programmes/ sensitization programmes conducted/organized by different departments of the college with focus on capacity building in terms of research and imbining research culture in last five years.

**3.1.7 Provide details of prioritized research areas and the expertise available with the institution.**

The qualified faculty of the college is involved in various research activities and their area of expertise are as follows:

**Table 3.3: Prioritized Research Areas and Expertise Available**

S. No.	Name of the Faculty	Area of specialization	Expertise available
<b>Department of Biochemistry</b>			
1.	Dr. Anita Sondhi	Medical Biochemistry	Medical Biochemistry
<b>Department of Biology</b>			
1.	Dr. N. S. Abbas	Molecular Biology and Biotechnology	Plant Biotechnology and Molecular Biology
2.	Dr. Anil K. Bali	Microbial Molecular Biology and Biotechnology	Cell Biology, Molecular Biology and Biotechnology
3.	Dr. Sujata Bharadwaj	Plant Molecular Biology	Ethanobotany
<b>Department of Biomedical Science</b>			
1.	Dr. Uma Chaudhry	Biomedical Science	Molecular Biology and Medical Biotechnology
2.	Dr. Shivani G. Varmani	Medical Biochemistry	Medical Biochemistry and Medical Biotechnology
3.	Dr. Uma Dhawan	Biomedical Science	Human Molecular Genetics and Bioinformatics
<b>Department of Chemistry</b>			
1.	Dr. Lalit Kapur	Coordination Chemistry	Organometallic Compounds
2.	Dr. Balaram Pani	Inorganic Chemistry	Inorganic Chemistry

S. No.	Name of the Faculty	Area of specialization	Expertise available
<b>Department of Computer Science</b>			
1.	Dr. Sangeeta Srivastava	Software Engineering	Database System
2.	Ms. Manu Kataria	Microprocessor	Microprocessor
3.	Mr. Bhavyadeep	Cloud Computing	High Performance Computing
4.	Ms. Arti Dua	Networking and Mobile Communication	Networking
<b>Department of Electronics</b>			
1.	Dr. Manoj K. Khanna	Electronics	Microelectronics and VLSI designing
2.	Dr. Geeta Mongia	Electronics	Optical Data Storage & Photovoltaics
3.	Dr. Inderbir Kaur	Electronics	Amorphous Semiconductors
4.	Dr. Avneesh Mittal	Electronics	Genetic Algorithm and Adaptive Controls
5.	Dr. Manoj Tiwari	Electronics	Microwave Photonics
6.	Ms. Shweta Gupta	Electronics	Electronics
7.	Dr. Jitender Kumar	Electronics	Nano-Materials and devices (LED Solar Cell, Sensors)
8.	Dr. Amit Kumar	Electronics	Electroluminescent Materials & Devices
<b>Department of Food Technology</b>			
1.	Dr. Rizwana	Food Technology	Food Processing, Technology of Animal Foods
2.	Dr. Vandita Gupta	Food Science and Nutrition	Nutrition and Processing of plant foods
3.	Dr. Shalini Sehgal	Dairy Microbiology	Food Microbiology and Food Safety
4.	Dr. Eram S. Rao	Food Science and Nutrition	Food Science and Nutrition
5.	Dr. Meenakshi Garg	Food Science and Nutrition	Food Processing and Packaging
<b>Department of Human Communication</b>			
1.	Dr. Madhulika Bajpai	Psychology	Marital Research, Stress Management, Personality Development and Counselling
<b>Department of Instrumentation</b>			

S. No.	Name of the Faculty	Area of specialization	Expertise available
1.	Dr. Geeta Bhatt	Semiconductor Thin Films	Electronic Waste/Gas Sensor
<b>Department of Mathematics</b>			
1.	Dr. Ragini Jindal	Applied Mechanics	Applied Mechanics
2.	Dr. Neeru Sharma	Functional Analysis	Functional Analysis
<b>Department of Microbiology</b>			
1.	Dr. Vijay K. Nalla	Microbiology	Molecular Biology, Bioinformatics and Biotechnology
2.	Dr. Purnima Anand	Microbiology	Environmental Microbiology
3.	Dr. Ruchi G. Marwah	Industrial Microbiology	Production of fungal metabolites
4.	Dr. Pawas Goswami	Dairy Microbiology	Probiotic Research / Antibiotic Resistance
<b>Department of Physics</b>			
1.	Dr. Anand Bharavaja	Atomic and Molecular Physics	Atomic and Molecular Physics
2.	Dr. Vandana Batra	Cosmic Rays	Cosmic Rays
3.	Dr. Meetu Luthra	Cosmology	Cosmology
4.	Dr. Partha S. Pal	Computational Physics	Computational Physics
5.	Mr. Vikas Tyagi	GTR and Q.F.T.	GTR and Q.F.T.
6.	Mr. Ramesh Kumar	Solid State electronic materials	Solid State electronic materials
7.	Mr. Sandeep Kumar	Optoelectronics	Optoelectronics
<b>Department of Polymer Science</b>			
1.	Dr. Saroj Kr. Shukla	Polymer Characterization	Polymer Characterization
2.	Dr. Siddharth Sirohi	Controlled Polymerization and Nanoencapsulation	Polymer synthesis, Nanoparticle preparation
3.	Dr. Susmita Dey Sadhu	Rubber Technology	Rubber Technology

**3.1.8 Enumerate the efforts of the institution in attracting researchers of eminence to visit the campus and interact with teachers and students?**

In order to broaden the horizon of students, the college has been organizing various lectures of eminent scientists throughout the year. Various scientists of repute are invited to discuss their research work with the students. The students also get an opportunity to interact with them through panel discussions regarding pursuing a career in science and the possibility of getting involved in projects as a part of their summer training program.

Some of invited lectures held in the college during the last five years that have helped students and faculty gain research exposure are mentioned in the individual departmental ERDs (Evaluative Report of Departments)

**3.1.9 What percentage of the faculty has utilized Sabbatical Leave for research activities? How has the provision contributed to improve the quality of research and imbibe research culture on the campus?**

The provision of sabbatical leave for college teachers at the level of Associate Professor has been made by University of Delhi in August, 2013. However, there has been a provision for study leave for college teachers as per the norms of University of Delhi. Fifteen (15) teachers have availed study leave for duration of 2-3 years for completing their Ph.D., Post-Doctoral work and additional Masters Program since the start of the college

**3.1.10 Provide details of the initiatives taken up by the institution in creating awareness/advocating/transfer of relative findings of research of the institution and elsewhere to students and community (lab to land)**

The college makes all efforts to provide a platform to showcase the research findings of the faculty and students. The findings of the DU innovation projects were exhibited at University of Delhi cultural fest 'Antradhvani' during 2013, 2014 and 2015.

**Table showing Patents filed by the faculty members are as follows:**

S.No.	Name of the Faculty member	Patents
1	<b>Dr. Uma Chaudhry</b>	Patent filed in US patent office for the PCR-based detection method for Chlamydia trachomatis and patent application number is 13/220,268 filed on 29 <sup>th</sup> August, 2011 and has been subsequented with US Patent no. 9,139,883 on 22 <sup>nd</sup> September, 2015. Daman Saluja, Uma Chaudhry, Mashook Ali, Poonam Sachdeva, Achchhey Lal Patel
2.	<b>Dr. Meenakshi Garg, Dr. Shivani G. Varmani and Dr. Susmita Dey Sadhu</b>	Patent has been filed for “Nutritional Composition and methods for manufacturing the same” preliminary file number is 471/DEL/2013, Indian Patent Office.  Patent has been filed for “Coating Compositions and Methods for preparation thereof” preliminary file number is 473/DEL/2013, Indian Patent Office.

### 3.2 Resource Mobilization for Research

#### 3.2.1 What percentage of the total budget is earmarked for research?

**Give details of major heads of expenditure, financial location and actual utilization.**

The primary responsibility of the college is to teach undergraduate courses. Therefore, no budget is earmarked for research. However, the college encourages its faculty to submit research proposals to various funding agencies such as DST, DBT, UGC, DU etc. With the relentless effort of the faculty members, the college has been able to generate extra mural funding. The details of utilization of these projects are as follows:

**Table 3.5: Utilization of research projects of the college for the year 2012-2016:**

Name of the Supervisor	Year	Funding Agencies	Total Grant received (Rs.)	Major Heads	Financial allocation	Actual Utilization
<b>Dr. AMIT KUMAR</b>	2014-2015	DBT	<b>10,90,400</b>	Manpower	Rs 7,45,200	Rs 5,39,471
				Consumables	Rs 1,45,000	Rs 99,567
				Travel	Rs 30,000	Rs 14,995
				Contingency	Rs 50,000	Rs 24,702
				Overheads	Rs 75,000	Rs 75,000

Name of the Supervisor	Year	Funding Agencies	Total Grant received (Rs.)	Major Heads	Financial allocation	Actual Utilization
<b>Dr. MEENAKSHI GARG &amp; Dr. SHIVANI G. VARMANI</b>	2012-2015	UGC	<b>5,05,000</b>	Equipment	Rs 25,000	Rs 23,688
				Travel	Rs 75,000	Rs 38,606
				Hiring	Rs 2,62,500	Rs 2,47,795
				Overhead	Rs 67,500	Rs 67,500
				Contingency	Rs 75,000	Rs 74,019
<b>Dr. UMA CHAUDHRY</b>	2011-2014	UGC	<b>11,31,278</b>	Equipment	Rs 3,00,000	Rs 3,00,000
				Contingency	Rs 30,000	Rs 30,000
				Chemicals & Glassware	Rs 1,00,000	Rs 1,00,000
				Overhead	Rs 41,800	Rs 41,800
				Project Fellow	Rs 6,59,478	Rs 6,59,478

**3.2.2 Is there a provision in the institution to provide seed money to the faculty for research? If so, specify the amount disbursed and the percentage of the faculty that has availed the facility in the last four years?**

The primary work of college faculty as stated in 3.2.1 is to teach undergraduate students and hence, there is no provision for seed money for research as a separate budgetary head. However, with the sincere efforts duly supported by the administration, teachers have been successful in upgrading their research laboratories with high end instruments from their research projects.

**3.2.3 What are the financial provisions made available to support student research projects by students?**

The college has various ways to give financial support to students involved in research.

- DU Innovation projects have the provision of fellowship of Rs.1000/- per month for ten students in each project. Till date 260 students have availed this fellowship.
- DBT Star College Scheme empowers the college to financially help students involved in in-house projects by funding the research associated activities like purchase of chemicals, participation in conferences and symposia etc. Several

students from the four participating departments (Biochemistry, Biomedical Science, Food Technology and Microbiology) have been benefitted from the scheme. Financial support for the field and industrial visits is also provided to students in order to enhance their exposure in cutting edge technology and research.

**3.2.4 How does the various departments/units/staff of the institute interact in undertaking inter-disciplinary research? Cite examples of successful endeavours and challenges faced in organizing interdisciplinary research.**

Interdisciplinary research has always been the strength over the years. The college is well known to encourage and motivate its teachers to pursue research work without limiting themselves within the boundaries of their own disciplines. Various activities such as in-house projects under the supervision of department teachers as mentors, introduction of new experiments, conducting workshops, trainings, lectures and seminars/ symposia, industrial and institutional visits are organized from time to time. These activities are conducted at inter and intra-departmental, inter college and inter-institutes levels.

University of Delhi has awarded 26 Innovation Projects (2012-16) to our college which are all interdisciplinary in nature. Faculty members rigorously brainstorm among themselves and with the students for further ideation.

**Examples of Successful Endeavors:**

DU innovation projects of college were showcased in Antardhvani, the annual festival of University of Delhi and received accolades from visitors of the exhibition. Out of the nine DU-Innovation Projects sanctioned during the year 2013-2015 the college received “**Certificate of Appreciation**” for five Innovation Projects at ‘Antardhwani’ Delhi University Cultural Festival which was held during 22<sup>nd</sup> to 24<sup>th</sup> February, 2015.

- **Certificate of Appreciation for Best Display in the Theme Business Ideas :**  
DU Innovation Project BCAS 205 titled “To prepare edible packaged low cost healthy snack from fruit and vegetable waste and its effect on healthy respondents”. The team comprises of Principal Investigators: Dr. Meenakshi Garg, Department of Food Technology, Dr. Susmita Dey Sadhu, Department



of Polymer Science and Dr. Shivani G. Varmani, Department of Biomedical Science.

- **Certificate of Appreciation for Best Display in the Theme Scientific Arena:** DU Innovation Project BCAS 209 titled “Genetic curation of ataxia phenomes for establishment of predictive and rapid diagnostic paradigm”. The team comprises of Principal Investigators: Dr. Uma Dhawan, Department of Biomedical Science, Dr. Pawas Goswami, Department of Microbiology and Mr. Bhava Deep, Department of Computer Science.
- **Certificate of Appreciation for Best Display in the Theme Health Concerns:** DU innovation project BCAS 206 titled “Assessment of brominated flame retardants in mobile phones, their consumption pattern in North India and carbon footprints from electronic waste”. The team comprises of Principal Investigators: Dr. Manoj Khanna, Department of Electronics, Dr. Geeta Bhatt, Department of Instrumentation, Dr. Balaram Pani, Department of Chemistry and Dr. Renu Baweja, Department of Biomedical Science.
- **Certificate of Appreciation for Best Display in the Theme Health Concerns:** DU innovation project BCAS 203 titled “Public Awareness and Evaluation of Probiotics sold in Delhi”. The team comprises of Principal Investigators: Dr. Shalini Sehgal, Department of Food Technology and Dr. Tejpal Dhewa, Department of Microbiology.
- **Certificate for Best Innovative Idea:** DU innovation project BCAS 202 titled “Agro Waste Material Management: From Waste to Wealth”. The team comprises of Principal Investigators: Dr. S. K. Shukla, Department of Polymer Science, Dr. Anand Bharadvaja, Department of Physics and Dr. Rizwana, Department of Food Technology.

### **Challenges faced with Innovation Projects**

- There is always shortage of time to conduct these projects along with college teaching and other co-curricular activities.
- Due to heterogeneous group of the students, it takes time to come on the same platform.

- It becomes difficult to have common time for research work involving students from different disciplines as different time tables are followed.

**3.2.5 How does the institution ensure optimal use of various equipment and research facilities of the institution by its staff and students?**

- BCAS is the only college of University of Delhi offering eight science honours courses and it has carved out a niche for itself in the field of Science education. Each department of the college has well-equipped laboratories with adequate research facilities including state-of-art instruments. The students and faculty of the college have access to these laboratories for their studies and research activities.
- Facility in terms of AMC and repair is provided by the college for regular maintenance of the necessary instruments. Laboratory staff are also trained from time to time to maintain these instruments either through demonstrations from the companies
- A record of issued items and regular stock checking is carried out for all the laboratory equipment.
- Wi-Fi and LAN internet connectivity helps staff and students to search literature smoothly.
- The college also has a pilot plant which is an integral part of the Department of Food Technology. The pilot plant is available for new product development, process evaluation, research, teaching and demonstration. This plant is utilized as a teaching and demonstration area, utilizing current processing technologies and procedures and with minor modifications, function as a research facility probing new concepts and procedures for the students.

**3.2.6 Has the institution received any special grants or finances from the industry or other beneficiary agency for developing research facility? If 'yes' give details.**

Yes, the college has received special grant from various external agencies (Kindly refer to 3.2.1)

**3.2.7 Enumerate the support provided to the faculty in securing research funds from various funding agencies, industry and other organizations. Provide details of ongoing and completed projects and grants received during the last four years.**

To avail research funding from various organizations college provides all possible support to the faculty members willing to pursue research projects. They are provided with power back up for laboratories, uninterrupted water supply, Wi-Fi enabled computers and facility for printing. The library has online access to many reputed journals to help them in their research.

**Table 3.6: List of ongoing and completed projects (2012-2016)**

S. No.	Name of the Project	Name of the funding agency	Duration of the project	Department of Investigator	Total grant Sanctioned
<b>List of Major Research projects</b>					
1	Development of an accurate and reliable biosensor based on raman scattering and photoluminescence emission in single walled carbon nanotubes for medical diagnostic and mutation detection in diseased DNA	DBT	Jan 2013-June 2014 For 1 year and 6 Months	Electronics Dr. Amit Kumar	Sanctioned Rs 10,90,400/-
2	Characterization of Pkn1 and IncA proteins as potential vaccine candidates of Chlamydia trachomatis	UGC	2011-2014 For 3 years	Biomedical Science  Dr. Uma Chaudhry	Sanctioned Rs 11,31,278/-
3	Effects of Religious Fasting on Weight Loss of Indian Adults”	UGC	2012-2015 For 3 years	Food Technology and Biomedical Science  Dr. Meenakshi Garg and Dr. Shivani G. Varmani	Sanctioned Rs 9,17,500/-  Received Rs 5,05,000/-
4.	Spatial Distribution of uranium and associated water quality parameters in groundwater/surface water of six districts (Agra, Mathura, Mahamaya Nagar, Kanshiram Nagar, Etah and Badaun) of Uttar Pradesh	Board of Research in Nuclear Sciences (Department of Atomic Energy)	(2016-18) For 2 years	Chemistry Dr. Balaram Pani and Dr. Manjeet Singh Barwa	Rs 26,94,300/-

S. No.	Name of the Project	Name of the funding agency	Duration of the project	Department of Investigator	Total grant Sanctioned
<b>List of Minor Research projects</b>					
2	Synthesis, characterization and potential applications of conducting polymers and transition metal composites	UGC	2011-2013	Polymer Science Dr. Saroj K. Shukla	Sanctioned Rs. 2.0 lakhs
<b>List of Interdisciplinary Research projects</b>					
Kindly refer criterion 1 and departmental ERDs for the list DU_IP- 101-105, 201-209, 301-312					

### 3.3 Research Facilities

#### 3.3.1 What are the research facilities available to the students and research scholars within the campus?

During the last four years, the college has been able to generate funds through some of the extramural projects. In addition to the funds procured, faculty and students working on these projects are free to use college facilities as well, some of which are as follows:

Computers with internet facility are provided to faculty members who are doing research. The college subscribes to both national and international journals in various fields through DU facilities. All departmental laboratories and other infrastructural facilities are available for each project. Qualified faculty members are always available to guide the students working on their project work. Laboratories and library are kept open beyond the scheduled time to complete their projects upon request.

The college library is fully automated and uses Integrated Library management software (LSEase of Libsys corporation). Facility of Wi-Fi and LAN internet connectivity is always there in the library. DULS, an electronic resource management package for e journals is also accessible to the students in the library via <http://crl.du.ac.in/atozn/index.php>. Subscription of e-journals is made possible through INFLIBNET.

#### 3.3.2 What are the institutional strategies for planning, upgrading and creating infrastructural facilities to meet the needs of researchers especially in the new and emerging areas of research?

Faculty and students are encouraged to attend seminars, symposium and workshops in their respective areas of research. The college has organized various such academic activities that have provided a platform for highlighting the innovative and new research in various areas. Various instruments have been added to different labs utilizing the external funding of different projects.

**3.3.3 Has the institution received any special grants or finances from the industry or other beneficiary agency for developing research facilities? If yes, what are the instruments/facilities created during the last four years.**

Yes, Grant-In-Aid by Ministry of Food Processing Industries, Government of India, for creating Infrastructural facilities for the Food Technology Department was provided for Rs. 68.78 lakhs in 2009-2010.

The college has received Star College Grant OF Rs. 56.61 lakhs from Department of Biotechnology (DBT), Government of India for four life science departments. Department of Food Technology is awarded Star Department Status by DBT in the year 2013. This scheme gives much needed boost to the college students and faculty. The students get an opportunity to excel in their career in life sciences and biotechnology.

Both these schemes have helped college build its infrastructure and state of art equipments are added under these schemes.

**3.3.4 What are the research facilities made available to the students and research scholars outside the campus/other research laboratories?**

Students of our college are encouraged to undertake various summer research projects outside the college. They undergo internship in various research organizations and industries. Students from other organizations are also allowed to use our college facilities. Some of the students from NSIT visited our college and performed some of their experiments using the facilities of Department of Biomedical Science. Students from DPS School visited our college and learnt molecular biology techniques. Even research scholars from University have undertaken short projects with the college faculty as part of their summer training.

**Table 3.7: List of Instruments lately purchased under Innovation Projects**

S. No	Title of the Innovation Project	Name of the Principal Investigator	List of Instruments purchased	Placed in the Department
1	BCAS 201 Low-cost electricity generation using Bio-Photovoltaic Technology – a Green Energy Initiative	Dr. Geeta Mongia, Dr. Inderbir Kaur, Dr. Ruchi Gulati Marwah	Plant Growth Chamber Digital Multi-meter, Galvanometer & Milli-Ammeter	Microbiology Electronics
2	BCAS 202 Agro Waste Material Management: From Waste to Wealth	Dr. S. K. Shukla, Dr. Anand Bharadvaja, Dr. Rizwana,	Oven Magnetic stirrer pH meter & Incubator	Physics Polymer Science Food technology
3	BCAS 203 Public Awareness and Evaluation of Probiotics sold in Delhi	Dr. Shalini Sehgal, Dr. Tejpal Dhewa, Dr. Neha Bansal	Incubator, Digital pH probe	Food Technology
4	BCAS 204 Screening and Enrichment of Polymer degrading micro-organisms and their application in Environmental Engineering	Dr. Vijay Kumar Nalla, Dr. Siddharth Sirohi, Dr. Krishna Dutt,	Homogenizer Ultrasonicator	Polymer Science Microbiology
5	BCAS 205 To prepare edible packaged low cost healthy snack from fruit and vegetable waste and its effect on healthy respondents	Dr. Meenakshi Garg, Dr. Susmita Dey Sadhu, Dr. Shivani G. Varmani,	Trey Drier Vaccum Pump Body Composition Analyser & Glucometer	Food Technology Polymer Science Biomedical sciences
6	BCAS 206 Assessment of brominated flame retardants in mobile phones, their consumption pattern in North India and carbon footprints from electronic waste	Dr. Geeta Bhatt, Dr. Manoj Khanna, Dr. Balaram Pani,	Microwave Oven & Mechanical Stirrer Shaker & Magnetic Stirrer with heating	Instrumentation Chemistry
7	BCAS 207 Understanding the Burden of Vitamin B12 and Folate Deficiency in Young Indians	Dr. Purnima Anand, Ms. Arti Batra, Dr. Parvinder Kaur	Work Station	Biomedical Science
8	BCAS 208 Lifestyle Interventions in Stress Management: A study among Delhi Youth	Dr. Madhulika Bajpai, Dr. Eram S. Rao, Dr. Ragini Jindal	Height measuring scale, Body Composition Analyzer & Electric Kettle	Food Technology
9	BCAS 209 Genetic curation of ataxia phenomes for establishment of predictive and rapid diagnostic paradigm	Dr. Uma Dhawan, Mr. Bhavyadeep, Dr. Pawas Goswami	Thermal Cyclor	Biomedical Science
10	BCAS 101 Study of Rise in Consumption of the Mobile phones/Electronic Gadgets in Delhi region and Material Analysis projecting potential Electronic Waste and their impact on Environment.	Dr. Geeta Bhatt, Dr. Manoj K. Khanna, Dr. Balaram Pani	Electro Deposition Unit including pH/ISE Projector & Laptop	Chemistry Instrumentation

S. No	Title of the Innovation Project	Name of the Principal Investigator	List of Instruments purchased	Placed in the Department
11	BCAS 102 Studies to assess the quality of fruits and vegetables with respect to microbial load and the remedial measures for their control.	Dr. Shalini Sehgal, Dr. Purnima Anand, Dr. Uma Chaudhry	Electrophoresis, Cooling Cabinet Laptop	Biomedical Science Food Technology Microbiology
12	BCAS 103 Development of Cost-Effective Nutritious Multi Cereal Bar and its Sustainable Packaging Using Nano-Biopolymer.	Dr. Meenakshi Garg, Dr. Susmita Dey Sadhu, Dr. Shivani G. Varmani	Magnetic Stirrer & Printer Growth Chamber & Projector Growth Chamber & Notebook	Polymer Science Food Technology Biomed Science
13	BCAS 104 Development and Study of alternate packaging materials from agro wastes and its application in Food Packaging.	Dr. S.K. Shukla, Dr. Anand Bharadvaja, and Dr. Rizwana,	Gas Chamber, Laptop, Multimeter & pH meter Incubator & Data Recorder	Polymer Science Food Technology
14	BCAS 105 Determine the Speciation of some selected Heavy Metals from e-waste and their impact on Ground Water.	Dr. Ramesh Kataria, Dr. Manoj K. Tiwari, and Dr. Parthasarthy Pal,	Computer & accessories Lysimeter complete setup	Electronics Chemistry
15	UGC sponsored project Effects of Religious Fasting on Weight Loss in Indian Overweight and Obese Adult"	Dr. Meenakshi Garg Dr. Shivani G. Varmani	Body Composition Analyser Sphigmomanometer- Refrigerator Printer & Laptop	Food Technology Biomedical Science

\*Currently, there are 12 ongoing innovation projects (BCAS 301-312). Several instruments are being procured under these projects and many proposals are under pipeline.

### 3.3.5 Provide details on the library/information resource center or any other facilities available specifically for the researchers?

The library is housed in a spacious and well-lit three storied building called the library block. Reading room, reprography and Internet etc. are some of the facilities being provided by the library to users in general and researchers in particular. It has a strong collection of 23280 volumes of books including reference books, 336 bound volumes of journals and 1238 CD-ROMs/DVD-ROMs. The library has a good collection of back volumes of food technology journals received from CFTRI, Mysore on gratis basis.

### E-Resources

Researchers have full access to thousands of online journals that are being subscribed to by the Central Reference Library (University of Delhi). The Library is also subscribing to N-LIST (National Library and Information Services Infrastructure of

Scholarly Contents) Programme - (a collection of E-Resources under UGC-INFONET Digital Library Consortium) with personal IDs and Passwords.

### **Facilities**

Facilities of the library include two spacious reading halls with adequate furniture, open access to the documents, air-conditioned Internet section having 20 computers that provide internet facility for the students. The library has a teachers' lounge for more informal and relaxed reading. The college library is fully automated using latest hardware and software with OPAC (Open Public Access Catalogue) facility. The entire library block is under CCTV cameras surveillance. The library has its own intranet. The library proposes to make the library block centrally air-conditioned and to install RFID, Web-OPAC and Biometrics technology in future.

### **Information Literacy/ Orientation Programme**

The library organizes orientation and information literacy programme for the students in the beginning of each year.

## **3.4 Research Publications and Awards**

### **3.4.1 Highlight the major research achievements of the staff and students in terms of**

- **Patents obtained and filed (process and product)**

#### **Patents filed by the students of the college**

Two students of Department of Instrumentation, Mr. Aakash Sharma and Ms. Prachi Chhatwal of B.Sc. (Hons) Instrumentation registered a patent (Patent Application Number- 1666/DEL/2014) on Method and Apparatus for Detection of Moisture in Wound Bed Using Near Field Communication

- **Patents filed and/or obtained by the faculty of the college**

Kindly refer to section 3.1.10.

- **Research studies or surveys benefiting the community or improving the services**

All the research projects mentioned under the head Interdisciplinary/ Students Research Projects are of this nature, benefitting the community directly or indirectly.



**Societal impact of Research Projects**

The Department of Biomedical Science of the college took an initiative to create a database for the blood groups of the staff and students of the college. A blood camp was organized on 11<sup>th</sup> September 2014 to determine the blood group of the students and staff of the college who did not know their blood groups. In this camp, the blood group of 90 individuals was determined by the students of the Departments of Biomedical Science and Microbiology.

Under the DU innovation scheme, Project BCAS-208 students carried out a study on “Lifestyle Interventions in Stress Management”. The study was carried out keeping in mind that youth today faces tremendous challenges and as a result is prone to stress and stress related disorders. The reasons of stress for youth could range from mental to physical and/or due to academics, interpersonal relationships, intrapersonal relationships, family pressures, poor eating habits, low self- esteem etc. to name a few. Depending on the severity and persistence of stress, the implications on youth can be far-reaching. Sadly, there is no formal structure in place, which can prepare the youth to cope with their daily stress or learn to reduce the intensity and occurrence of the same. Thus, the study attempted to comprehensively research into how we can use our own ancient, indigenous and time-tested styles of living for an efficient and largely stress free existence. An attempt was thus made to suggest various life style interventions, which would include Indian traditional foods, relaxation techniques, psychological and physical interventions in order to help our youth cope better with stress. The objective was to evaluate the additive and interactive effects of interventions in the stress responses amongst the subjects. Primary purpose of the study was to reinforce that, “prevention is better than cure”. The sooner the youth learn to follow and practice the suggested skills, the more far reaching and enhanced the benefits will be for them.

FOOD SAFETY EDUCATION INITIATIVE-A complete training kit comprising of 14 posters (seven in Hindi and seven in English), leaflets, booklets were designed to help food handlers understand that the basic techniques of hand washing, hygiene, temperature control, proper storage play an important role in maintaining the supply of safe food by Dr. Shalini Sehgal.

AWARENESS CAMPAIGN ON PROBIOTICS-Lack of information about probiotics

was found to be the major outcome of the consumer survey. The team BCAS-203 with Dr. Shalini Sehgal, Principal Investigator designed a series of handmade posters, brochures in both Hindi and English, cartoon booklets especially for school students, as educational material. The team then interacted with 500 school students, 100 elderly people in the senior citizen homes and 300 college students in Delhi during the awareness campaign.

Development of WEBSITE: [www.probioticgyan.in](http://www.probioticgyan.in) designed by Team-BCAS 203 which is the only Indian portal providing extensive information about the probiotics and Indian probiotics products.

Dr. Uma Dhawan and her team were involved in a project which also had societal benefits. The project entitled 'Understanding the Burden of Vitamin B12 and Folate Deficiency in Young Indians' studied 450 individuals in the age group of 18-25 years to determine the levels of vitamin B12 and folate in young Indian population. During this study, awareness especially amongst the youths of India towards vitamin B12 and folate deficiency was created. General public awareness was also created at Annual cultural festival of University of Delhi, Antardhwani 2014 and 2015. It is important as significant proportion of the Indian population is vegetarian, they might be deficient in vitamin B12 because this vitamin is only obtained from animal sources and microbial products. This study has shown deficiency of vitamin B12 in this age group of Indians indicating young Indians are at higher risk of complex disorders, hence more such awareness programmes should be organized to promote sensitivity among youth for their dietary habits.

**3.4.2 Does the Institute publish or partner in publication of research journal(s)? If 'yes', indicate the composition of the editorial board, publication policies and whether such publication is listed in any international database?**

No, the college does not publish or is partner in publication of research journals. However, Dr. Saroj K. Shukla of Polymer Science Department is an Editor for an International Journal of Nanotechnology in Diagnosis and Treatment, USA.

**3.4.3 Give details of publications by the faculty and students**

Publication per faculty: for details please refer to ERDs of Departments

Department	Publications In Journals [A]	Publications in Proceedings [B]	Chapter In Books [C]	Books Edited [D]	Books With ISBN/ISSN Numbers [E]	Publications Per Faculty
Biochemistry	04	---	---	---	---	{[A]+[B]+[C]+ [D]+[E]/ Total Permanent Faculty Members}
Biology	11	09	08	---	---	
Biomedical Science	42	---	01	03	---	
Chemistry	12	---	01	---	15	
Computer Science	14	02	---	---	---	
Electronics	59	---	---	---	17	
Food Technology	22	11	15	---	10	
Human Communication	03	---	04	01	02	
Instrumentation	07	07	---	---	02	
Library Science	05	---	01	---	---	
Mathematics	10	---	---	---	02	
Microbiology	33	---	03	---	02	
Physics	22	---	---	---	---	
Polymer Science	44	---	06	01	---	
<b>TOTAL</b>	<b>288</b>	<b>29</b>	<b>39</b>	<b>05</b>	<b>50</b>	<b>9.0</b>

### By Students:

Sharma, A., Gupta, P., Kumar, R., and Bhardwaj, A. 2016. dPABBs: A Novel *in silico* approach for Predicting and Designing Anti-biofilm Peptides. Sci. Rep.6, 21839; doi: 10.1038/srep21839.

Students have also contributed in DU Innovation projects and several papers have been published as mentioned in the Department ERDs

Details of papers published by faculty and students in peer reviewed journals (national/ international) – Refer ERDs of all departments

### 3.4.4 Provide details of Research awards received by the faculty

Out of the nine DU-Innovation Projects of the college sanctioned during the year 2013-2015, five DU Innovation projects received “**Certificate of Appreciation**” at ‘Antardhvani’ Delhi University Cultural Festival held during February 20-22, 2015. Refer to section 3.2.4.

**Recognition received by the faculty from reputed professional bodies and agencies, nationally and internationally**

- Dr. S. K. Shukla of Polymer Science Department received IAMM Scientist award in the year 2011, ISCAS Bronze medal award in the year 2011, I Prize in best poster award in APM in the year 2013
- Dr. Shalini Sehgal, Associate Professor in the Department of Food Technology, presented a paper in an International Conference on Food Technology: Impact on Nutrition and Health organized by International Institute of Food and Nutritional Sciences at JNU Convention Centre, Delhi from Dec 23-24, 2013. "Identification of Microbial Hazards Associated with the Fresh Produce sold in South Delhi Markets and their Minimization. (Paper was awarded Second Prize in Oral Presentation Category).
- Dr. Meenakshi Garg, Assistant Professor in the Department of Food Technology, received best poster presentation award for the poster entitled "Assessment of nutrient intake and food consumption pattern of north Indian adults" at 4th international conference on 'Updating food technology: A challenge towards public health nutrition' held during May 7-8, 2014

**Incentives given to faculty for receiving state, national and international recognitions for research contributions:**

- Dr. Saroj K. Shukla, Assistant Professor in the Department of Polymer Science, has been awarded with the visiting fellowship under Indian National Science Academy Bilateral Exchange program in the year 2013.
- Dr. Uma Chaudhry, Assistant Professor in the Department of Biomedical Science has been awarded with Summer Research Fellowship of 'Indian National Science Academy' (INSA) for two months from May 15, 2014 to July 14, 2014 to work on the project titled "Elucidating various inhibitors of glutamate racemase of Mycobacterium tuberculosis" under the supervision of Dr Madhu Chopra from Dr B R Ambedkar Center for Biomedical Research, University of Delhi.

### **3.5 Consultancy**

#### **3.5.1 Give details of the strategies adopted by the institution for establishing institute-industry interface?**

The following systems and strategies are adopted for establishing institute-industry interface:

Consultancy services are provided to industry and corporate sector by the expert faculty of Departments of Food Technology, Computer Science and Polymer Science.

The college not only aims at preparing students academically but also in guiding them towards a rewarding and satisfying career. It is imperative for students to identify their aptitudes, interests, career goals and aspirations in order to make well-informed decisions concerning higher education.

Students are counseled on:

- An array of career options
- Finalizing on course and country where the student wants to and can study
- Indian and International colleges study options (including USA, Germany Singapore and others)
- Guidance on preparation of the entrance tests
- Scholarships and funding options

#### **3.5.2 What is the stated policy of the institution to promote consultancy? How is the available expertise advocated and publicized?**

No specific and stated policy is followed to promote consultancy. Yet the college faculty has expertise in various areas which needs to be explored and publicized. Consultancies or services are given to outer agencies such as contributions for e-content development for University of Delhi and other educational organizations such as CBSE, IGNOU, and NSIT. Training and Placement cell explores the possibility of collaboration during their interaction with various industries. Major areas of expertise are advertised through department blogs and also through technical events/programmes.

**3.5.3 How does the institution encourage the staff to utilize their expertise and available facilities for consultancy services?**

The college provides a conducive and free environment to the faculty to use their intellect and available facility of the campus to promote associations with industries/companies by which the consultancy service gets a boost. The college motivates the professionally qualified faculty to utilize their expertise for consultancy services. This helps in promoting interactions with industry/ companies. In return, the students get an opportunity to visit these companies and the placement process is thus, facilitated.

**3.5.4 List the broad areas and major consultancy services provided by the institution and the revenue generated during the last four years.**

The college is governed by the University of Delhi guidelines and encourages its faculty for consultancy services on honorary basis. No such revenue generation process is followed. The service provided by the faculty is essentially intellectual, conceptual and strategic in nature. Services such as formulating new syllabi, evaluation of the scripts, taking lectures are put in practice. The faculty of the college through such services however have certainly garnered much appreciation and led to many long-standing relationships with reputed institutions.

**3.5.5 What is the policy of the institution in sharing the income generated through consultancy (staff involved: Institution) and its use for institutional development?**

Consultancy is provided by the college faculty only on the gratuitous basis and no revenue is generated from the same. The college does not take any share of the honorarium of the faculty offered by the beneficiary agencies as the faculty members do offer their services after doing their due duties of the institution.

**3.6 Extension Activities and Institutional Social Responsibility (ISR)****3.6.1 How does the institution promote institution-neighborhood community network and student engagement, contributing to good citizenship, service orientation and holistic development of students?**

The college lays special emphasis on inculcating ethics and values in the students. The students are encouraged to do 'community service', visit orphanages, old age homes to be apprised of the problems faced by their members. The focus of our college is to make each student realize the essential of human worth. To familiarize the students with the Indian ethos, its vast and rich heritage and the tradition of dance, drama and music, the 'Spic Macay', Songs of India programme were initiated in the college. Such programmes have become an indispensable part of the college culture.

The college aims at grooming students to be responsible citizens of the country. In this regard, various activities are being organized like:

- Regular blood donation camps
- Swachhta Abhiyan
- Paper recycling
- Collection and donation of clothes.
- YOGA activities
- Tree Plantation Drive
- Anti-Tobacco awareness campaign

### **3.6.2 What is the Institutional mechanism to track students' Involvement in various social movements / activities which promote citizenship roles?**

The college promotes its extension activities through NSS or other committees like Eco Club and Equal Opportunity Cell. The faculty members encourage students to participate in the various activities. The college also encourages students to participate in orientation program of NSS. In the previous years, students participated in Gyanodya project of University of Delhi to travel to various parts of country and learn the socio-economic cultural values.

The college has constituted the following clubs and centres which regularly organize activities that promote citizen roles and participation in various social movements.

- Mountaineering and Trekking Club
- Vivekananda Vichar Manch
- Bhaskaracharya Cell
- Gandhian Study Centre

**3.6.3 How does the institution solicit stakeholder perception on the overall performance and quality of the institution?**

The Principal along with the faculty of the college meet students of the respective departments on a regular basis in order to understand their ongoing needs and difficulties, if any. Students are given freedom to give their constructive suggestions for the further improvement in the course structure and its proper implementation. Such informal and verbal feedback of the course from its students helps shape the curriculum even better. The college also invites suggestions from alumni through different means during the forum discussions.

**3.6.4 How does the institution plan and organize its extension and outreach programmes? Providing the budgetary details for last four years, list the major extension and outreach programmes and their impact on the overall development of students.**

The college devices various extension and projects based on the expertise available in-house and to promote student participation and sensitivity to various social issues like yoga, entrepreneurship etc. Under NSS, the college organizes various important activities for instance

- (i) Importance of cleanness
- (ii) Energy conservation and waste disposable
- (iii) Participation in relief activities during national calamities.

The college has organized six INSPIRE SCIENCE CAMPS for the school students of class XII to motivate them on research based scientific courses. "Innovation in Science Pursuit for Inspired Research (INSPIRE)" is an innovative programme sponsored and managed by the Department of Science & Technology for attraction of talent to science. The basic objective of INSPIRE is to communicate to the youth of the country the excitements of creative pursuit of science, attract talent to the study of science at an early age and thus build the required critical human resource pool for strengthening and expanding the Science and Technology system and R&D base. At least 600 school students have been benefitted by the program.



**3.6.5 How does the institution promote the participation of students and faculty in extension activities including participation in NSS, NCC, YRC and other National/International agencies?**

The Principal, faculty and other technical staff members interact with the in-coming batch of students each year during the orientation program and give insights of the course curriculum and abreast them about various extension activities offered by the college. Students are further exposed to other extension activities such as screening of film and documentaries highlighting the current social scenario and role of student to the society. Students are also sensitized through invited lectures of eminent personalities on social issues like gender inequality, women education, social security etc.

**3.6.6 Give details on social surveys, research or extension work (if any) undertaken by the college to ensure social justice and empower students from underprivileged and vulnerable sections of society?**

The students are involved from time to time in various extension activities as well. The major activities undertaken during the last five years include:

**Project Akshar** which was a social outreach project developed by Enactus SSCBS that focused on use of-wasted resources to empower people in need. Students of the college from all the streams participated whole-heartedly in this initiative. They made groups on social media to attract volunteers for the cause. New practical notebooks were created using waste sheets that are often dumped before being fully utilized. These notebooks were supplied to children in need in rural and slum sectors and for urban sensitization in premium sectors as well.

Other important outreach programs initiated by the college include organization of blood group testing camp. A database of blood group of all the students who volunteered in this initiative was prepared to be used in case of any emergency. Students were also involved in waste management projects undertaken by the college faculty during the year.

Members of eco-club of the college organized a “Swachh Bharat Abhiyan” on the occasion of Gandhi Jayanti on October 2, 2014. The members spruced up the campus and pledged to keep college and its surrounding clean. ‘Good Governance Day’ was

also observed in the college on December 22, 2014. Several students participated in the event. Various lectures of societal relevance are also organized during the academic year.

**3.6.7 Reflecting on objectives and expected outcomes of the extension activities organized by the institution, comment on how they complement students' academic learning experience and specify the values and skills inculcated.**

It is mandatory for students to be the part of any one of the extracurricular activities which help them build their personality. Their participation in various extension programmes have brought positive changes in their attitude towards people living with various diseases, slum dwellers, street children etc. Their participation in various campaign and rallies has made them understand their social responsibility. The extension activities inculcated the values of team spirit, helping each other, community participation, acknowledging their peers and group ideology.

**FOOD SAFETY EDUCATION INITIATIVE**

A complete training kit comprising of 14 posters (seven in Hindi and seven in English), leaflets, booklets were designed to help food handlers understand the basic techniques of hand washing, hygiene, temperature control, proper storage play an important role in maintaining the supply of safe food

**3.6.8 How does the institution ensure the involvement of the community in its reach out activities and contribute to the community development? Detail on the initiatives of the institution that encourage its activities?**

NSS unit of the college plays a role in reach out activities and contribute to the community development. Some of the initiatives are:

- (i) Collection of used paper and its recycling to make hand-made paper.
- (ii) Collection of used clothes from local people for under-privileged, etc.

**3.6.9 Give details on the constructive relationships forged (if any) with other Institutions of the locality for working on various outreach and extension activities.**

NSS unit of the college organizes free health check-up, blood donation camps and yoga camps for all stakeholders in college as well as nearby residents. The medical

camps provide free consultation towards diagnosis of a wide array of medical problems their year-long blood requirements.

In collaboration with Delhi Police the college organized self-defence training programmes for girl students. Students of the college participated in the campaign against smoking organized by University of Delhi.

The NSS unit of the college organized three events during the year 2012-13: Blood Donation Camp was organized in association with AIIMS. Eye Donation Awareness Drive was started where an on the spot poster making competition was organized on the topic of Eye Donation; at the end of this camp many were inspired to pledge to donate their eyes; Clean-A-Thon was organized in collaboration with Leaders for Tomorrow and Eco-Club; more than 130 students turned up for the event and the whole campus was cleaned up.

NSS unit of our college also conducted a variety of programme to sensitize youth and empower society including cloth and stationery collection drives in which we managed to collect and distribute large number of clothes, toys and stationery items to four slums across Delhi namely, Palam slums, Dwarka Sector-2 '*Rain Basera*' and Naraiana slums. Plantation Drives are held time to time and more than one hundred saplings have been planted in college premises.

### **3.7 COLLABORATION**

#### **3.7.1 How does the institution collaborate and interact with research laboratories, institutes and industry for research activities. Cite examples and benefits accrued of the initiatives - collaborative research, staff exchange, sharing facilities and equipment, research scholarships etc.**

Collaborative Research work carried out/ongoing by the faculty members of the college for which the college has taken initiatives for implementation and effective output. A few initiatives are mentioned below-

##### **Better Process Control School (BPCS)**

It is a certification course for thermal processing systems, acidification and container closure evaluation programs for low-acid canned foods and acidified foods. The U.S. Food and Drug Administration (FDA) India Office has successfully partnered with Bhaskaracharya College of Applied Sciences to complete three Better Process Control

Schools (BPCS). The BPCS is conducted at our College campus located at Dwarka, New Delhi for the manufacturers of low acid canned and acidified foods. Food professionals from across the India from reputed food industries such as MTR, Gits, Haldiram, ITC etc. have participated in the same. Instructors for this school are drawn from the Food Technology Department of our college and experts from food industry. The course can be designed as per the requirement of the organization or specific industry based on their process and container closure system. The team from Bhaskaracharya College has even conducted one such course at Negumbo, Srilanka for their food industry under the coordinatorship of Dr. Shalini Sehgal, Associate Professor, Deptt. of Food Technology

### **Add-on Course in Bioinformatics and *in silico* Drug Discovery**

The Department of Biomedical Science of the college jointly with Acharya Narendra Dev College started an add-on course in Bioinformatics and *in silico* Drug Discovery for undergraduate and post-graduate students in July 2012. The duration of course is ~128 hours. Till date three batches of students have attended the course. The aim of this course is to suit the fast track needs of bioinformatics and in-silico drug discovery divisions of pharmaceutical companies and research organizations. The course structure was formulated in consultation with the members of the course advisory committee consisting of eminent scientists from academia as well as industry. The course includes lectures and hands-on sessions on biological databases, sequence and microarray analyses, phylogenetic analysis, and importance of Bayesian statistics, molecular modeling and protein-drug docking. The course was approved by the staff council and Governing body of both the colleges.

**Some of the collaborations are also undertaken at the faculty and department level as well as on the college level.**

Examples and benefits accrued are as follows:

### **Collaboration with CSIR-Open Source Drug Discovery**

Some of the students of B. Sc. (Hons) Biomedical Science along with the students of Miranda House participated in CSIR Open Source Drug Discovery projects and workshops held from time to time from December, 2013. In all three workshops were organized as follows:

**Table 3.9: CSIR – BCAS collaborative series**

S. No	Name of the workshop	Workshop date	Venue	Remarks/ Resource Person
1	Hands-on training on 'Protein modeling & docking studies for rational drug design'	December 23-24, 2013	Institute of Genomics and Integrative Biology (IGIB)	Students from Biomedical Science course of our college and Biochemistry Department of Shivaji College
2	Molecular Modeling in Drug Discovery	July 16-18, 2014	BCAS	Dr. S. Janardhan, Scientist, Indian Institute of Chemical Technology, Hyderabad
3	Modern methods in drug design: Prospects and challenges	October 17, 2014	CSIR Headquarters	Students from Miranda House and our college participates

### Sharing facilities and equipment

Students of neighboring colleges and institutes are always welcomed to use any equipment of the college at the time when available. The school teachers of Delhi Public School, Vidyutnagar, Dadri visited our college, by the efforts of Dr. Sujata Bharadwaj of Department of Biology in order to learn and get exposed to genomic DNA isolation procedures. Some of the faculty members are involved in mentoring students of other institutes during summer vacations. Prior permission is sought from the college Principal in order to undertake these students for summer trainings.

### Research Scholarships for students

Some of our students have been receipt of scholarships from funding agencies like Kishore Vaigyanik Protsahan Yojana (KVPY) scholarship which is an on-going National Program in Basic Sciences, initiated and funded by the Department of Science and Technology (DST), Government of India to attract exceptionally highly motivated students for pursuing basic science courses and research career in science. This is an initiative taken by the students at their end and college forwards their application from time to time. Around 20 students have been benefitted by this scheme during the last four years. One or two students of B. Sc. (Hons) Biomedical Science each year after their II year studies are benefitted by the Summer Undergraduate Research Programme (SURP) of Dr B R Ambedkar Centre for Biomedical Science, University of Delhi. DU Innovation projects have the provision of giving a fellowship of Rs. 1000/- per month for ten students in a project. In the last three cycles of these innovative projects, 260 of our students have benefitted.

**3.7.2 Provide details on the MOUs/collaborative arrangements (if any) with institutions of national importance/other universities/industries/Corporate (Corporate entities) etc. and how they have contributed to the development of the institution.**

Collaboration with DBT, DST, & UGC and D.U has helped up-gradation of academic facilities and infrastructure facilities of the college viz. laboratories. The college has signed a Memorandum of Agreement (MOA) with DBT for Star College Grant which has helped to increase the infrastructure of participating Departments, Biochemistry, Biomedical Science, Food Technology and Microbiology. The grant received was also utilized to organize various workshops, seminars, symposia for the benefit of students, faculty and staff.

The U.S. Food and Drug Administration (FDA) India Office has successfully partnered with Bhaskaracharya College of Applied Sciences to complete three Better Process Control Schools (BPCS). The BPCS is conducted by our College only in India and neighboring countries. The course can be designed as per the requirement of the organization or specific industry based on their process and container closure system. One such course has been conducted at Negumbo, Srilanka for their food industry under the coordinatorship of Dr. Shalini Sehgal, Associate Professor, Department of Food Technology.

The college organized a National Seminar on ‘Solid State Chemistry and Allied Areas’ in association with Indian Association of Solid State Chemists and Allied Scientists from May 8 to 10, 2015 in the University of Delhi. Various eminent Scientists from India participated and delivered their lectures.

**3.7.3 Give details (if any) on the industry-institution-community interactions that have contributed to the establishment / creation/up-gradation of academic facilities, student and staff support, infrastructure facilities of the institution viz. laboratories / library/ new technology /placement services etc.**

The college promotes industry interactions in several ways:

A two day national symposium on “Innovations in Polymers towards Sustainability and Growth” was organized on March 2, 2012, by the **Department of Polymer**

**Science**, Bhaskaracharya College of Applied Sciences, and University of Delhi in association with National Academy of Sciences and Polymer Processing Academy on March 2-3, 2012 in the college premises.

**Department of Instrumentation** organized a workshop on ‘Wireless Robotics’ in collaboration with Nanosemi Technology & Techinest Enterprises on March 11-12, 2015. It was an endeavor to make students learn latest technologies being used in industry nowadays. Participants were introduced to concepts of wireless radio transmission, H Bridge and DC motor driver ICs. They also learnt about the different sensors as well as various receivers and transmitters used in designing a Robot. The workshop included hands on session on design of Autonomous Obstacle Follower/Avoider Robot. Demonstration of Bluetooth Controlled Robot generated a lot of enthusiasm amongst the participants.

A skill enhancement workshop on ‘Embedded Sensors and their Interface with Microcontroller’ in collaboration with SIITA (Shriram Institute of Industrial Training and Applications) was also organized by the same Department during the month of October 2014. The participants were introduced to the concept of microcontroller, sensors and their types, interfacing of PIC microcontroller with sensors. A session on fundamentals of PCB designing was also conducted.

**Industrial Visits** A Workshop on ‘Mushroom Cultivation” was conducted for the students of Microbiology and Biomedical Science at **HAIC Agro Research and Development Centre, Murthal** in order to provide a flavor and stimulus for entrepreneurship. To give students an idea about real life working conditions in industry or research in institutes, various visits were also conducted to **Yakult Plant, Kundli; Superior Industries, Faridabad and Technology Based Incubator (TBI), UDSC**. Students were exposed to various types of fermenters, sewage treatment plants, bottling and packaging units, HACCP plans etc., which supplements their theoretical knowledge and enhance understanding. Industrial Visits were also organized to **Superior Industries, (Brewery), Faridabad, (Haryana)**. The trip helped students observe microbiological processes fermentation on an industrial scale. They were able to appreciate the working of Effluent Treatment Plant also.

Department of Instrumentation organizes various industrial and educational visits every academic year. Some of them are as follows: Visit to **‘Aimil Ltd.**

**Instrumentation & Technologies**', organization working in the area of civil, Electronics, Analytical, Industrial, Healthcare was organized in November 2014. Another industrial visit to **Shriram Institute for Industrial Research**, an independent and self-sustaining multidisciplinary institute conducting R&D in the areas of special significance to industry, government agencies and other organizations was also organized. An educational visit to **Shimadzu Analytical (India) Private Limited**, a leading-edge in analytical and measuring instruments was organized in February 2015.

### **Career Counseling Cell Initiatives**

As a part of career counseling cell activities, final year students of **Food Technology** attended a conference on lab quality management at par global standard on July 26, 2013, organized by All India Food Processors Association (AIFPA), New Delhi. A session on CV making and 'How to face interviews' was conducted for all final year students of the college by Career Launcher.

A lecture on **“Effective communication”** and a **“Workshop on Business Plan”** was organized in collaboration with Apeejay School of Management, Dwarka for final year students. Students were enriched with lectures on financial and legal aspects of Business Plans. Three teams from the college participated in the event. Our students, Rahul Pandey, Raghuvendra and Bhupender Singh won 2<sup>nd</sup> prize for the Best Business Proposal on **“SATIETY EXPRESS”** and Vineet, Prashanth Kumar Dubey and Varun Kumar Rajak won third prize on **DAIRY FARMING”**. In continuation to these collaborations, students of the college also participated in a workshop on **“How to crack a case”** at Apeejay School of Management., Dwarka.

Students of B.Tech. (Polymer Science) II year participated in annual festival (TATVA-2015) of Dept. of Applied Chemistry and Polymer Technology, Delhi Technological University, Delhi (Formerly Delhi College of Engineering) held on 13-15 February 2015 and won first prize in trash to cash/blue print event and first, second and third price in polymer clay event.

**Placement Cell** of the college was instrumental in placing three students of Polymer Science in Parag Pentachem industry on March 26, 2015. Placement interviews were also arranged by the same cell for placement of students in Primer Polyfilm Ltd. on April 6, 2015. Fourteen students of the college were selected by Wipro for placement.



Several final year students appeared and secured placements in companies like TCS, WIPRO, GENPACT, HCL etc during the last four years. Students of Food Technology Department have made their niche in organizations like FICCI, Coke etc.

### **Entrepreneurship Awareness Camp**

A three day Entrepreneurship Awareness Camp (EAC) was jointly organized by the college and Innovation & Entrepreneurship Development Centre (IEDC), Acharya Narender Dev College (University of Delhi) from January 4 to January 6, 2012 and in collaboration with National Science & Technology Entrepreneurship Development Board (NSTEDB), Department of Science & Technology (Government of India).

#### **3.7.4 Highlighting the names of eminent scientists/participants, who contributed to the events, provide details of national and international conferences organized by the College during the last four years.**

For name of eminent scientists participating in workshops or symposium etc. organized by the college, please refer to Departmental ERD's.

For National Conferences please refer 3.1.6/ Departmental ERD's.

#### **3.7.5 How many of the linkages/collaborations have actually resulted in formal MoUs and agreements? List out the activities and beneficiaries and cite examples (if any) of the established linkages that enhanced and/or facilitated –**

MoA with Department of Biotechnology, Govt of India in order for the successful implementation of Star College Scheme was signed. There are various other linkages and / or collaborations which have enhanced and facilitated the following activities in a major way:

##### **(a) Curriculum development**

Faculty members of the college are nominated as the members of University Committees involved in the curriculum development. They have participated actively in designing, modifying and the implementation of the University syllabi of the degree/B.Tech courses.

##### **(b) Internship:**

Training Programme in collaboration with other agencies and University of Delhi has lead to imbibe research culture among the students. Those who are interested in jobs after graduation are also benefitted by initiatives of Career Counseling and Placement Cell of the college. Around 260 students were recipient of scholarship of Rs 1000/- every month for a year in 26 DU Innovation Projects. Two students of B. Sc. (Hons.) Biomedical Science are placed in the prestigious Summer Undergraduate Research Programme (SURP) of Dr. B. R. Ambedkar Center for Biomedical Research, University of Delhi each year.

#### **(c) Summer Placement**

As part of the curriculum, most of the second year students are placed in various research organizations or industries for their summer training programme. College duly forwards their application for the same. Faculty have been encouraging and also recommending students for further studies in India and abroad.

#### **(d) Faculty exchange and development:**

The linkages with universities help in arranging faculty exchange and academic development. The Faculty is involved in teaching, soft-skills development and research collaboration. It has improved the quality of work and its applications. Dr. Uma Dhawan, Assistant Professor of Department of Biomedical Science was awarded *Universitas 21* fellowship to pursue Master's degree in Bioinformatics from the School of Biological Sciences, College of Science and Engineering, University of Edinburgh, UK (November, 2011). Some of the faculty members are involved in undergraduate and post-graduate teaching of other institutes.

Dr. Uma Dhawan has been awarded UGC-Raman Fellowship for Post-Doctoral Research at Boston University, Massachussetts, USA for the year 2016-17.

Dr. Uma Chaudhry has been awarded UGC Research Award for the year 2016-18.

#### **(e) Research**

The college has been successful in getting research grants from various funding agencies. University of Delhi has helped in this direction by initiating research at the undergraduate level. This has helped our students in foreseeing their future career. Those who find themselves not suitable for research, try other options such as MBA etc. immediately after graduation from our college.

Recently, Dr. Balaram Pani and Dr. Manjeet Singh Barwa have been sanctioned Rs. 26,94,300/- for the project entitled “ Spatial Distribution of uranium and associated water quality parameters in groundwater/surface water of six districts” (Agra, Mathura, Mahamaya Nagar, Kanshiram Nagar, Etah and Badaun) of Uttar Pradesh by Board of Research in Nuclear Sciences (Dept of Atomic Energy) for two years (2016-18)

**(a) Introduction of new courses**

The following three more new courses have been approved by Delhi Government and University of Delhi. These courses are going to be started from academic session 2017-18.

1. B.Sc. (Hons) Chemistry
2. B.Sc. (Hons) Botany
3. B.Sc. (Hons) Zoology

Further, B.Sc. (Hons) Mathematics, B.A. (Hons) Psychology and B.Sc. (Hons) Biochemistry have been approved by the Governing Body of the college and are being pursued for approval from Delhi Government.

**CRITERION - IV**

**INFRASTRUCTURE  
AND  
LEARNING RESOURCES**

## CRITERION – IV

### INFRASTRUCTURE AND LEARNING RESOURCES

#### 4.1 Physical Facilities

##### 4.1.1 What is the policy of the Institution for creation and enhancement of infrastructure that facilitate effective teaching and learning?

The college is 100% funded by Government of NCT of Delhi and each year constant effort is made to strengthen and maintain the existing infrastructure.

The policy of the college is to plan in advance and take necessary steps as and when given an opportunity. Different committees like Finance Committee, Central Purchase Committee and Building Maintenance Committee work in tandem in these directions with the Departmental committees. Some other committees/ cells such as library, canteen, equal opportunity, student advisory committee etc. constantly endeavor for respective needs of the stake holders. The college ensures AMC for ICT related items, sophisticated lab equipment and RO system.

The college is sensitive to the progressive needs pertaining to academic, co-curricular and extra-curricular activities. In this regard, a building expansion plan has been submitted to the (PWD) Public Works Department Delhi for necessary action.

##### 4.1.2 Detail the facilities available for

- a) **Curricular and co-curricular activities – classrooms, technology enabled learning spaces, seminar halls, tutorial spaces, laboratories, botanical garden, Animal house, specialized facilities and equipment for teaching, learning and research etc.**

Facility	No(s)	Remarks
Library Block	Triple storied including one reading room	23280 volumes, 27 computers equipped with Wi-Fi connectivity and intranet facility.
Lecture Theatres	14	All are well-lit and are equipped with LCD projectors.
Conference Room	1	Well-lit and air conditioned having a public address system and a LCD projector.

Facility	No(s)	Remarks
Laboratories per department	4 with a store room	Two Labs are dedicated for experimental work and other two Labs for the Instruments. One lab equipped with LCD projector. Small rooms is used as store room/ media/ tissue culture/ dark room
Departmental Room	1	For Faculty
Audio Visual room	1	Seating Capacity of 100, fully air conditioned, overhead projector and public address system
Common staff room	1	Capacity of 40, air conditioned
Photocopy and stationary shop	1	Cater the needs of staff and students
Principal Bungalow	1	Presently being used by Department of Microbiology
Ramp	1	For differently abled persons
Power generator system	1 (140kVA)	Power backup for essential services
Water Cooler/RO systems	08	Available on each floor.
Green House	01	For housing potted plants, used as a nursery.

### **List of Major Equipments in Different Departments**

#### **DEPARTMENT OF BIO-CHEMISTRY**

- Water Distillation Apparatus
- Laminar Flow
- Water bath
- Nephelometer
- UV Spectrophotometer
- UV trans illuminator
- Autoclave
- Incubator

**DEPARTMENT OF BIOLOGY**

- Fluorescence Microscope
- Refrigerated Centrifuge
- Water Purification System
- Binocular Microscope
- UV-Vis Spectrophotometer
- Ice Flaking Machine
- Transilluminator
- Trinocular Microscope
- Multi-Chamber Water Bath
- Plant Growth Chamber

**DEPARTMENT OF BIOMEDICAL SCIENCES**

- Binocular Microscope with image projection System
- Palm Cycler
- ELISA Reader
- Digital Viscometer
- Gel Documentation System
- Thermal Cycler
- Orbital Shaker Incubator
- UV Spectrophotometer
- CentriFuge 5418R
- Water Purification System.

**DEPARTMENT OF CHEMISTRY**

- Digital Spectrophotometer
- Water Bath
- Digital pH meter
- Digital Melting and Boiling Point Apparatus
- Double Distillation Apparatus
- Polarimeter
- Vacuum Pump
- Digital Conductivity Meter
- High Precision Electronic Balance
- Fume Hood

**DEPARTMENT OF COMPUTER SCIENCE**

- Servers : Acer AR380F1, IBM X-series 206
- Computer: HP P4
- Switch for wi-fi
- 12 Printers
- Router
- Computer: Acer AMD Processor
- 2KVA UPS
- Access point for Wi-Fi
- Projector

**DEPARTMENT OF ELECTRONICS**

- Cathode Ray Oscilloscopes (CRO)
- Analog and Digital I.C. Tester
- 8086 Microprocessor kits with assembler and dissembler
- Interfacing modules and cards
- Various Communication Modules Experimental kits
- Digital Storage Oscilloscope (DSO)
- LCR Q-tester
- Microcontroller trainer
- Arduino and AVR Microcontroller Kits
- Universal Programmer
- LASER kits

**DEPARTMENT OF FOOD TECHNOLOGY**

- Mini Milk Plant
- Bakery Unit
- Trinocular Microscope
- Texture Analyzer
- Spectrophotometer
- Brookfields Viscometer
- Gas Chromatography
- Bomb Colorimeter
- Package Testing Machine
- Water purifier
- Canning Unit
- Kjeldhal Digestion Unit

**DEPARTMENT OF INSTRUMENTATION**

- Medical Ultrasound Machine trainer
- Level Transmitter Trainer set up
- Pressure gauge trainer
- Transducer and Instrumentation Trainer
- Cathode Ray Oscilloscope (CRO)/ Digital Storage Oscilloscope (DSO)
- Set up to study Orifice plate
- Circular chart recorder Trainer
- Electromagnetic Flowmeter trainer
- Design and prototype for circuit design/ bread board Trainer with single user Lab. view)
- A.C. Servomotor Study (Model No.- ACS-01)

**DEPARTMENT OF MATHEMATICS**

- Desktop and Accessories



**DEPARTMENT OF MICROBIOLOGY**

- Monocular Microscope
- Autoclave
- Laminar Flow
- Binocular Microscope
- Centrifuge Refrigerated
- Gel Documentation System
- Electronic Balance
- Incubator
- Spectrophotometer-SL-177
- B O D Incubator
- MLX-M Magnus Microscope
- UV Spectrophotometer
- Master Cycler
- Shaking Incubator

**DEPARTMENT OF PHYSICS**

- Universal Interferometer
- Ultra-Sonic Grating
- Hydrogen Spectrum
- (Complete set up)
- HALL EFFECT kit
- Quinke's Method (Complete set-up)
- Angstrom Method(Complete set-up)
- He-Ne Laser
- Iodine Spectrum
- (Complete set up)
- FOUR PROBE Method Set-up
- CRO/DSO/Function Generator

**DEPARTMENT OF POLYMER SCIENCE**

- Compression Modelling Machine
- Two Roll Mill
- UV-Vis Spectrophotometer
- Extruder Machine
- Rheometer
- Optical Microscope with Image Analyzer
- Dielectric Strength Apparatus
- Digital Melt flow index Apparatus
- Injection Moulding Machine
- Oscillating Disc
- FTIR Spectrometer
- Fume Hood Chamber

- b) Extra –curricular activities – sports, outdoor and indoor games, gymnasium, auditorium, NSS, NCC, cultural activities, Public speaking, communication skills development, yoga, health and hygiene etc.**

### **ECA**

The ECA committee and Clubs of the college coordinate various extracurricular activities throughout the year. The college houses well equipped ECA room and other extracurricular facilities which are mentioned below in the table. The ECA committee has procured various musical instruments such as drum, Electric guitar, harmonium, table, mike, speakers, and amplifiers etc.

### **Infrastructural support available for conducting ECA activities**

<b>Facility</b>	<b>No(s)</b>	<b>Remarks</b>
Audio visual room (AV room)	1	Seating Capacity of 107. fully air conditioned, overhead projector, good acoustic, LAN, Wi-Fi facility and public address system
Amphitheater	1	Seating Capacity for 400+ students
Gymnasium	1	Equipped with treadmill, cross trainer, rowing machine, 2 cycles, small multi station gym, free weights etc.
Conference Room	1	Well-lit and air conditioned having a public address system and a LCD projector.
Sports	3 acre ground, 1 lawn tennis court, 1 basket ball area, 2 badminton courts and 1 table tennis room along with indoor game facility.	An approximate 3 acre ground area is available for number of outdoor games. It can accommodate cricket ground, football court, 200 meter athletic track, long jump pit, Basket ball court, volley ball court, badminton courts and lawn tennis court.  Space for indoor games such as carom, chess and table tennis room with facility of two tables is also available. There is sufficient stock of items available for the above mentioned sports activities in the college.
Common staff room	1	It is used for meetings of NSS, different Clubs and Cell etc.

**Health and Hygiene**

The cleanliness of college is regularly monitored by college authorities and a duly formed Staff council committee-Swachhata committee. The college takes the following steps in this regard.

- Care is taken to maintain adequate hygiene in and around the cafeteria monitored by the Canteen committee. The committee also ensures the qualitative standard and the hygiene of food at reasonable cost.
- Hygiene services are outsourced by the college as per norms.
- Sweepers keep the college campus, laboratories, Library, class rooms and wash rooms clean.
- College has a Waste Management Committee which facilitates the process of waste disposal as per the rules and guidelines.
- Dustbins are placed strategically for disposal of garbage.
- The overhead and underground water tanks are cleaned on priority and regular basis.
- Maintenance of RO is done on regular basis for drinking water
- Sports club encourage sports activities and has a gym for workouts.
- The college is a No Smoking Zone. Anti tobacco cell of the college organizes awareness campaign to sensitize the staff and students.
- Yoga club organizes meditation and yoga camps for overall Health and well being.
- Regular plantation drives were carried out to keep the campus green.

**Communications Skill Development**

The college identifies growing need of effective communication skills for suitable employment and holistic personality development. In order to reach these objectives, the college library subscribes to various magazines, newspapers and books to cater to the growing areas of influence and interest of students. Reading these resources

especially for students who lack exposure earlier help them a great deal.

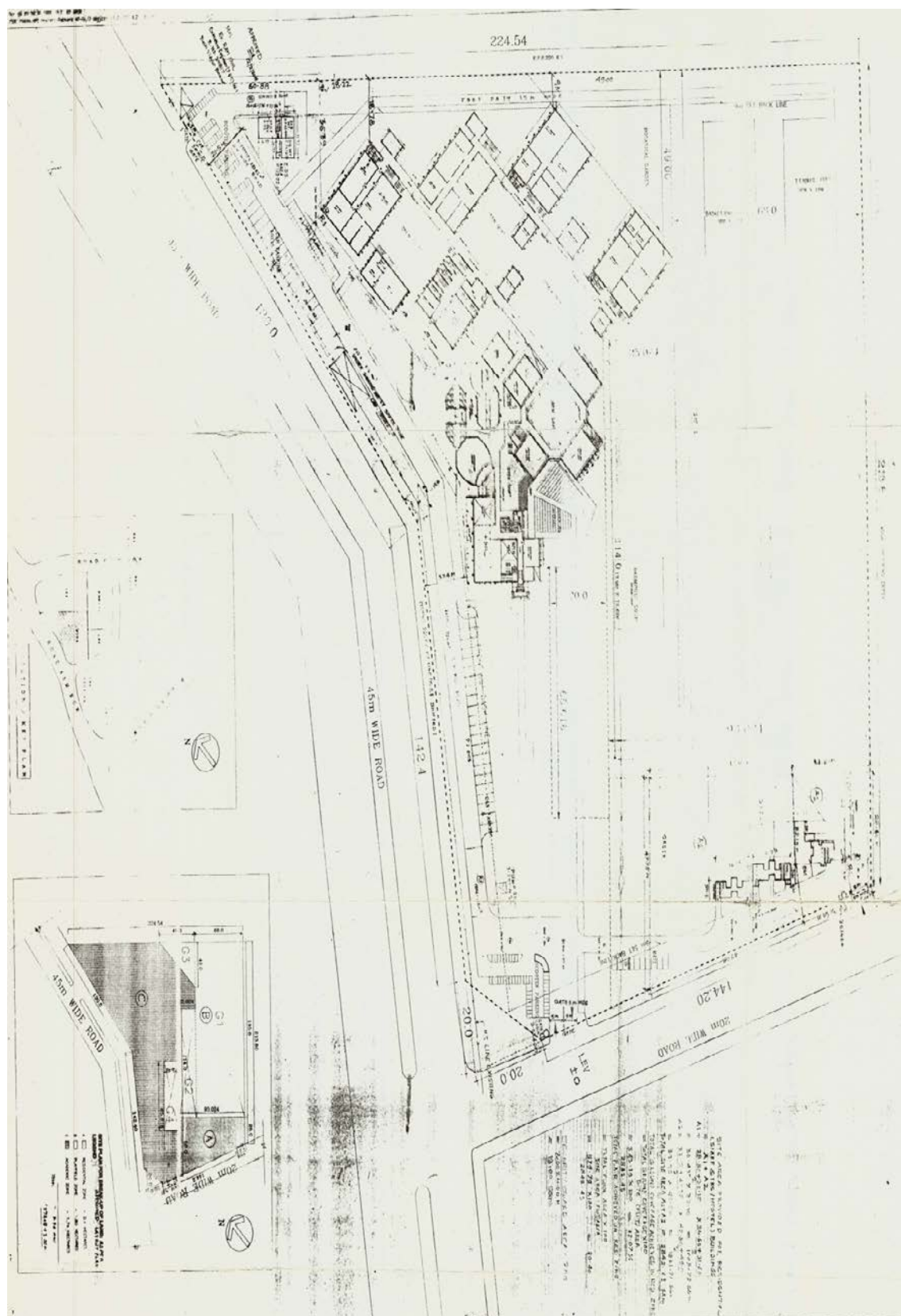
The college curriculum also offers a few subjects which cater to the specific needs related to communication skills. English language is a compulsory paper and Modern Indian Languages (MIL) can be opted by the students according to their own need assessment. The college also designs assignments and projects tailored to help students learn communication more effectively. The college also has a battery of psychological test which helps students gain more insight about themselves and their abilities as and when needed.

**4.1.3 How does the institution plan and ensure that the available infrastructure is in line with its academic growth and is optimally utilized? Give specific examples of the facilities developed/augmented and the amount spent during the last four years (Enclose the Master Plan of the Institution / campus and indicate the existing physical infrastructure and the future planned expansions if any).**

The college ensures that the available infrastructure is optimally utilized for its academic growth.

- During vacation time, college is used as an examination center for various examinations like Category 'B' and entrance exams.
- Held INSPIRE camps in the college
- Short term courses are held on weekends
- Research activities are encouraged in the college. DU innovations projects are regularly housed in the college. The college facilities are used for smooth functioning of these projects.
- The college has an herbal garden and has a tradition of felicitating its guests with potted plant grown in our own nursery.

**Master plan of the Institution is shown below:**



**Future Plan Expansion:**

- The college intends to start more new courses which have already been approved. The expansion plan includes additional class rooms, laboratories, research cabins, common staff rooms, separate common rooms for boys and girls, extension of one floor over canteen block, store room, rooms for driver and gardener over the existing building terraces and also an additional block.

Installation of Radio Frequency Identification (RFID) and centralized air-conditioner for the Library.

Proposed building plan for addition /alteration in existing college has been approved. Copy of the letter is attached herewith.

24/4/15

S.O. 18/5/15

GOVT. OF NCT OF DELHI  
DIRECTORATE OF HIGHER EDUCATION  
B-WING, 2<sup>ND</sup> FLOOR, 5 SHAM NATH MARG. DELHI-54.

**IMMEDIATE**

F.No. DHE- 14(01)/BCAS/2015-16/Const./

**Dated:**

**To**

1. The Chief Project Manager(Education), Public Works Department, Govt. of NCT of Delhi, C-Wing, Vikas Bhavan -II, Civil Lines, Delhi -110054.	2. Executive Engineer, CBDM M-122(N), PWD, Govt. of NCT Of Delhi, ITI Campus Pusa, New Delhi-110012.
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**Sub:** Construction of Additional class rooms, laboratory sets, research cabins, common staff rooms, Common Boy's & Girls's rooms . extension of one floor over canteen block, store room, drivers and malie rooms over the existing buildign terraces & also ne new block at Bhaskaracharya College of Applied Sciences . Sector-2, Dwarka, New Delhi.(SH:- Consultancy Charges, Statutory Approval & Services Connection charges to be paid to MCD & Soil Testing charges required for construction of proposed building)

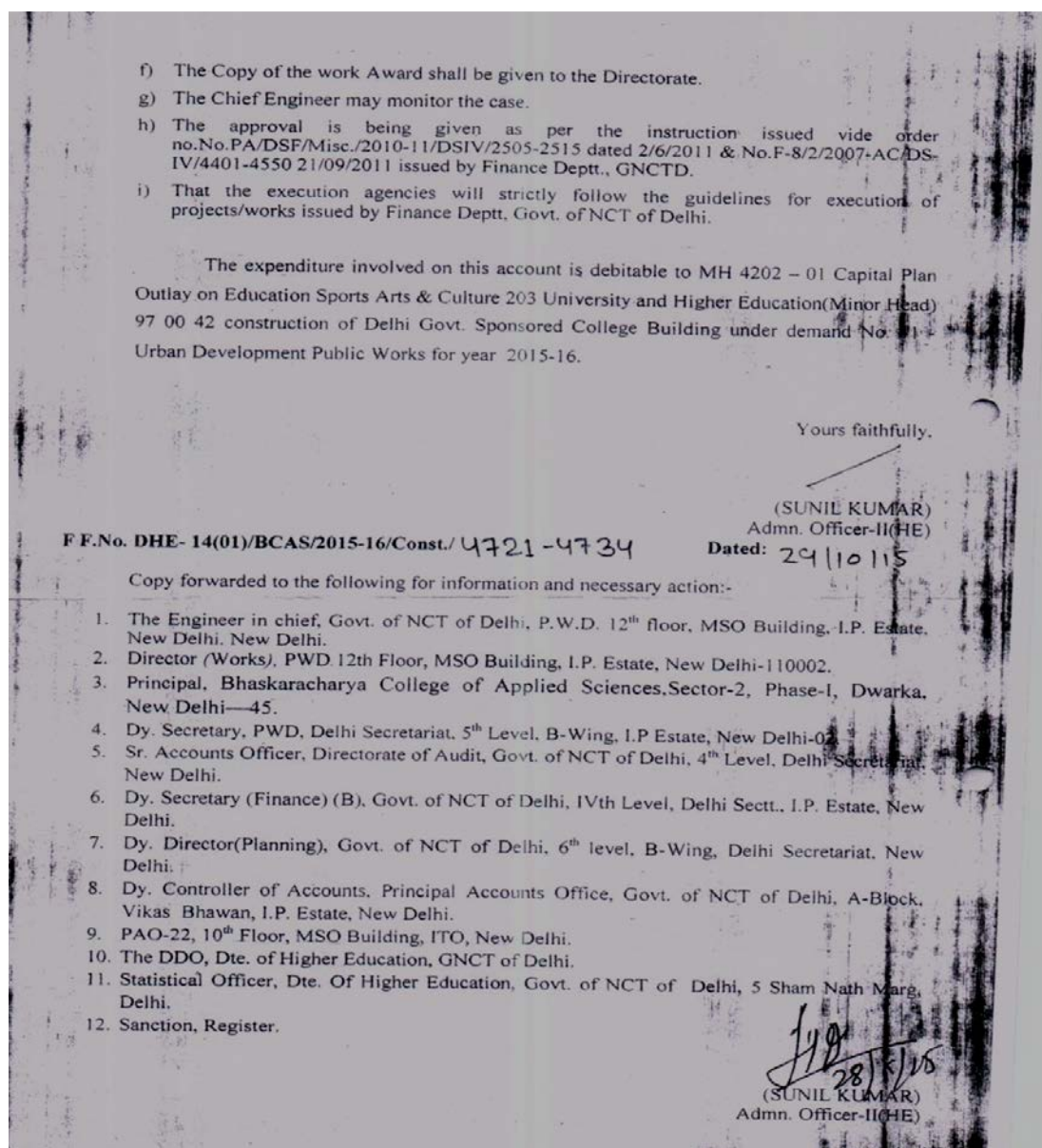
**Sir,**

Reference letter No. F.20(2)/CBMD M-122(N)/D.S/105 dated 09-02-2015 on the subject cited above, I am directed to convey the A/A & E/S of the Director, Directorate of Higher Education for incurring an expenditure of Rs. 34,14,000/-(Rs. Thirty Four Lakhs Fourteen Thousand only) including Add @ 1% contingencies for Construction of Additional class rooms, laboratory sets, research cabins, common staff rooms, Common Boy's & Girls's rooms . extension of one floor over canteen block, store room, drivers and malie rooms over the existing buildign terraces & also ne new block at Bhaskaracharya College of Applied Sciences . Sector-2, Dwarka, New Delhi.(SH:- Consultancy Charges, Statutory Approval & Services Connection charges to be paid to MCD & Soil Testing charges required for construction of proposed building)

The grant is sanctioned subject to the following conditions:-

- That all the codal formalities as per G.F.R. & CPWD manual shall be observed and a report will be sent to this Directorate.
- No escalation in cost & no deviation in the work shall be allowed.
- The relevant detail of physical and financial achievements shall be
- to this Directorate on time to time basis.
- The work shall be awarded on immediate basis and completed within time frame as mentioned in the estimate





The amount spent on development of various infrastructure facilities during the last four year is given below:

Amount spent (in Rs) on development of Various Infrastructure Facilities					
S. no	Items	2012-13	2013-14	2014-15	2015-16
1	Furniture	302304/-	-	-	-
2	Building	Maintained by PWD			
3	Equipments (Lab)	6700125/-	4471898/-	27988/-	-
4	Books	915672/-	549717/-	0	368872

The building infrastructure is being maintained by PWD.

**4.1.4 How does the institution ensure that the infrastructure facilities meet the requirements of students with physical disabilities?**

The college understands and is sensitive to the cause of the differently abled and has taken several measures to address their needs. Several ramps have been constructed to facilitate movement for the differently-abled. The wash rooms have been modified for use accordingly. A wheel chair is always available in the office for the differently abled students. Prominent signage have been put suitably to guide them. College also has two laptops with special software for visually challenged students. It also stocks some literature in Braille for assistance in the library.

**4.1.5 Give details on the residential facility and various provisions available within them:**

- **Hostel Facility/Accommodation:** NA
- **Recreational facilities, gymnasium, yoga center, etc.** NA
- **Computer facility including access to internet in hostel :** NA
- **Facilities for medical emergencies :** NA
- **Library facility in the hostels :** NA
- **Internet and Wi-Fi facility :** NA
- **Recreational facility-common room with audio-visual equipments:** NA
- **Available residential facility for the staff and occupancy:** Available for Class III workers
- **Constant supply of safe drinking water :** NA
- **Security:** NA

**4.1.6 What are the provisions made available to students and staff in terms of health care on the campus and off the campus?**

**On the Campus:** With in college premises, there is provision of first aid box in every department. There is a CGHS dispensary adjacent to the college which can be accessed in case of emergency.

**Off the Campus:** The staff has provision of medical reimbursement from authorized medical practitioner/ hospital on Delhi University panel and cash less medical facility as per CGHS norms. Both staff and students can also become members of Ward of University Centers (WUC) and use the facilities thereof.



**4.1.7 Give details of the Common Facilities available on the campus–spaces for special units like IQAC, Grievance Redressal unit, Women’s Cell, Counselling and Career Guidance, Placement Unit, Health Centre, Canteen, recreational spaces for staff and students, safe drinking water facility, auditorium, etc.**

Common facilities available in the college are:

1. Separate common rooms for boys and girls
2. Gymnasium
3. Cafeteria
4. Staff room
5. Audio visual room
6. Safe drinking water (8 RO's with cooling facility)
7. For several committees mentioned above, though there is no dedicated space per se however as and when the need arises, space is made available.

**4.2 Library as a Learning Resource**

**4.2.1 Does the library have an Advisory Committee? Specify the composition of such a committee. What significant initiatives have been implemented by the committee to render the library, student/user friendly?**

Yes, the library has an advisory committee known as the Library Committee. The committee is constituted by the Staff Council of the college.

Composition – the committee has representatives from all the departments as members and Librarian as its convener.

Some of the significant initiatives implemented by the committee are:

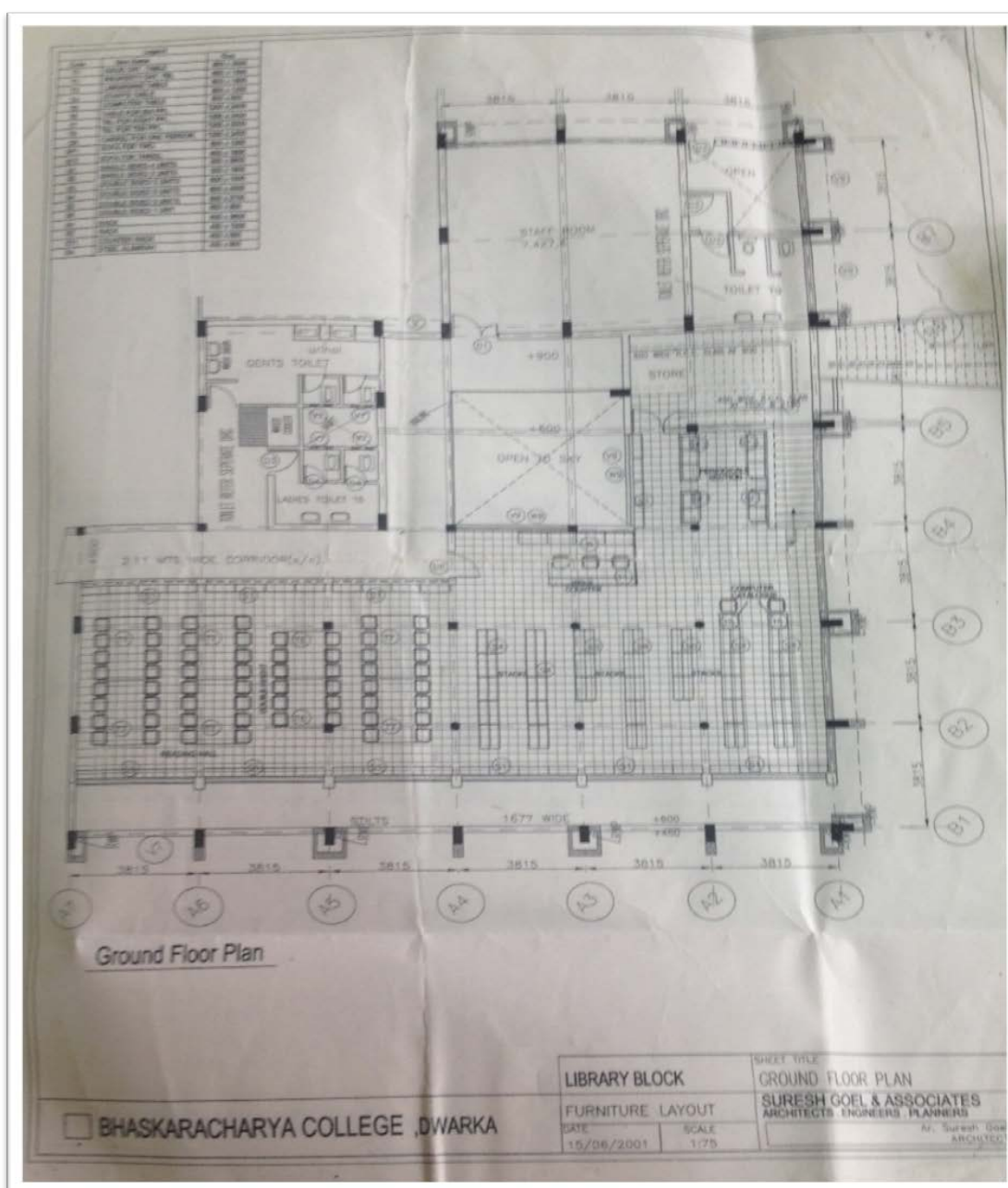
- Installation of an integrated library management software (LSEase of LibSys Corporation);
- In order to prevent library property, the committee initiated installation of CCTV cameras with recording facility;
- Formation of policies pertaining to collection development, procurement, rules and regulations for the patrons, terms and conditions for the vendors, quotation formats etc.

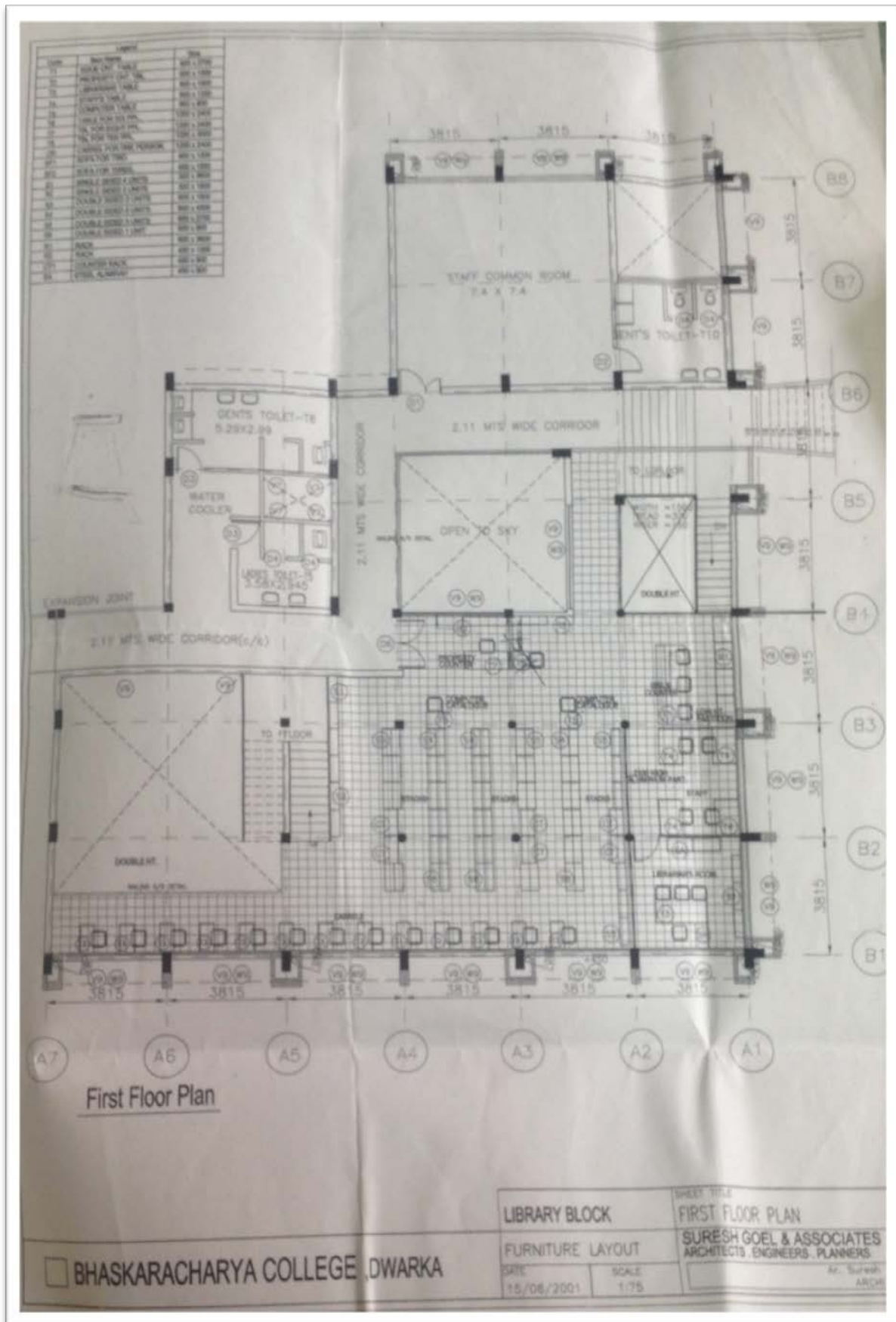
- Weeding out and write off lost and damaged books of the library stocks.

#### 4.2.2 Provide details of the following:

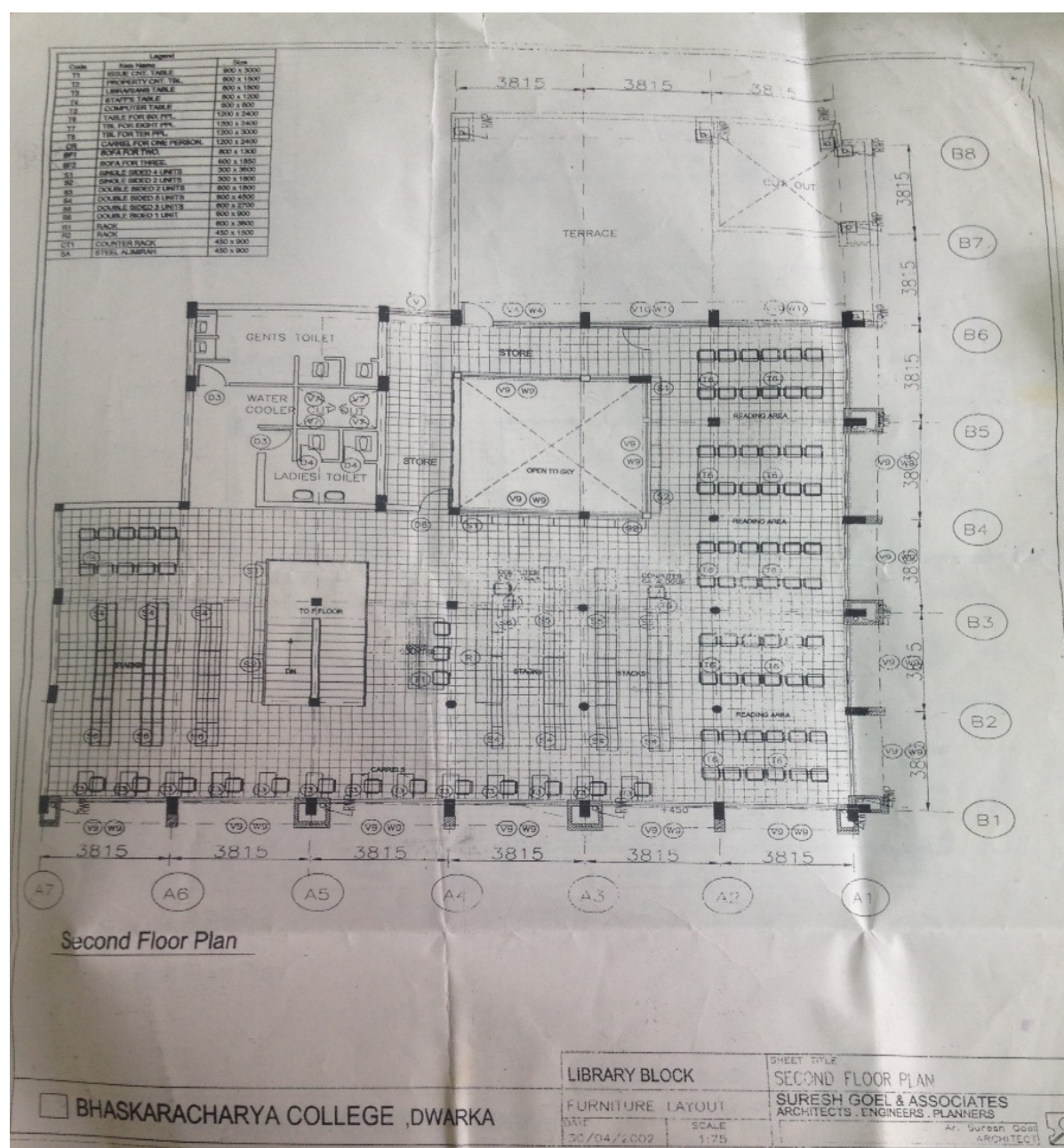
1	Total Area of the library (in Sq. Mts.)	1148.69 sq. Mts.
2	Total Reading Room Seating Capacity	177
3	Working Hours	9 am to 5.30 pm
4	Total Internet Room Seating Capacity	20
5	Total Stacking Length	3396 ft.

Layout of library is shown below:









#### 4.2.3 How does the library ensure purchase and use of current titles, print and e-journals and other reading material? Specify the amount spent on procuring new books, journals and e-resources during the last four years.

The library seeks regular recommendations of resources/ titles from respective departments to ensure the availability of current and useful titles in the library. All online resources available through Delhi University Library System are also accessible to our students.

Publishers catalogues, their websites, book reviews are used as an effective tool for collection development. The College library takes feedbacks informally from the students for library related activities as well.

The amount spent in the last four years under different heads is as follows:

Library Holdings		2012-13	2013-14	2014-15	2015-16
Text Books	Number	1425	987	Nil	486
	Total Cost (Rs.)	866757	538782	Nil	368872
Reference Books	Number	14	4	Nil	0
	Total Cost (Rs.)	48915	10935	Nil	0
Journals/ Periodicals	Number		1		
	Total Cost (Rs.)		1350		
Magazines	Number	20	19	20	18
	Total Cost (Rs.)	14567	15908	22183	20957
e_Resources	Number	NList	NList	NList	NList
	Total Cost (Rs.)	5000	5000	5000	5700
Newspapers	Number	13	13	13	13
	Total Cost (Rs.)	17282	19286	19841	19858

#### 4.2.4 Provide details on the ICT and other tools deployed to provide maximum access to the library collection?

OPAC	Yes
Electronic Resource Management package for e-journals	Yes DULS is accessible in the library via. <a href="http://crl.du.ac.in/atozn/index.php">http://crl.du.ac.in/atozn/index.php</a>
Federated searching tools to search publications	Yes As provided by UGC-Infonet and DULS (JCCC and KNIMBUS).
Library Website	Yes Library has an operational blog since December 2010 with 28000+ page views and 60+ followers. The blog link is embedded in the college website.
In-house remote access to e_Publications	Yes It is accessible via the college campus wide WiFi connectivity.

Library automation	Yes Library uses LAN based LMS with one server and six clients. However we a provision for unlimited client connections in the network. Library also uses BARCODE technology.
Total number of computers for students access	21
Printers	2
Internet bandwidth	95-100 mbps
Institutional Repository	No
Content Management	Yes, Integrated with LMS
Participating in resource sharing network/ consortium	Yes Inflibnet and DULS

#### 4.2.5 Provide details on the following items:

Average number of walk-in	Appx. 500
Average number of book issued (Last three years)	2015-16 – 20000 2014-15 - 19199 2013-14 - 24483 Total - 63682 <b>Yearly Average – 21227.3</b> (63682/3 yrs) <b>Average per day – 117.9</b> (@180 days)
Ratio of library books to students enrolled	<b>23:1</b> (@1014 students and 23280 books)
Average number of books added during last three years	<b>492</b> 2015-16 - 486 2014-15 - Nil 2013-14 - 991
Average number of login to OPAC	Approx. 400
Average number of login to e_resources	2015 – 73 (Till 05/10/15) 2014 – 40 2013 – 53 2012 – 47
Average number of e_resource downloaded/ printed	2015 – 10162 (Till 05/10/15) 2014 – 1726 2013 – 15335 2012 – 6522

Number of information literacy training organised	16 per year		
Details of weeding out of books	2015-16	32	8878.75
	2014-15	14	5034.50
	2013-14	15	3748.25
	2012-13	24	6343.38
	2011-12	37	9735.82
	2010-11	17	3368.10
	1995 to 2010	172	34508.30

#### 4.2.6 Give details of the specialized services provided by the library

Manuscripts	Nil
Reference Service	Yes
Reprography	Yes, It is near the library
ILL	No
Information deployment	Yes Through library blog and display
Download	Yes
Printing	Yes
Reading list/ Bibliography compilation	No
In-house remote access to e_resources	Yes Through DULS and UGC-Infonet
User orientation and awareness	Yes Every year first year students are oriented on the first day. This is done course wise
Assistance in searching databases	Yes
Inflibnet/ IUC facility	Yes

#### 4.2.7 Enumerate on the support provided by the Library staff to the students and teachers of the college.

Help in locating books in the library.

Previous years question papers are scanned and given to the students and teachers on demand.

Relevant cuttings of newspapers are also scanned and made available to teachers or other staff members on demand.

**Article Indexing:** Most of the articles/ papers published in the journals available in the library in bound volumes have been indexed. These are made available to the students and teachers via OPAC. This is useful to the students in doing their projects.

**Reference Service:** The library staff helps students and teachers in their reference queries.

Many of the student's activities are being organized in the library block. These include, blood donation camps, health check-up camps, yoga camps, SPIC-Macay, book exhibitions, poster making competitions etc. The library staff supports teachers and students in organizing these activities in the library block.

**Library Blog:** The library blog provides information on the library. Apart from the 'Home Page' the blog includes web pages like – About the library, Policies and Procedures, List of books, Minutes of the library committee meetings, Newspaper Clippings, Previous Years' Question papers and Online Tools and e-Resources.

The library staff organizes, on the first day of opening the college, an orientation programme for all the freshers.

#### **4.2.8 What are the special facilities offered by the library to the visually/physically challenged persons? Give details.**

Library has two Braille computers with updated software. Staff helps the physically challenged in their movement in the library.

#### **4.2.9 Does the library get the feedback from its users? If yes, how is it analyzed and used for improving the library services. (What strategies are deployed by the Library to collect feedback from users? How is the feedback analyzed and used for further improvement of the library services?)**

There is no formal method for feedback. However, feedback is taken informally through regular interaction with users and also through library blog.

The suggestions from the users are taken care of such as replacement or repair of damaged books. Faculty and students request for books and latest magazines are



considered for purchase. Information literacy programmes are organized for the first year students of all the departments to make them aware of the e-resources available to them.

### 4.3 IT Infrastructure

#### 4.3.1 Give details on the computing facility available (hardware and software) at the institution. Number of computers with Configuration (provide actual number with exact configuration of each available system)

##### Software:

Open source (SciLab, Linux, Pspice, Quicks), procured LSEase (LibSys Corp.). All other facilities available through Delhi University Computer Center (DUCC); MATLAB, Mathematica, Multisim, MathCad, LABview, Turbo C++, SPSS are installed in computers to enable the students to gain expertise in IT skills.

##### Hardware:

**Total Desktop Computers:** 209

**Total Laptops:** 368

ACCOUNTS	
<b>Acer Desktop (1)</b>	Desktop System with Intel Dual Core E220, 2.4 GHz speed, 800 MHz FSB & 1 MB L2 Cache or higher processor, 1 GB DDR-II 800 MHz or higher memory, 160 GB or higher SATA-II HDD TCO-03 Certified 17" TFT Color Monitor, Combo Drive, Gigabit Ethernet Port & 4 x USB, Keyboard & Optical Mouse with Mouse Pad
<b>Wipro Desktop (1)</b>	Desktop System with Intel Dual Core 01 E220, 2.4 GHz speed, 800 MHz FSB & 1 MB L2 Cache or higher processor, 1 GB DDR-II 800 MHz or higher memory, 160 GB or higher SATA-II HDD, TCO-03 Certified 17" TFT Color Monitor, Combo Drive, Gigabit Ethernet Port & 4 x USB, Keyboard & Optical Mouse with Mouse Pad
DEPARTMENT OF BIOCHEMISTRY	
<b>Acer Desktops (2)</b>	Intel core 2 Duo E4500 processor (2x512 MB DDR II RAM, 667 MHz 160GB SATA I HDD, 17" TGT LCD Integrated PCI 1000 Mbps, Gigabit Ethernet,
<b>HCL Busybee Desktop (1)</b>	P-IV, Samsung CD-R/RW SW-252-B, PS-2 compatible mouse, Multimedia Key Board.

<b>DEPARTMENT OF BIOLOGY</b>	
<b>HCL BUSYBEE Desktop 4450 (1)</b>	HCL Busybee 4450 Intel P4P (Ddr266 256MB PC2100 Unbuff Non Ecc, 1.44MB Mini Floppy Drive Of 8.89cm, 3.Fansink-P4 478 Nw Till 2.86hz Low Nois 40GB Ata/100 IDE HDD 5400 Rpm, Samsung Ide 52X24X52X Cdrw-2mb W/O Med Ide Harness For 1XIDE Cdrom, Label Windows Win Xp CPU P4 478 Nw 2.4ghz 400fsb 512kb Nis 2003 Prld W/Inssheet-10025685, 90da Mbd Optra-Ld I845gv-D P4 478 Matx Smpls P4 For Kme Cabinet Sonata Mini Atx Cabinet As Busybee, Scroll Mouse, 107 Keys +18 Both, Kit 15" Colour Monitor, Speaker)
<b>IBM Desktop (1)</b>	IBM Desktop-P-IV, 3.0 GHz with HT 256 MB DDR RAM, 80 GB HDD, CD-ROM Drive, OEM Optical Mouse with Scroll button, FDD, 10/100/1000 Ethernet, 104 Key OEM Keyboard, 17" TFT LCD Flat Monitor
<b>DEPARTMENT OF BIOMEDICAL SCIENCE</b>	
<b>IBM Desktop (1)</b>	P-IV-3.0 GHz with HT (256 MB DDR RAM, 80 GB HDD, CD-ROM Drive, OEM Optical Mouse with Scroll Button, FDD, 10/100/1000 Ethernet, 104 Key OEM Keyboard, 17" Color Monitor)
<b>Acer Desktops (2)</b>	Acer B2-AP-2CDE4506 (1 GB DDR RAM, 160 GB HDD, DVD-RW, PS2 Scroll Mouse, OP, WXPP, NF, SP, WF, 17" LCD MONITOR)
<b>Assembled Desktop (1)</b>	AMD Sempron™ 145 Processor, ~2.8GHz ; Memory : 2048MB RAM ; TFT 18.5; Keyboard & Mouse (Logitech)
<b>HCL Desktop (1)</b>	Intel® Core™ i3 CPU ; Memory : 2048 MB (2GB) RAM; Hdd 500GB; TFT 18.5; Mouse with Scroll Button, HCL keyboard
<b>DEPARTMENT OF CHEMISTRY</b>	
<b>Acer Desktop (1)</b>	Desktop B2-Intel core 2 Duo E4500 or higher processor (2x512 MB DDR II RAM 667 MHz, 160 GB SATA 1 HDD, 17" TFT LCD Flat Color monitor 1280 X 1024 MPR-II/TCO-03 Compliant, Internal dual layer DVD Writer, External Speaker, PS2 Scroll Mouse with Mouse Pad, Integrated PCi 1000 Mbps Gigabit Ethernet, 104 Keys OEM Keyboard, , Wi Fi Compatible 22/55 Mbps Wireless I/F Card.
<b>DEPARTMENT OF COMPUTER SCIENCE</b>	
<b>Acer Desktops (80)</b>	Veriton SFF AMD 880: PH X4 810,RAM 2GB DDR3, HDD320GB SATA, DVDROM, PS2 KBD, OPT Mouse ,PCIe, Wi-Fi Card, TFT Monitor.
<b>Wipro Desktops (3)</b>	Intel Core 2 Duo E7300 (2.66 GHz Speed, 3MB-L2 Cache, 1333 MHz FSB , 2GB DDR-II 800 MHz , 250 GB SATA-II HDD.

<b>Acer Desktops (4)</b>	Intel Core 2 Duo E4500 (2x512 MB DDR II RAM 667MHz, 160 GB SATA I HDD, 17" LCD Color Monitor MPR-II/TCO-03 Compliant, Internal Dual Layer DVD Writer, Integrated PCI 1000Mbps Gigabit Ethernet, Wi Fi Compatible 22/55 Mbps Wireless Card).
<b>HP Desktops (20)</b>	Intel Core 2 Duo E6600 (Memory 512 MB, HDD 80GB, FDD 1.44MB, Optical Drive DVD Combo, Network Adapter 10/100/1000 Ethernet, Monitor 15" TFT Color.
<b>Wipro Desktops (9)</b>	Intel Pentium D-915 (2x256 MB DDR II RAM 533 MHz, 160 GB SATA II HDD, 17" SVGA Color Monitor TCO-03 Compliant, 52x CD ROM Drive, FDD, External Speaker, PS2 Scroll Mouse, Integrated PCI 10/100/1000 Mbps Gigabit Ethernet, 104 keys OEM Keyboard)
<b>IBM Desktops (8)</b>	B2-Intel P-IV ,3.0 GHz (256 MB DDR RAM 400 MHz, 80 GB HDD, 17" SVGA Color Monitor, DVD ROM Drive, OEM Optical Mouse, FDD, 10/100 Ethernet, 104Key OEM Multimedia Keyboard)
<b>ACER AR380F1 (Computer server) (2)</b>	Acer TK R5300.076, intel Xenon 5500 family (Nehalem), Harddisk drive 3x300 GB hot plug LFF SAS with 10 k RPM Optical drive, DVD writer 16x or better storage controller Embedded RAID controller Form Factor 2U Rack Keyboard 104 Keys, Ethernet 2x10/100/1000 on board integrated networkport with with remote booting network.
<b>DEPARTMENT OF ELECTRONICS</b>	
<b>Dell Desktops (1)</b>	Model-Inspiron ONE2320, Processor- Intel® Pentium® CPU G630@2.70GHZ, Installed memory (RAM)-2.00GB, System Type-64-Bit Operating System, x64-based processor, Pan and Touch-No Pan or Touch Input is available for this display,
<b>WIPRO Desktops (5)</b>	Desktop B2-Intel Pentium D 915 or Higher Processor (2x256 MB DDR II RAM 533 MHz, 160 GB SATA II HDD, 17" SVGA Color Monitor TCO-03 Compliant, 52x CD ROM Drive, FDD, External Speaker, PS2 scroll Mouse, Integrated PCI 10/100/1000 Mbps Gigabit Ethernet, 104 keys OEM keyboard.
<b>Acer Desktops (5)</b>	B2-Intel Core 2 Duo E4500 or Higher Processor (2x512 MB DDR II RAM 667 MHz, 160 GB SATA I HDD, 17" SVGA Color Monitor MPR-II/TCO-03 Compliant, Internal dual layer DVD Writer, External Speaker, PS2 Scroll Mouse with Mouse Pad, Integrated PCI 1000 Mbps Gigabit Ethernet, 104 keys OEM keyboard, Less-17" SVGA Color monitor 0.27d dot pitch 1280X1024 Resolution, MPR/TCO 99/03 II compliant-1* 4680.00, Add-17" TFT LCD flat Monitor 1280 X 1024 resolution with 8 MS or better response time, TCO 99/03 compliant-1 *

	10264.00
<b>DEPARTMENT OF FOOD TECHNOLOGY</b>	
<b>Wipro Desktop (1)</b>	Desktop with intel core 2 Duo E7300 (266GHz speed, 1333MHz FSB) or higher processor, 2GB DDR-II, 800MHz or higher memory, 250 GB or higher SATA-II, 17" TFT color monitor, DVD writer, keyboard
<b>Acer Desktop (1)</b>	Windows OS, intel core 2 Duo E8400 (3 Ghz speed 1333 Mhz FSB and 6Mb L2 cache ) or higher gigabit Ethernet controller, 250 GB SATA or higher, 104 keys OEM keyboard and optical scroll mouse with mouse pad.
<b>HCL Computer attached with Gas chromatography (1)</b>	32 bit windows NT compatible work station software includes GC control dual channel real time cinematographic data acquisition and post run analysis software analysis include high speed acquisition audit trail validation system suitably QA/QC functions
<b>HCL Computer attached with texture Analyzer (1)</b>	P-IV computer system, monitor UPS
<b>Compaq (attached with microscope) (1)</b>	1 GB RAM, 160 GB HDD keyboard, optical mouse, multimedia kit DVD writer, 17" TFT color monitor
<b>DEPARTMENT OF HUMAN COMMUNICATION</b>	
<b>HCL BUSYBEE 4450 Desktop (1)</b>	HCL Busybee 4450 Intel P4P (Ddr266 256MB PC2100 Unbuff Non Ecc, 1.44MB Mini Floppy Drive Of 8.89cm, 3.Fansink-P4 478 Nw Till 2.86hz Low Nois 40GB Ata/100 IDE HDD 5400 Rpm, Samsung Ide 52X24X52X Cdrw-2mb W/O Med Ide Harness For 1XIDE Cdrom, Label Windows Win Xp CPU P4 478 Nw 2.4ghz 400fsb 512kb Nis 2003 Prld W/Inssheet-10025685, 90da Mbd Optra-Ld I845gv-D P4 478 Matx Smpls P4 For Kme Cabinet Sonata Mini Atx Cabinet As Busybee, Scroll Mouse, 107 Keys +18 Both, Kit 15" Colour Monitor, Speaker)
<b>DEPARTMENT OF INSTRUMENTATION</b>	
<b>HCL BUSYBEE 4450 Desktop (1)</b>	HCL Busybee 4450 Intel P4P (Ddr266 256MB PC2100 Unbuff Non Ecc, 1.44MB Mini Floppy Drive Of 8.89cm, 3.Fansink-P4 478 Nw Till 2.86hz Low Nois 40GB Ata/100 IDE HDD 5400 Rpm, Samsung Ide 52X24X52X Cdrw-2mb W/O Med Ide Harness For 1XIDE Cdrom, Label Windows Win Xp CPU P4 478 Nw 2.4ghz 400fsb 512kb Nis 2003 Prld W/Inssheet-10025685, 90da Mbd Optra-Ld I845gv-D P4 478 Matx Smpls P4 For Kme Cabinet Sonata Mini Atx Cabinet As Busybee, Scroll Mouse, 107 Keys +18 Both, Kit 15" Colour Monitor, Speaker) Monitor, Speaker

<b>Wipro Desktops (2)</b>	Intel Pentium D 915 or Higher Processor (2x256 MB DDR II RAM 533 MHz, 160 GB SATA II HDD, 17" SVGA Color Monitor TCO-03 Compliant, 52x CD ROM Drive, FDD, External Speaker, PS2 scroll Mouse, Integrated PCI 10/100/1000 Mbps Gigabit Ethernet, 104 Keys OEM keyboard.
<b>Acer Desktops (2)</b>	Intel Core 2 Duo E4500 or higher processor (2x512 MB DDR II RAM 667 MHz, 160 GB SATA I HDD, 17" SVGA color monitor MPR-II/TCO-03 Compliant, Internal dual layer DVD Writer, External Speaker, PS2 Scroll Mouse with Mouse Pad, Integrated PCI 1000 Mbps Gigabit Ethernet, 104 keys OEM keyboard, Less-17" SVGA color monitor 0.27d dot pitch 1280X1024 Resolution, MPR/TCO 99/03 II compliant-1 * 4680.00 Add-17" TFT LCD flat Monitor 1280 X 1024 resolution with 8 ms or better response time, TCO 99/03 compliant-1 * 10264.00 Wi Fi Compatible 22/55 Mbps Wireless I/F Card
<b>LIBRARY</b>	
<b>HP Compaq Desktops (20)</b>	HP Compaq Intel Core Duo E6600 (Memory 512 MB, HDD, FDD 1.44 MB, Optical Drive DVD Combo, Network Adapter 10/100/1000 Ethernet, Monitor 15" TFT Color, Keyboard 104 Keys, Mouse 2 Button USB Optical Wheel
<b>Wipro Desktops (4)</b>	C2-Intel Pentium D925 or Higher Processor (2x256 MB DDR II RAM 533 MHz, 160 GB SATA II HDD , 17" SVGA Color Monitor TCO 03 Compliant, 48X/24X/ CDRW+16X DVD Read COMBO Drive, FDD, External Speakers, OEM Optical Scroll Mouse, Integrated PCI 10/10
<b>Wipro Desktops (2)</b>	System with Intel Core 2 Duo E7300 2.66GHz Speed, 3MB-L2 Cashe, 1333MHz FSB or Higher Processor (2GB DDR-II 800 MHz or higher Memory, 250GB or higher SATA-II HDD, TCO-03 certified 17" Color Monitor, DVD Writer, Gigabit Ethernet Port and 4xUSB)
<b>Wipro (Server) (1)</b>	Server EI Intel Xeon 3.2 GHz with 2 MB L2 Cashe (2x512 MB RAM, 2x120GB SATA HDD with RAID 0& 1, 17" SVGA Color Monitor, Gigabit Ethernet, 48x or Higher CDROM)
<b>DEPARTMENT OF MATHEMATICS</b>	
<b>Acer Desktop (1)</b>	Desktop B2-Inter Core 2 Duo E4500 or Higher Processor (2x512 MB DDR II RAM 667MHz, 160 GB SATA I HDD, 17" LCD Color Monitor MPR-II/TCO-03 Compliant, Internal Dual Layer DVD Writer, External Speaker, PS2 Scroll mouse, Integrated PCI 1000Mbps Gigabit Ethernet, 104 Keys OEM Keyboard, Wi Fi Compatible 22/55 Mbps Wireless Card),
<b>DEPARTMENT OF MICROBIOLOGY</b>	
<b>Acer Desktops (2)</b>	Intel Core 2 Duo E 4500 Processor (2x512 MB DDR II RAM 667

	MHz. 160 GB SATA I HDD, 17" TGT LED Flat TCO-03 Compliant Monitor, Internal Dual Layer DVD writer, External Speaker, PS2 Scroll Mouse, Integrated PCI 1000 Mbps Gigabit Ethernet, 104 Keys OEM Keyboard, Wi Fi Compatible 22/55 Mbps wireless I/F Card
<b>HCL BUSYBEE 4450 Desktop (1)</b>	HCL Busybee 4450 Intel P4P (Ddr266 256MB PC2100 Unbuff Non Ecc, 1.44MB Mini Floppy Drive Of 8.89cm, 3.Fansink-P4 478 Nw Till 2.86hz Low Nois 40GB Ata/100 IDE HDD 5400 Rpm, Samsung Ide 52X24X52X Cdrw-2mb W/O Med Ide Harness For 1XIDE Cdrom, Label Windows Win Xp CPU P4 478 Nw 2.4ghz 400fsb 512kb Nis 2003 Prld W/Inssheet-10025685, 90da Mbd Optra-Ld I845gv-D P4 478 Matx Smpls P4 For Kme Cabinet Sonata Mini Atx Cabinet As Busybee, Scroll Mouse, 107 Keys +18 Both, Kit 15" Colour Monitor, Speaker)
<b>ADMINISTRATIVE SECTION</b>	
<b>HCL Desktop (1)</b>	Desktop System with Intel Dual Core E2220 (2.70 GHz speed, 800MHz FSB & IMB L2 cache) or higher processor, 1GB DDR-II 800 MHZ or higher memory, 160GB or higher SATA-II HDD, TCO-03 certified 17" TFT color monitor, Combo Drive, Gigabit Ethernet Port & 4xUSB, Keyboard & Optical Mouse with Mouse pad.
<b>Wipro Desktop (3)</b>	Desktop System with Pentium Dual Core CPU E5300 (2.60 GHz speed, 800MHz FSB & IMB L2 cache) or higher processor, 1GB DDR-II 800 MHZ or higher memory, 160GB or higher SATA-II HDD, TCO-03 certified 17" TFT color monitor, Combo Drive, Gigabit Ethernet Port & 4xUSB, Keyboard & Optical Mouse with Mouse pad.
<b>ACER Desktop (1)</b>	Desktop B2-Intel Core 2 Duo E4500 or Higher Processor (2x512 MB DDR II RAM 667MHz, 160 GB SATA I HDD, 17" LCD Color Monitor MPR-II/TCO-03 Compliant, Internal Dual Layer DVD Writer, External Speaker, PS2 Scroll Mouse, Integrated PCI 1000Mbps Gigabit Ethernet, 104 Keys OEM Keyboard, Wi Fi Compatible 22/55 Mbps Wireless Card).
<b>PRINCIPAL BLOCK</b>	
<b>Acer Desktops (2)</b>	Intel® Core™2 Duo CPU E4600@ 2.40GHz, 1GB DDR II RAM, 160GB HDD (SATA), Wifi Card, DVD Writer (SATA), Multimedia Keyboard, Optical Mouse, OS-Windows 8 (Pro), External Speaker 2.1 (Creative), LCD Monitor 17"
<b>HCL Desktop (2)</b>	Intel® Core™ Dual Core CPU E5800@ 3.20GHz, 1GB DDR III RAM, 500GB HDD, Wi-Fi Dongle (USB), DVD Writer, Multimedia Keyboard, Optical Mouse, HCL Wide Color Monitor 18.5"

<b>HCL Desktop(1)</b>	Intel® Core™ i5 CPU 650@ 3.20GHz, 2GB RAM DDR III, 500GB HDD, Wi-Fi dongle(USB), DVD Writer, Multimedia Keyboard, Optical Mouse, HCL Wide Color Monitor 18.5"
<b>HCL Desktop (1)</b>	Intel® Core™ Dual Core CPU E5400@ 2.70GHz, 1GB DDR II RAM, 160GB HDD, Wi-Fi Card, DVD Writer, Multimedia Keyboard, Optical Mouse, HCL Color Monitor 17"
<b>Dell Desktop (1)</b>	Intel® Core™ i3 CPU 550@ 3.20GHz, 4GB DDR III RAM, 500GB HDD, Wi-Fi Dongle(USB), DVD Writer, Multimedia Keyboard, Optical Mouse, Dell Wide Color Monitor 18.5"
<b>DEPARTMENT OF PHYSICS</b>	
<b>Acer Desktops (1)</b>	Desktop B2-Intel core 2 Duo E4500 or higher processor (2x512 MB DDr II RAM 667 MHz, 160 GB SATA 1 HDD, 17" TFT LCD Flat Color monitor 1280 X 1024 MPR-II/TCO-03 Compliant, Internal dual layer DVD Writer, External Speaker, PS2 Scroll Mouse with Mouse Pad, Integrated PCi 1000 Mbps Gigabit Ethernet, 104 Keys OEM Keyboard, , Wi Fi Compatible 22/55 Mbps Wireless I/F Card
<b>DEPARTMENT OF POLYMER SCIENCE</b>	
<b>Samsung Supergenius (1)</b>	Desktop B2 Intel Pentium D915 or Higher Processor 01 (2X256MB DDR II RAM 533 MHz, 160GB SATA II HDD, 17" SVGA Colour Monitor TCO-03 Compliant, 52X CD ROM Drive, FDD, External Speaker, PD2 Scroll Mouse, Integrated PCI 10/100/1000 Mbps Gigabit Ethernet, 104 Keys OEM Keyboard)
<b>Lenova (1)</b>	Lenova Desktop H320, Intel core i3 CPU, RAM DDR3 4GB, Harddisk SATA 1TB DVD-RW 18.5" TFT
<b>Acer Desktop (2)</b>	Desktop B2 Intel core 2 Duo E4500 or Higher Processor (2x512 MB DDR II RAM 667 MHz, 160 GB SATA 1 HDD, 17" TFT LCD Flat Color Monitor 1280x1024 MPR-II TCO-03 Compliant, Internal Dual Layer DVD Writer, External Speaker, PS2 Scroll Mouse with Mouse Pad, Integrated PCI 1000 Mbps Gigabit Ethernet, 104 Keys OEM Keyboard.
<b>TOTAL LAPTOPS IN THE COLLEGE</b>	
<b>368 HP Probook445 GI</b>	AMD A6-5350H, 8GB RAM, x64 based processor, 300 GB HDD

- **Computer-student ratio:** approx 1: 2
- **Stand alone facility:** YES (Through AMC)
- **LAN facility:** Available

- **Wi-Fi facility:** Available
- **Licensed software:** Provided by DU
- **Number of nodes/ computers with Internet facility:**  
60 LAN nodes and Wi-Fi internet connectivity in all computers. (Through AMC)
- **Any other**  
MTNL and Airtel

#### **4.3.2 Detail on the computer and internet facility made available to the faculty and students on the campus and off-campus?**

More than 150 desktops and several laptops are available to students and faculty in the campus. Faculty and students have access to internet via their personalized login details.

#### **4.3.3 What are the institutional plans and strategies for deploying and upgrading the IT infrastructure and associated facilities?**

The college upgrades the IT infrastructure and associated facilities as per the need of the core curriculum. College has three common computer labs enabled with Wi-Fi internet connectivity. The Departmental labs are also equipped with latest configured computers, printers, LCD projectors and scanners. Library has eight CCTV surveillance cameras with recording facility.

#### **4.3.4 Provide details on the provision made in the annual budget for procurement, up gradation, deployment and maintenance of the computers and their accessories in the institution (Year wise for last four years)**

At the onset of the academic year the college assimilates the budget requirements from various departments with their estimated cost and justification. The budget proposal as well as previous year's utilization certificates is forwarded to University of Delhi and Directorate of Higher Education.

There is a provision in the annual budget for maintenance of computers and related accessories. The year wise details of Annual Maintenance Contract (AMC) for computers are mentioned:



**AMC Expenditure in Different Years**

Year	AMC Amount (Rs.)
2012-13	185000/-
2013-14	185000/-
2014-15	228835/-
2015-16	235000/-

**4.3.5 How does the institution facilitate extensive use of ICT resources including development and use of computer-aided teaching/ learning materials by its staff and students?**

The college understands importance of ICT for enhanced learning and effective teaching. In order to implement ICT as a tool for learning, college has installed 25 overhead projectors.

- Wi-Fi connectivity is also being used to live stream subject related videos.
- Four virtual labs, subject related manuals, workbooks and reports were developed under the aegis of Star College Scheme of Department of Biotechnology. The same are also available on the college website.
- Library is maintaining its blog since 31/12/2010. The blog is to reach out to students and faculty of the college in particular and public at large. The blog contains all most all relevant information pertaining to the library.
- Department of Polymer Science has its own blog 'polybcasblogspot.in' which contains important information related to the department and students.
- The faculty also uses ICT tools like Skype, team viewer and other web based tools for various academic and administrative pursuits.

**4.3.6 Elaborate giving suitable examples on how the learning activities and technologies deployed (access to on-line teaching- learning resources, independent learning, ICT enabled classrooms/learning spaces etc.) by the institution place the student at the centre of teaching-learning process and render the role of a facilitator for the teacher.**

The college undertakes suitable measures to groom students to think out of the box and develop more inquisitiveness. Necessary steps have been taken to involve students in the centre of the teaching-learning process. Some of the exercises undertaken are:

- Skype sessions are carried out with eminent academicians for enhanced learning experience for the students.
- Students are given more online assignments and projects to acquire better IT skills.
- Students are also encouraged to make most of online resources for additional knowledge
- A lot of classes are conducted with the help of ICT Tools. This audio-visual approach is considered to be more effective for comprehensive learning.
- Students have access to some of virtual labs developed by the college faculty.
- Some of the curricular experiments are carried out with the help of ICT tools.
- Simulation based experiments are also carried out in the laboratories.

**4.3.7 Does the Institution avail of the National Knowledge Network connectivity directly or through the affiliating university? If so, what are the services availed of?**

The college avails the facility of National Knowledge Network of University of Delhi wherein video conferencing and virtual class room activities are conducted.

**4.4 Maintenance of Campus Facilities**

**4.4.1 How does the institution ensure optimal allocation and utilization of the available financial resources for maintenance and upkeep of the following facilities (substantiate your statements by providing details of budget allocated during last Four years)?**

The college ensures optimal allocation and utilization of the available financial resources for maintenance. Apart from the requirements from the Administration, each department proposes its budget which are collated together and presented to the Funding agency as per the due procedure . Once the funds are received their duly

distributed among all the various heads. The details of the budget allocated during the last four years are as follows:

Details of the Amount utilized during the last four Years					
S. no	Items	2012-13	2013-14	2014-15	2015-16
1	Furniture	302304/-	0	0	0
2	Building	Maintained by PWD			
3	Equipments (Lab)	6700125/-	4471898/-	27988/-	0
4	Books	915672/-	549717/-	0	368872
5	Sports	0	0	238182/-	0
6	Computers (AMC)	185000/-	185000/-	228835/-	235000
7	Horticulture	54569/-	54230/-	33988.50	0
8	IT	0	0	0	0
9	Repair and maintenance of furniture/Maintenance of lab items/Office equipment/Staff	177716/-	375365/-	133756/-	0

#### **4.4.2 What are the institutional mechanisms for maintenance and upkeep of the infrastructure, facilities and equipment of the college?**

The college ensures that all the infrastructure, facilities and equipment of the college are properly maintained. The mechanisms that the college follows for maintenance are as follows:

- The college has a caretaker who is primarily responsible for the maintenance of the building. The College also has a trained electrician and a plumber (PWD) so that all the related complaints are addressed promptly. For more specialized repair and maintenance, external resources are hired.
- AMC contracts are in place for maintenance of computers and its peripherals and high end equipment and EPBAX.
- All types of repair and maintenance of the college building come under PWD.
- There are three dedicated gardeners and other multi-tasking staff to maintain the college campus green and beautiful.
- College has high boundary wall with concertina wires all around the campus

- The college has outsourced security service to prevent trespassing and general security of the campus.
- The library has a proper system in place to weed out old books periodically.
- The college condemnation committee ensures that old instruments and unusable material is cleared out.
- The college has a generator of 140 kVa for un-interrupted power supply.
- Fire extinguishers are installed at significant and centrally located throughout the building.
- Hygiene services are outsourced by the college as per norms. The Sweepers keep the college campus, laboratories, class rooms and wash rooms clean.

#### **4.4.3 How and with what frequency does the institute take up calibration and other precision measures for the equipment/ instruments?**

The college emphasize on the regular upkeep and maintenance of the instruments and equipments. Instruments whenever required are calibrated before every use.

#### **4.4.4 What are the major steps taken for location, upkeep and maintenance of sensitive equipment (voltage fluctuations, constant supply of water etc.)?**

The college ensures safety of sensitive instruments by taking below mentioned measure:

- Constant voltage stabilizers are installed in several departments.
- All desktops have an attached UPS for uninterrupted power supply. They are also under AMC.
- College has a generator of 140 kVA.
- All sensitive scientific instruments and servers are kept in ambient conditions.
- The proper cleaning and maintenance of overhead and underground water tanks is ensured.
- Uninterrupted supply of essentials (power, water and gas) is ensured for equipments that require the same.

- The proper cleaning and maintaining of overhead and underground water tank is ensured.
- The college has a substation closer to its vicinity which can have hazardous consequences. The college has made a provision of additional covering to avoid any untoward consequences.
- The college has also installed fire-fighting tools in its premises.

**Any other relevant information regarding Infrastructure and Learning Resources which the college would like to include.**

To enrich and improve the learning curve of the students, the college undertakes several initiatives on a regular basis which have been duly mentioned throughout this criterion.

**CRITERION – V**

**STUDENT SUPPORT  
AND  
PROGRESSION**

## **CRITERION – V**

### **STUDENT SUPPORT AND PROGRESSION**

#### **5.1 Student Mentoring and Support**

The Principal, Vice Principal and faculty members mentor the students during their course of study. Students are given exposure to their respective areas of specialization. They are also trained to pursue higher studies or avail job opportunities. In this regard, various training programs are regularly organized to enable them to make informed choices regarding their career. The college tries to provide academic and administrative support to the students along with necessary infrastructure.

##### **5.1.1 Does the institution publish its updated prospectus/handbook annually? If ‘yes’, what is the information provided to students through these documents and how does the institution ensure its commitment and accountability?**

The college publishes an online version of its prospectus (available on the college website) before the start of admissions for the new academic session each year. The prospectus enlists information about the college which includes courses offered, admission guidelines, number of seats allotted to each course, fee structure, profile of every department along with the respective faculty members and infrastructure facilities. The college follows the guidelines of University of Delhi for admissions that are mentioned in the prospectus along with the reservation policies. Information regarding various staff council committees, proforma of various affidavits and certificates required for admission process is also duly mentioned in the prospectus. All the information related to admission is regularly uploaded on the college website.

The college also publishes its annual report highlighting contributions and achievements of staff members in the areas of academics, research and social arena. It also highlights achievements of students excelling in the field of academics, sports and co- curricular activities. Annual report also showcases the curricular and co-curricular activities organized by different clubs, cells and departmental societies throughout the academic session.

The college adheres to a transparent system of providing all the necessary information

through its various publications and the same information is also uploaded on college website for complete clarity.

**5.1.2 Specify the type, number and amount of institutional scholarships / free ships given to the students during the last four years and whether the financial aid was available and disbursed on time?**

- Student Advisory and PR Committee recommends and ensures timely disbursement of fee concession to the deserving candidates on annual basis.
- Students with disabilities are given scholarships by National Handicapped Finance and Development Corporation (NHFDC).
- Scholarships are offered to SC/ ST/ OBC/ Minority students by Department of Welfare of the SC, ST, OBC and Minorities, Govt. of NCT of Delhi.
- Scholarships are also available from Vice Chancellor's Student fund.
- Two memorial awards (Deepika Wanganoo & Saurabh Grover, initiated by their parents) are conferred to students who secure first position in B.Sc. (H) Electronics and B.Sc. (H) Physics respectively.

**The numbers of students who have availed scholarships/ fee concession in the last four years are as:**

S. No.	Year	Number of student beneficiaries			
		Fee Concession	VC Student Fund	NHFDC	Total
1	2015-16	32	-	-	32
2	2014-15	41	02	01	44
3	2013-14	25	-	01	26
4	2012-13	17	-	-	17

**5.1.3 What percentage of students receives financial assistance from state government, central government and other national agencies?**

Students belonging to the SC/ST/OBC/Minorities and differently-abled students receive financial assistance from Govt. of NCT of Delhi. Institute supports them by providing necessary documents and forwarding their application to the concerned



agencies. The disbursement is made available directly to the applicant.

#### **5.1.4 What are the specific support services/facilities available for:**

##### **Students from SC/ST, OBC and economically weaker sections:**

- Under the funds received from UGC, special/ remedial classes have been organized for students in different subjects.
- Scholarships are offered to SC/ ST/ OBC/ Minority students studying in the college by Department for Welfare, GNCT Delhi.
- Students from economically weaker sections are provided concession in fees and other necessary aid on a case-to-case basis.
- There is a liaison officer to supervise admission and any other related activities for the SC /ST /OBC students.
- There is an Anti Discriminatory cell for the students.

##### **Students with physical disabilities**

- There is an Equal Opportunity cell for differently-abled students.
- As per admission guidelines, seats are also reserved for PwD students.
- The college building is friendly for differently-abled. Shaded ramp has been constructed in the college for the students to reach conveniently at higher floors. Wheel chair facility is also available in the administrative office near the main entrance for ready assistance.
- Special washrooms have also been constructed for their convenience.
- There is a complete fee waiver for them. In the academic year 2013-2014, 04 students have availed this benefit.

##### **Overseas students**

The college adopts the policy of University of Delhi guidelines for admission for overseas students. The policy treats all students including those who have completed their schooling from an Indian board as foreign students for the purpose of their registration/ admission in various departments and colleges of the University. Also they may be considered for admission under 5% quota prescribed for the foreign

students. The foreign candidates seeking admission to undergraduate courses can apply directly to Deputy Dean, Foreign Students and University of Delhi. Email: dydean\_fs@du.ac.in.

### **Students to participate in various competitions / National and International**

- The college extends full support to the students who wish to participate in various extracurricular and co-curricular activities through its ECA committee, sports committee, various clubs, cells and societies.
- Membership fee of Rs100 is collected per student for some of the clubs being run in the college. Funds thus collected are later made available to organize respective club activities in the college.
- The students are also trained for participating in various competitive extracurricular activities and help is sought from the experts of those fields.

### **Medical assistance to students: health center, health insurance etc.**

- First aid facility is available in each department of the college.
- A CGHS dispensary is located adjacent to the college.
- Students can approach WUS health centre for medical assistance, if the need be.

### **Organizing coaching classes for competitive exams**

Though the college has no formal system in place for providing coaching classes per se to students; but all the teachers in their respective individual capacity mentor students for competitive exams, job opportunities and personality development.

### **Skill development (spoken English, computer literacy, etc.)**

- Remedial classes have been conducted time to time in the college.
- Under the CBCS curriculum, English is a mandatory part of the syllabus for all students.
- In an attempt to improve their written and spoken skills in English, college organized a workshop for the students. The subject experts from English Mate (a venture of Hindustan Times) delivered talk and conducted quiz during the event.

- The ICT tools are used in facilitating learning process.
- The college library organizes an orientation program to guide and encourage students to use N-List e-resources.
- The librarian conducts ‘information literacy’ programs for the first year students of all the departments to make them aware of the e- resources available to them.
- Kindly refer to 1.2.1 for further information about the skill development activities organized for the benefit of the students.

**Support for “slow learners”**

- “Not all students share the same learning curve”. The faculty members understand this aspect and accordingly provide necessary support to these students in their respective capabilities.
- Grievances of the students are duly addressed and taken care at various platforms.

**Exposures of students to other institutions of higher learning/corporate/business house etc.**

- Seminars/ workshops/ conferences/ invited talks etc. are regularly organized by the college. The students are also encouraged to participate in academic events outside the college.
- Every year, the students undergo trainings/ internships in the prestigious research organizations and industries related to their area of discipline and interest.
- Departments also organize educational day trips/ exhibitions and other academic programs to get students acquainted with latest developments in their respective areas of discipline.

**Publication of student magazines**

The college annually publishes its college magazine, “Resonance”. It highlights various activities carried out through the year by the students. It also acts as a platform for showcasing and expressing creative literary inputs and sharing interesting

and inspiring anecdotes by students and staff members. The students are encouraged to pen their thoughts, share their views and hone their literary and creative skills through the college magazine. The magazine is released each year on the college Annual Day. The student editorial board under the guidance of magazine committee motivates the students through notices, posters and personal interaction to submit articles, poetry, photographs, paintings etc.

The students are throughout involved in the entire process of bringing out each edition. From designing the cover page to screening, editing and designing the magazine, is largely a student driven process.

Department of Microbiology also publishes its magazine, "Life under Lens". The magazine acts as an interactive platform for students and teachers to highlight both academic as well as co-curricular activities carried out through the academic session.

**5.1.5 Describe the efforts made by the institution to facilitate entrepreneurial skills, among the students and the impact of the efforts.**

- The college strongly advocates the cause of youth to be economically self-reliant. In order to impart exposure and inculcate entrepreneurial skills, various departments of the college have organized workshops, events and seminars in different fields.
- The college has facilitated the request of two students of B.Sc. (H) Instrumentation for incubator in one of the scheme of Ministry of Micro, Small and Medium Enterprises (MSME). The students were given permission to work on the project in collaboration with IIT Delhi, Delhi Technological University and SGTB Khalsa College, University of Delhi. With a total team comprising of six people, they have developed smart waste segregating machine, e-collectors. These machines accept the waste material from the users and segregate the waste according to their physical characteristics. Machine terminates the process by awarding each user for their material in the form of free gift voucher.
- These activities broaden the mental horizons of the students to make more informed decisions regarding their careers choices. The efforts of the college are reflected in the increasing number of placement in recent years. An effort

is made to lay strong foundation during the college tenure to enable students to pursue entrepreneurship goals later in life.

**5.1.6 Enumerate the policies and strategies of the institution which promote participation of students in extracurricular and co- curricular activities such as sports, games, Quiz competitions, debate and discussions, cultural activities etc.**

- As mentioned in the preceding paragraphs, students are provided additional support in case of their participation in various co-curricular and extracurricular activities.
- Various musical and related instruments and sports gear are also purchased by the college for effective participation of students.
- The college has various clubs and cells, which not only provides students to showcase their talents but the support provided by the college also helps in honing their skills. These opportunities provide much needed exposure and experience to students.
- Annually departmental and college outstation trips are also organized to give a varied exposure to students.
- The college also has a well-equipped gym to promote healthier lifestyle in the students.

**5.1.7 Enumerating on the support and guidance provided to the students in dies preparing for the competitive exams, give details on the number of students appeared and qualified in various competitive exams such as UGC-CSIR- NET, UGC-NET, SLET, ATE / CAT / GRE / TOFEL / GMAT / Central /State services, Defense, Civil Services, etc.**

Being an undergraduate college, most of the students prefer to pursue higher studies. Some of the above mentioned competitive exams are not applicable for the students. The students interested in taking up these exams follow it independently. However, faculty members regularly counsel the students and provide the available material and guidance for these exams. Also, through necessary recommendations, strengthen their chances in these competitive examinations.

**5.1.8 What type of counseling services are made available to the students (academic, personal, career, psycho-social etc.)**

The college has a student counseling system in addition to some of the below mentioned staff council committee which aids in student counseling.

- Student advisory and PR committee: This committee renders advice as and when necessary to students in matters relating to the scholarships and fee concession.
- Career Counselling: The Career Counseling and Placement Cells of the college ensure that students get adequate exposure to face the challenges with respect to the current employment scenario.
- NSS activities: NSS attempts to instill ethics and values amongst the students to make them better human beings and global citizens.
- Women Development Cell: This committee aims at allowing its members to have a balanced view about the various gender issues that are a part of everyday living. It helps to widen the perspective on topics of sexuality, patriarchy and gender

**5.1.9 Does the institution have a structured mechanism for career guidance and placement of its students? If 'yes', detail on the services provided to help students identify job opportunities and prepare themselves for interview and the percentage of students selected during campus interviews by different employers (list the employers and the programmes).**

- Yes, the college has a structured mechanism for career guidance and placement of the students. The placement cell is constituted in the Staff Council to help students to find suitable jobs. It also acts a bridge between the students and the central placement cell of the DU (CPC).
- This committee remains in contact with various organizations through the alumni association and invites various companies for interactions regarding training and placements of the students.
- The cell conducts various lectures and workshops on career enhancement skills. Some of the recently held were on 'Effective Communication', 'How to

Face Interviews', a session on CV Making by experts from Apeejay School of Management, Career Launcher, respectively to name a few.

- The placement cell maintains a database of relevant information for its final year students. As a result of its endeavors, the CPC has been able to organize campus interviews with some of the college students been placed at reputed companies like Wipro, M/s. Parag Pentachem, M/s. Primer Polyfilm etc.
- A strong emphasis is laid on to apprise students about different career options and preparing them for job interviews. The students are encouraged to participate in career related events held at other institutes to have more experiential learning.

**5.1.10 Does the institution have a student grievance redressal cell? If yes, list (if any) the grievances reported and redressed during the last four years.**

The college has a public grievance redressal cell and other staff council committees, like Student Advisory and PR Committee, Discipline Committee, College Complaint Committee etc. to attend the grievances, if any. The college grievance committee provides all necessary help to the aggrieved students.

**5.1.11 What are the institutional provisions for resolving issues pertaining to sexual harassment?**

The college has an Internal Complaints Committee against Sexual Harassment. The committee comprises of two teachers, two nonteaching staff, three student representatives and two co-opted members from outside the college with known contribution to women's issues as per the ordinance XV (D) of University Delhi. The committee looks into the complaints of sexual harassment cases, if any in a suitable manner.

**5.1.12 Is there an anti-ragging committee? How many instances (if any) have been reported during the last four years and what action has been taken on these?**

Yes, the college has an Anti-Ragging Committee formed in the staff council comprising of senior faculty members, NSS in-charge and sports in-charge as per ordinance XV(C) of University of Delhi.

- Every year during admissions, the students and their parents mandatorily submit anti-ragging affidavits.
- Names and contact numbers of committee members are displayed prominently across the college and also find a mention on the website.
- Seniors students are also roped in every year to maintain decorum and discipline in the college.
- Till date, no case of ragging has been reported in the college.

**5.1.13 Enumerate the welfare schemes made available to students by the institution.**

- The college provides financial help to the students of economically weaker sections (EWS) by giving concessions in the fee every year.
- Grievance committee of the college addresses complaints, if any.
- Remedial classes are also conducted for the students from under-privileged sections.
- The college has an Equal Opportunity cell and an Anti discriminatory cell. All the teaching and non-teaching staff of the college also extends help to the differently-abled students.
- Canteen committee of the college regularly monitors the quality, hygiene and price of the products sold in the college canteen for the health and welfare of the students.
- Gym facility is also available in the college. The college has an active Yoga club that organizes yoga camps for the students.
- All the students have been provided with a free Wi-Fi facility with individual log in.

**5.1.14 Does the institution have a registered Alumni Association? If 'yes', what are its activities and major contributions for institutional, academic and infrastructure development?**

- The college has an Alumni Association but it is not registered.
- Annual Alumni meet is held in the college.



- Every year distinguished alumnus is honored on the Annual Day function of the college.

## 5.2 Student Progression

### 5.2.1 Provide the percentage of students progressing to higher education or employment (for the last 4 batches) highlight the trends observed.

The college offers only Bachelor of Science programme. There is no mechanism as per the University of Delhi norms to monitor student's progression. The approximate data is as follows:

Student progression (2011-2015)	Percentage (%)
UG to PG	70-90
Employed	10-30
– Campus selection	
– Other than campus recruitment	

### 5.2.2 Provide details of the programme wise pass percentage and completion rate for the last four years (cohort wise/batch wise as stipulated by the university)? Furnish programme-wise details in comparison with that of the previous performance of the same institution and that of the Colleges of the affiliating university within the city/district.

Course	Pass Percentage			
	2009-2012	2010-2013	2011-2014	2012-2015
Biomedical Science	100	81.82	63.16	62.50
Computer Science	96.97	97.92	94	68.52
Electronics	89.66	48.72	50	50
Food Technology	100	100	91.30	81.25
Instrumentation	100	85.71	56.86	32.14
Microbiology	100	75	84.85	73.33
Physics	100	53.85	64.29	56.86
Polymer Science	100	100	74.14	43.33

### 5.2.3 How does the institution facilitate student progression to higher level of education and/or towards employment?

- Most of departments of the college have their associated parent departments in the main campuses of the University. The college facilitates the students' progression to higher education by arranging interaction events with the senior teachers from the parent departments and the alumni of the college who are

pursuing higher studies.

- Placement Cell and Career Counseling Cell regularly organizes workshops, seminars, and invited talks etc. which help students with a head start due to the necessary exposure provided through these activities.
- The industrial visits and summer trainings planned by the departments provide students with a hands-on exposure and also help in staying in trend with what is latest in the employment industry.

#### **5.2.4 Enumerate the special support provided to students who are at risk of failure and drop out?**

- Students who are at risk of failure and drop out are given due support by the respective departments.
- The concerned committees also address their financial problems, if any.

### **5.3 Student Participation and Activities**

#### **5.3.1 List the range of sports, games, cultural and other extracurricular activities available to students. Provide details of participation and program calendar, Students admitted in the category wise and their participation in different events, Participation of Students/Teachers/Staff in interdepartmental and intradepartmental games**

#### **• SUMMARY OF SPORTS ACTIVITIES IN 2015-16**

##### **I. Tournament Organized by College**

<b>Games/Tournament</b>	<b>Organizer</b>	<b>Participation</b>	<b>Winners</b>	<b>Runners Up</b>
3 <sup>rd</sup> Bhaskaracharya College Cricket Tournament	Bhaskaracharya College	12 Colleges viz. Venkateshwara College, Ram Lal College (RLA), PGDAV college, College of vocational studies (CVS), Delhi College of Arts & Commerce, Khalsa College (E), Shyam Lal College, DDU, Guru Gobind Singh college of Commerce, NSIT, Bhagat Singh college and Bhaskaracharya College of Applied Sciences	RLA College	CVS

## II. Participation in Inter-college Games organized by Delhi University

- **Surender Pal Singh** of B.Tech Food Technology won **silver medal** in 20 km walk in Inter-college athletics meet at Delhi University ground

## III. Participation of Students/Teachers/Staff in interdepartmental and intradepartmental games at BCAS (2015-16)

S. No.	Sports Disciplines( Students)	Events
1.	Cricket (Boys) and Cricket (Girls)	----
2	Basketball Boys, Basketball Girls	-----
3	Volley Ball Boys, Volley Ball Girls	-----
4	Badminton Boys, Badminton Girls, Badminton Boys, Badminton Girls	Singles and Doubles
5	Table Tennis Boys, Table Tennis Girls, Table Tennis Boys, Table Tennis Girls	Singles and Doubles
6	Chess	Mixed (Boys + girls)
7	Kabaddi	Boys
8	Athletics	100 m (Boys & Girls), 200 m (Boys & Girls), 400 m (Boys & Girls), 800 m (Girls), 1500 m (Boys), Long jump (Boys & Girls), Shot put (Boys & Girls), Discus Throw (Boys) and 4 X 100 m relay (Boys & Girls)

S.No.	Sports Disciplines( Staff)	Events
1	Badminton Staff (Men), Badminton Staff (women)	Singles and doubles
2	Table Tennis staff (Men), Table Tennis (Women)	Singles and doubles
3	Athletics	100 m (Men & women) below 35 years, 100 m (Men & women) above 35 years, 100 m walk for above 50 years, Long jump (Men & women) and Shot put (Men & women).

**IV. Staff Participation at Inter College Tournament**

Games/Tournament	Organizer	Position
1 <sup>st</sup> Bhaskaracharya Inter college-staff cricket tournament (for teachers and staff)	Bhaskaracharya College of Applied Sciences, University of Delhi	Semi-finalists

- SUMMARY OF SPORTS ACTIVITIES IN 2014-15**

S.No.	Sports Disciplines Students	Events
1.	Cricket (Boys) and Cricket (Girls)	
2	Basketball Boys, Basketball Girls	
3	Volley Ball Boys, Volley Ball Girls	
4	Badminton Boys, Badminton Girls, Badminton Boys, Badminton Girls	Singles and Doubles
5	Table Tennis Boys, Table Tennis Girls, Table Tennis Boys, Table Tennis Girls	Singles and Doubles
6	Chess	Mixed (Boys + girls)
7	Athletics	100 m (Boys & Girls), 200 m (Boys & Girls), 400 m (Boys & Girls), 800 m (Girls), 1500 m (Boys), Long jump (Boys & Girls), Shot put (Boys & Girls), Discus Throw (Boys) and 4 X 100 m relay (Boys & Girls)

**Surender Pal Singh** of B.Tech Food Technology won **bronze medal** in 20 km walk in Inter college athletics meet at Delhi University ground

- SUMMARY OF SPORTS ACTIVITIES IN 2013-14.**

**I. Tournament Organized by College**

Games/Tournament	Organiser	Participation	Winners	Runners Up
2 <sup>nd</sup> Bhaskaracharya College Cricket Tournament	Bhaskaracharya College	12 Colleges viz. Venkateshwara College, Ram Lal College (M), PGDAV (M) college, PGDAV (E) college, Delhi College of Arts & Commerce, Khalsa College (E), Shyam Lal College, Deshbandu College, Agarsen College, NSITC, Keshav Mahavidhyala, and BCAS	Sri Venkateswara College	PGDAV (E)

## 1. Participation in Inter-college Games organized by Delhi University

The college team participated in Athletics, Basketball, Volleyball, Football, Chess, Cricket, Table tennis and Badminton.

## 2. Participation of Students/Teachers/Staff in interdepartmental and intradepartmental games at BCAS

S. No.	Sports Disciplines Students	Events
1.	Cricket (Boys) and Cricket (Girls)	
2	Basketball Boys, Basketball Girls	
3	Volley Ball Boys, Volley Ball Girls	
4	Badminton Boys, Badminton Girls, Badminton Boys, Badminton Girls	Singles and Doubles
5	Table Tennis Boys, Table Tennis Girls, Table Tennis Boys, Table Tennis Girls	Singles and Doubles
6	Chess	Mixed (Boys + girls)
7	Athletics	100 m (Boys & Girls), 200 m (Boys & Girls), 400 m (Boys & Girls), 800 m (Girls), 1500 m (Boys), Long jump (Boys & Girls), Shot put (Boys & Girls), Discus Throw (Boys) and 4 X 100 m relay (Boys & Girls)

S. No.	Sports Disciplines Staff	Events
1	Badminton Staff (Men), Badminton Staff (women)	Singles and doubles
2	Table Tennis staff (Men), Table Tennis (Women)	Singles and doubles
3	Athletics	100 m (Men & women) below 35 years, 100 m (Men & women) above 35 years, 100 m walk for above 50 years, 800 m (Men & women) Long jump (Men & women) and Shot put (Men & women).

• **SUMMARY OF SPORTS ACTIVITIES IN 2012-13**

**1. Tournaments Organized by College**

Games/Tournament	Organizer	Participation	Winners	Runners Up
1 <sup>st</sup> Bhaskaracharya College Cricket Tournament	BCAS	8 Colleges viz. Motilal College (M), Ram Lal College (M), PGDAV (M) college, PGDAV (E) college, Delhi College of Arts & Commerce, Khalsa College (E), Shyam Lal College and BCAS	PGDAV (E)	Motilal College (M)

**2. Participation of Students/Teachers/Staff in interdepartmental and intradepartmental games at BCAS**

S.No.	Sports Disciplines Students	Events
1.	Cricket (Boys)	
2	Basketball Boys, Basketball Girls	
3	Volley Ball Boys, Volley Ball Girls	
4	Badminton Boys, Badminton Girls, Badminton Boys, Badminton Girls	Singles and Doubles
5	Table Tennis Boys, Table Tennis Girls, Table Tennis Boys, Table Tennis Girls	Singles and Doubles
6	Chess	Mixed (Boys + girls)
7	Athletics	100 m (Boys & Girls), 200 m (Boys & Girls), 400 m (Boys & Girls), 800 m (Girls), 1500 m (Boys), Long jump (Boys & Girls), Shot put (Boys & Girls), Discus Throw (Boys) and 4 X 100 m relay (Boys & Girls)
S.No.	Sports Disciplines Staff	Events
1	Badminton Staff (Men), Badminton Staff (women)	Singles and doubles
2	Table Tennis staff (Men), Table Tennis (Women)	Singles and doubles
3	Athletics	100 m (Men & women), 800 m (Men) Long jump (Men & women) and Shot put (Men & women).

**DETAILS OF PARTICIPATION UNDER ECA:**

The college supports and promotes holistic growth of the students. Hence, the students are encouraged to participate in various co-curricular and extra-curricular activities. Kindly find mentioned below the representative list of participation of the students in myriad of activities:

**List of Events organized by ECA Committee in the period 2012-2016**

S.No	Year	Students/ Team	Participation	Remarks
1	2015-16	Dance Club	Acharya Narendra Dev College, IIT-Delhi, Indian School of Business and Finance (ISBF), National Law University	
			Vipika Dhawan (Computer Science III Year) participated in the Solo Dance Competition during Srijan - 2016.	III Prize
			Nupur (Food Technology I Year) participated in the Dance Face-Off competition during Srijan – 2016	II Prize
		Dhriti-The Rock Band	Inter college cultural festival 'Srijan 2k16'	
		Moksha- The Choir Group	'Songs of India'	III prize
2.	2014-15	Music Club	Rendezvous, IIT Delhi	
		Music Club	VFEST, Ansal University, Gurgaon	
		Moksha- The Choir Group	Rendezvous, Vande matram, a DU Cultural Council event at DDU college	
		Dhriti and Moksha group	Antardhwani- Cultural Fest of University of Delhi	Dhriti -III position Moksha -II position
		Manav Doshi - member of Music club	Vocal Solo event, Antardhwani- Cultural Fest of University of Delhi	I position
		Xquisite -Dance team	Institute of Home Economics, Delhi college of Arts and Commerce, Kalindi college, Mata sundari college, PGDAV college, Bhartividyaapeeth	
		Debate club	Inter College competition held at BCAS	Anshu Bidhuri - I position Satyendra Singh - III position
3	2013-14	Dance group	Delhi College of Arts and Commerce	Certificate of scholarship from Dance Workx

S.No	Year	Students/ Team	Participation	Remarks
				performing Arts Academy
		Debate and Quiz club	NSIT, Dwarka	I, II and III prize
		Debate and Quiz club	Bharti College	III prize
		Debate and Quiz club	National level college Debate completion at SBS (PG) Dehradun	
		Dramatics and Fine Arts club	Competition at Gandhi Bhawan, University of Delhi- "Sarvodaya- Rise of all"	III position
		Dramatics and Fine Arts club	Apeejay College, Dwarka	II position
		Dramatics and Fine Arts club	performance in Antardhwani :- special play on FYUP	
		Dramatics and Fine Arts club	Stage play at Shaheed Rajguru College of Applied Science	
4.	2012-13	Debate and Quiz Club	College team was selected for Grand Finale to be held in IIT Delhi	
		Music club	Band competition held in Northern India Engineering College, Shastri Park	III position
		Music club	Inter-college Group song competition, Vande-Mataram, held in Deen Dayal Upadhyaya College, University of Delhi	III position
		Music club	Band Competition held in Shyam Lal College, Selampur	II position
		Music club	Band Competition in Antardhwani	III position

**5.3.2 Furnish the details of major student achievements in co-curricular, extracurricular and cultural activities at different levels: University / State / Zonal / National / International, etc. for the previous four years.**

The students of the college participate in various technical, cultural and sports events in other colleges and universities every year and also win prizes.

The details of major achievements under ECA are given as follows :



**Year 2015-2016**

- Vipika Dhawan (Computer Science III Year) participated in the Solo Dance Competition during Srijan – 2016, won 3<sup>rd</sup> prize.
- Nupur (Food Technology I Year) participated in the Dance Face-Off competition during Srijan – 2016, won 2<sup>nd</sup> prize.

**Year 2014-2015**

- Members of music club participated in ‘Antardhvani-2015’, the Annual Cultural Festival of University of Delhi and won accolades.
- Members of music society won Second Prize in the Choir Singing competition in ‘Antardhvani-2015’
- Members of Music society secured third position in Rock Band competition in ‘Antardhvani-2015’.
- Manav Doshi, member of the club participated in Vocal Solo event and secured First position.
- Music choir of college secured second position in “Songs of India” organized by University of Delhi.
- Members of the dance club secured third position in the college Annual Festival – SRIJAN-2015.
- Members of the Dramatics and Fine Arts club received second prize at Greater Noida Institute of Technology for their outstanding performance in the street play.
- Members of the Dramatics and Fine Arts club received second prize in a stage play at Amity University.
- Members of Debate and Quiz club secured the first position in an Inter-college debate and quiz competition organized by the college.
- Anshu Bidhuri secured I position in Inter College debate competition held at BCAS.
- Satyendra Singh secured III position in Inter College debate competition held at BCAS.

**Year 2013-2014**

- Akshay A. Jha, member of Debate and quiz club secured first position in debate at NSIT, Dwarka.
- Akanksha, member of Debate and quiz club won second prize for slogan writing at NSIT, Dwarka.
- Members of Debate and quiz club won third prize at Bharti College.
- Members of Debate and quiz club participated in National Level College Debate Competition at SBS (PG), Dehradun.
- Members of Dramatics and Fine Arts club won third prize at Gandhi Bhavan, University of Delhi.
- Members of Dramatics and Fine Arts club won third prize at Apeejay College, Dwarka.
- Kaushal Bodwal, Member of Dramatics and Fine Arts club won first prize in poster making at Gandhi Bhawan, University of Delhi.
- Members of Dramatics and Fine Arts club won first prize in Rangoli competition at Delhi College of Arts and Commerce
- Members of Dramatics and Fine Arts club won first prize at Maharaja Agrasen College.
- Members of Dramatics and Fine Arts club won second prize at Zakir Hussain, Shaheed Bhagat Singh and Aurobindo Colleges.
- Members of Dramatics and Fine Arts club won third prize at Gargi College.
- Members of film club produced and directed a short film named “Jamnagar sector 13” which was selected for screening in the 2nd Delhi International Film Festival, 2013.
- The members of Music club secured second position at Shyam Lal College.

**Year 2012-2013**

- Members of the Dramatic club won second prize at MERI College, I.P. University.

- Members of the Dramatic club won third prize at Dyal Singh Evening College.
- Members of the music club won second prize in the “Songs of India” organized by University of Delhi.
- Members of music club won third prize in band competition at Dyal Singh College.
- Members of music club won third prize in Inter-college Group song competition, Vande-Mataram, held in Deen Dayal Upadhyaya College, University of Delhi.
- Members of music club won second prize in Band competition held in Northern India Engineering College, Shastri Park.
- Members of music club won second prize in Band competition held in Shyam Lal College, Selampur.
- Members of music club won third prize in Band Competition in Antardhwani.
- The College band got the best entertainer team award in Antardhwani.

**5.3.3 How does the college seek and use data and feedback from its graduates and employers, to improve the performance and quality of the institutional provisions?**

The college has a strong alumni well placed in various industries and research organizations. Suitable feedback is taken from alumni through invited talks and annual interactive sessions. They also sometimes pitch in during admissions and orientation programmes of new academic year.

**5.3.4 How does the college involve and encourage students to publish materials like catalogues, wall magazines, college magazine, and other material? List the publications/ materials brought out by the students during the previous four academic sessions.**

- The students are encouraged to pen their thoughts, share their views and hone their literary and other creative skills through the college magazine, “Resonance”. The magazine is published annually and released on the Annual Day of the college.

- The student editorial board under the guidance of magazine committee motivates the students through notices, innovative posters and personal interaction to submit articles, poetry, photographs, paintings etc.
- The students are involved through the entire process of designing the cover page, screening and editing the contributions for the magazine.
- Department of Microbiology also takes out its cultural magazine, 'Life Under Lens'.

**5.3.5 Does the college have a Student Council or any similar body? Give details on its selection, constitution, activities and funding.**

- There is a student council that exists in the college. It constitutes of elected class representatives. Regular meetings are organized with college authorities to discuss and tackle problems faced, if any.
- These representatives are also members of various committees that deal with students' issues.

**5.3.6 Give details of various academic and administrative bodies that have student representatives on them.**

Student representatives are part of Student Advisory and PR committee, Discipline Committee and Canteen Committee. The students are elected as even coordinators under ECA committee. Office bearers are also elected for various co-curricular clubs. Similarly, for NSS class coordinators are elected as well. Departmental societies also elect their respective Presidents and other office bearers who help in organizing various departmental activities. Hence, student representation in all aspects of college functioning is strongly emphasized.

**5.3.7 How does the institution network and collaborate with the Alumni and former faculty of the Institution.**

The college organizes alumni meet to maintain a link between alumni and the alma mater. The departments also invite their alumni for interaction sessions with the students. The college is also in the process of creating a directory of all its alumni.

The college is a new college and has young faculty members. So far, no teacher has retired. Hence, no mechanism is in place for interaction with former faculty. Retired Principals are invited to the various functions of the college.

**CRITERION - VI**

**GOVERNANCE, LEADERSHIP  
AND  
MANAGEMENT**

## CRITERION – VI

### GOVERNANCE, LEADERSHIP AND MANAGEMENT

#### 6.1 Institutional Vision and Leadership

##### 6.1.1 State the vision and mission of the Institution and enumerate on how the mission statement defines the institution's distinctive characteristics in terms of addressing the needs of the society, the students it seeks to serve, institution's traditions and value orientations, vision for the future, etc.?

Lord Sri Krishna says in Bhagwat Gita (B.G. 9.1)

इदं तु ते गुह्यतमं प्रवक्ष्याम्यनसूये।  
ज्ञानं विज्ञानसहितं यज्ज्ञात्वा मोक्षयसे शुभात्॥

“I am going to give you not only this *Gyana* (**ज्ञान**) but also *Vigyana* (**विज्ञान**).

Theoretical knowledge along with the realized knowledge or practical application of that knowledge, by knowing which you will be completely relieved from all the auspicious things in the world.”

The college vision is reflected in its logo “**ज्ञान विज्ञान सहितं**” means “*Knowledge with Practice*” that is what we aim. Knowledge needs to be validated by practice.

#### **VISION:**

“A commitment to mentor our students to achieve excellence through holistic education”.

#### **MISSION:**

The mission of the College is to create and sustain the conditions that enable students to experience an unparalleled educational journey that is intellectually, socially and personally transformative. We aim to support and promote both the academic as well as personal development of the learners. The diverse profiles of the learners are valued and encouraged through various academic and co curricular activities. The college firmly believes in the transformative power of education. We strive to educate the young citizens and create citizen-leaders for the society, who will also contribute

to the nation building. The college prepares its students for not only successful careers and but also a fulfilling life.

**Objectives:**

The main objective of the institution is to excel at imparting curricular, co-curricular and extra-curricular education and training to its students. The goals of the college are as follows:

- To provide a holistic education and allow each student to realize their complete potential through academics and extra-curricular activities.
- To excel in imparting curricular and extra-curricular education and training to the students entering into the portals of this institution.
- To motivate the faculty and the learners to take quality initiatives in academic, research and extension activities and help them to serve as desirable human resource in the development of the nation.
- To motivate students to become value-oriented individuals and be sensitive to the needs of the society.
- To foster a scientific temperament and encourage students to adopt a rational approach to solve problems.
- To mentor students through continuous assessment.
- To empower students to be leaders and contribute towards the achievement of world harmony

**Communication to Stakeholders:**

The objectives of the college are displayed on notice boards in the college premises, on the college website, during orientation program and also making announcements in the class rooms from time to time thus effectively being communicated to all stakeholders

**VALUES:**

- Academic excellence and integrity is strongly embedded in the curriculum and practice.
- Outstanding teaching and service is the main motto of college staff.



- An effort is made to inculcate innovative research and professional leadership among the students.
- Integration of teaching, research and service is thoroughly practiced in the college.
- Individual and collective excellence thrives at BCAS.
- Diversity, equity and social justice are some of the values that BCAS strongly advocates and follows.
- Life long learning is the primary objective of the college.

**6.1.2 What is the role of top management, Principal and Faculty in design and implementation of its quality policy and plans?**

- A. The highest decision making body of the College is its Governing Body (GB), which comprises of 16 members. It includes five nominees of the Government of NCT Delhi, five nominees of the University of Delhi (DU), two Professors from the Departments of DU as the Vice Chancellor's nominees, two teacher representatives from the College and one member of the non-teaching staff nominated by the Principal. The Principal is the ex-officio member secretary of the GB.
- The GB facilitates smooth functioning of the college activities as per the DU Ordinance XVIII.
  - The GB approves the budget proposal and expenditure statement for onward submission to Directorate of Higher Education (DHE).
  - It sees that the college affairs are managed as per the guidelines of DU and government.
  - It approves and recommends the introduction of new courses, finance committee approves financial issues, leave committee for long term leave, appointments with the laid down procedures of the DU etc.
- B. The Principal, being the Head of the Institute, sets the tone for all the stakeholders along with the Vice Principal and Staff members. He ensures that all policies and decisions are implemented in the right spirit and plans ahead

for the future. His prime motive is to have unity of direction, aimed at achieving the set goal.

- Principal manages the college funds with the assistance of the Bursar.
- He ensures that teaching and learning standards are maintained, and student needs are prioritized and he also identifies the capabilities of the staff and deploys them accordingly.
- He coordinates with Vice Principal and Staff Council committees to draw a blueprint of various activities viz. extra-curricular, sports, NSS, club, societies, etc. which is placed into action by the faculties and students.
- He encourages and supports faculties and students initiatives.
- Vice Principal also shares administrative duties along with the Principal for the smooth functioning of the college.

C. The college functions smoothly with the help of various Governing Body committees, staff council committees, Clubs, Cells and Departmental Societies. These bodies, (listed below) help in the running of the college :

#### **Governing Body Committees**

1. Provident Fund Committee
2. Finance Committee
3. Committee for the disposal of unserviceable and condemned items
4. Leave Committee

#### **Staff Council Committees**

1. Academic Committee
2. Admission Committee
3. Alumni Association
4. Annual Day/ Prize Distribution Function Committee
5. Annual Maintenance Committee of Computers and its Peripherals
6. Annual Report Committee
7. Anti Ragging Committee

8. Building Maintenance Committee
9. Canteen Committee
10. Central Purchase Committee
11. College Monitoring Committee for Internal Assessment
12. Committee for Financial assistance to teachers for attending Seminars, conferences etc.
13. Departmental Moderation Committee for Internal Assessment
14. Development Fund Committee
15. Proctorial Committee
16. Extra Curricular Activity Committee
17. Garden Committee
18. Gender Sensitizing Committee
19. Internal Complaint Committee
20. Library Committee
21. Magazine Committee
22. National Service Scheme
23. Public Grievance Committee
24. Research & Project Assessment Committee
25. Special Categories Admission Enabling Committee
26. Sports Committee
27. Students Advisory and P.R. Committee
28. Swachhatta Committee
29. Time Table Committee
30. Website and Internet Committee
31. Waste Management Committee

### Clubs

1. Dance Club
2. Debate Club
3. Dramatics & Fine Arts Club
4. Eco Club

5. Film Club
6. Literary Club
7. Mountaineering & Trekking Club
8. Music Club
9. Photography Club
10. Yoga Club

**Cells/ Centre**

1. Anti Discriminatory Cell
2. Anti Tobacco Cell
3. Astronomy Club
4. Bhaskaracharya Cell
5. Career Counseling Cell
6. Equal Opportunity Cell
7. Gandhian Study Centre
8. NCC
9. North East Cell
10. Training & Placement cell
11. SC/ST Cell
12. Vivekananda Vichaar Manch
13. Women Development Cell

**Departmental Societies**

Department	Society
Biomedical Science	DNAmics
Computer Science	CS.net
Electronics	Sparks
Food Technology	Ambrosia
Instrumentation	Sensors
Microbiology	Sukshmjeev
Polymer Science	Pearls

- D. Staff Council formulates recommendations on the introduction of new teaching posts in the departments and the expansion of the existing departments as well as the introduction of new courses
- E. Departments organize talks, seminars, workshops and conferences
- F. Faculty plans and executes various academic activities through staff council committees and committee of courses as recommended by the University of Delhi.

### **6.1.3 What is the involvement of the leadership in ensuring**

- **The policy statements and action plans for fulfillment of the stated mission**

As stated in the point 6.1.1 all the levels of management work in tandem for the achievement of the college mission. The leadership makes all efforts to keep all the stakeholders focused and work diligently.

### **Formulation of action plans for all operations and incorporation of the same into the institutional strategic plan**

Formulation of action plans for all operations and incorporation of the same is done by the Principal through the various staff council committees with the proper involvement of administrative staff.

- **Interaction with stakeholders**
  - There is a continuous dialogue and discussions among stakeholders to have consensus on various issues relating to the management of college affairs which is done through various staff council committees, clubs, societies and departmental meetings.
  - Interaction with the students and parents is ensured through open door policy and being available to them all the times. The faculty is also encouraged to be available to students at all the levels.
  - As and when required the Principal and the faculty gets in touch with parents, alumni and through an outreach program to larger sections of

the society.

- **Proper support for policy and planning through need analysis, research inputs and consultations with the stakeholders**

There is a provision for regular review of the “Cause and Effect” of our formulated policies. There is a constant monitoring of the plans formulated for the achievement of the goals. The planning is done after the consultation with all the stakeholders.

- **Reinforcing the culture of excellence**

The culture of excellence is reinforced by constant self-motivation, leading from the front and creating a competent and collaborative work culture.

- **Champion organizational change**

Changes, as suggested by competent authorities, are duly discussed and implemented for the betterment of the college.

#### **6.1.4 What are the procedures adopted by the institution to monitor and evaluate policies and plans of the institution for effective implementation and improvement from time to time?**

College policies are mainly governed by Ordinances/statutes of the University of Delhi and circulars received from the Ministries of the Govt. of India through DU, Orders of the DHE and the college GB from time to time. The college designs the procedures for their implementation. These procedures are reviewed periodically and corrective measures are taken as and when needed.

Staff council committees are formed on an annual basis. Academic departments and administrative sections plan their annual budget and action plan. Similarly the various societies, clubs etc. make their annual schedule and adhere to it.

The various committees, societies etc. present their report in the staff council for inputs and observation of all. The staff council committees periodically review in order to implement monitor and evaluate policies and plans for the effective functioning of the college. The college also publishes its annual report which describes all the activities carried out throughout the year and highlights college achievement in academic, co and extra -curricular activities.

**6.1.5 Give details of the academic leadership provided to the faculty by the top management?**

- The top management encourages and supports the faculties to pursue their academic goals. The faculty is encouraged to organize or attend various seminars, conferences and workshops. The faculty is sanctioned necessary leave to meet the above-mentioned purposes.
- They also facilitate up gradations of skills and training needs.
- The top management implements the promotional policies for the faculty.
- The GB approves various academic courses viz. regular and short term as recommended by the staff council.
- Faculties are encouraged to take up independent research projects. They are also provided the opportunity to be a supervisor for scholars pursuing higher degrees.
- The faculty members are also involved in co-operative teaching and counseling in various institutes like DU/NSIT/ DTU/ GGSIPU/IGNOU, IIHMR etc.

**6.1.6 How does the college groom leadership at various levels?**

- The college provides academic and administrative opportunities to faculty members on a rotational basis which helps in gaining insights to varying working profiles leadership.
- Ours is the only college which offers 8 Science (Hons.) courses in the DU. Each of the classes has an elected class representative who coordinates different college activities on behalf of the respective class and acts as an interface between college administration and students. These representatives elect President and Secretary amongst them for the Student Representative Council.
- In order to recognize excellence and reward excellence in academics, extra-curricular and other college activities, the college has instituted Best Student (male and female) awards. It motivates other students to perform well.

- Moreover, various staff council committees like Canteen Committee have two students representative in it.
- Different clubs and societies of the college have respective President and Secretaries, amongst the student, which provides larger opportunities for the students to learn and acquire leadership qualities under the teacher coordinator.
- The students of each department elect their own office bearers of the societies. They also contribute and cooperate in organizing and managing different programs. Students along with the convener of the different Cells/Committees/Clubs effectively carry out various departmental and college activities.
- They are given opportunities to express themselves in the college through NSS unit, Editorial board of the college magazine and various other platforms (intra and inter college) to explore the talent of the students.

**6.1.7 How does the college delegate authority and provide operational autonomy to the departments/units of the institution and work towards decentralized governance system?**

- Various staff council committees/ departments have respective conveners/ in-charges have autonomy to take decisions, formulate guidelines and rules for the implementation of different schemes, keeping in the minds of the Acts of the DU and Govt. of NCT of Delhi, proposals though their decisions are subject to ratification by the Staff Council. The Principal works on their recommendation.
- Teacher in-charge are responsible for the proper functioning of their departments; overseeing the academic performance of the students of the department and arranging talks, seminars and conferences.
- Teacher in-charge-ship is by rotation for a period of two years and by seniority.
- The Section Officer (Administration) and Section Officer (Accounts) are responsible for the proper functioning of their respective offices.



**6.1.8 Does the college promote a culture of participative management? If 'yes', indicate the levels of participative management.**

Yes, the college strongly promotes a culture of participative management. Two Teacher's representatives from the College and one of the non-teaching staff nominated by the Principal are members in the GB.

The college follows the model of decentralization and creation of a spirit of due autonomy among all the college departments, committees and societies and by involving students and members of the non-teaching staff at most levels of policy formulation and decision-making.

**6.2 Strategy Development and Deployment****6.2.1 Does the Institution have a formally stated quality policy? How is it developed, driven, deployed and reviewed?**

As mentioned in our Vision and Mission statement (Refer to 6.1.1), it is our endeavor to groom students who could contribute the inclusive growth of the nation. The college is very conscious about quality standards and protocols. The college plans to formulate its stated quality policy based on zero tolerance for academic slackness, non-compliance with DHE, DU and University Grants Commission (UGC) advisories and indifference towards student welfare.

**6.2.2 Does the Institute have a perspective plan for development? If so, give the aspects considered for inclusion in the plan.**

The college perspective for development is contingent upon offering students more facilities, a better academic atmosphere and the best of infrastructural facilities.

- DU and DHE have already approved three new Hons. courses in Botany, Chemistry and Zoology. Final approval is still awaited to start these courses. Some more courses in Mathematics and Psychology are under process.
- To improve infrastructure, the work has already been started on projects like building expansion and Auditorium.
- Presently we have sanctioned faculty strength of 76. Currently, there are 46 permanent members in the college.
- One of the important aspects which have been included in the plan is the

promotion of research culture and greater involvement in extension activities.

- Some faculty members are already co-supervising and few have been given permission to guide their own Ph. D. scholars.
- The college aims to act as an 'incubator center' to encourage entrepreneurial ship in the Dwarka and adjoining areas.

### **6.2.3 Describe the internal organizational structure and decision making processes.**

Internal organizational structure in respect of teaching and administrative staff is given as Annexure 6a

- The college GB is the supreme decision making body of the institute. The powers and duties of the GB and other authorities are as per statute 30 and ordinance XVIII of the DU. The decisions regarding institution, suspension or abolition of teaching and non-teaching posts is taken by the GB.
- Principal is the chief executive and academic officer of the college. Principal is responsible for administration and organization of teaching, administrative activities and extra-curricular activities in the college with the help of Administrative/ Section officers.
- Vice Principal also shares administrative duties along with the Principal for the smooth functioning of the college.
- Bursar and the Accounts Section assist the Principal in the maintenance of accounts and the day-to-day financial affairs of the College. The Principal and Bursar jointly operate the Bank account within the budget estimates all the grant items duly approved by the GB of the college.
- Decisions in matters of staff council committees (refer to 6.1.2) are taken as per the provisions of the act, statutes and ordinances of DU.
- The faculty through the staff council formulates recommendations on the introduction of new teaching posts in the departments as well as the introduction of new courses.

### **6.2.4 Give a broad description of the quality improvement strategies of the institution for each of the following**

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– **Teaching & Learning**

The quality improvement strategy of the institution involves the creation of ICT facility which is blended with the chalk and talk method to improve teaching and learning process for students. The college aims to upgrade regularly the teaching skills of teachers by conducting or participating workshops. These include workshop on multimedia techniques for classroom teaching and preparing e-learning materials.

– **Research & Development**

The college actively encourages research projects for teachers and students by providing support and infrastructure. Many faculty members are involved in various research projects funded by various governmental agencies like UGC/DST/DBT/DU etc. The undergraduate students are encouraged to pursue research during summer vacations and even during regular teaching days through various schemes like Innovation projects etc.

– **Community engagement**

Community engagement is ensured through the activities of the National Service Scheme, the Eco club, the Dramatics Society of the College and through the participation of the students in outreach activities by organizing various events like Blood Donation Camp, Swacchta Abhiyan, and Yoga. INSPIRE Camps for school students, Workshop for Biology Teachers (refer 3.2.4). Car free day are also conducted.

– **Human resource management**

- Efforts are made to recruit the most deserving and competent individuals for the teaching/ non-teaching positions as per rules formulated by the DU.
- Staff members are encouraged to take up career advancement and skill development schemes for which necessary leave are also sanctioned time to time as per DU norms.
- The college also organizes regular awareness sessions on social and health issues. The college has a conducive environment for all its

employees.

- Several talks have been organized on women safety, gender equality and related issues.
- The college also has duly constituted committees to look into grievances if any, for all its members.

– **Industry Interaction**

Industry interaction is ensured by having regular sessions and workshops from experts for students and faculty. The college also has constant and continuous interaction with industrial organizations for ensuring the placement for our students. The placement cell of the college coordinates with various industries for recruitment. Final year students are also registered with the Central Placement Cell of the DU which allows them to get a wider opportunity. The curriculum includes interaction with industry.

**6.2.5 How does the Head of the institution ensure that adequate information (from feedback and personal contacts etc.) is available for the top management and the stakeholders, to review the activities of the institution?**

- Approvals and permissions for the required activities are taken from the Chairperson of the GB and decisions taken are ratified by the GB. Regular meetings and discussions also ensure that all information is conveyed to the GB of the college like appointments, promotions, financial matters, academic matters etc.
- Suo-motto disclosure is made to display important information, decisions, guidelines, UGC/DU circulars, and minutes of the GB and staff council etc.
- All the essential information is loaded on the college website also.
- College annual report also publishes the individual achievements and activities of the department, club, society etc.

**6.2.6 How does the management encourage and support involvement of the staff in improving the effectiveness and efficiency of the institutional processes?**

The faculty members have autonomy to choose their own teaching methodologies with a significant degree of flexibility. They have freedom to express their opinions regarding the improvements in institutional processes.

**6.2.7 Enumerate the resolutions made by the Management Council in the last year and the status of implementation of such resolutions.**

The Governing body of the college is its Management Council and it has taken some of the following resolutions and which have been implemented also.

- Appointments of Principal, Vice Principal, Bursar, ad-hoc appointments, contractual staff, promotion of various staff members.
- Approval of six new courses of which three have been sanctioned by the Delhi University and three are still in the pipeline
- Formation of Central Condemnation committee
- Acceptance of the resignation of Dr. Ramesh Kataria on account of his joining as Assistant Professor in the University of Punjab
- Creation of Misc. Library Development Fund
- Sanctioning of Rs. 15 Lakhs for the purchase of Software & IT items and furniture.
- Membership of the Delhi University Health Centre

**6.2.8 Does the affiliating university make a provision for according the status of autonomy to an affiliated institution? If 'yes', what are the efforts made by the institution in obtaining autonomy?**

No. The DU does not allow status of autonomy to its constituent colleges.

**6.2.9 How does the Institution ensure that grievances/complaints are promptly attended to and resolved effectively? Is there a mechanism to analyze the nature of grievances for promoting better stakeholder relationship?**

Yes, as mentioned in point 6.1.2 the college has a Grievance Committee, Proctorial Committee, Internal College Complaint Committee (in accordance with the provisions of the Sexual Harassment of Women at Workplace- Prevention, Prohibition and Redressal Act 2013), Equal Opportunity Cell and North East Cell and SC/ST

Grievance Cell. There is also a Grievance Redressal Committee for students in general and all complaints are forwarded to the relevant committee and prompt action is ensured. Based on the complaints of students and teachers, corrective action/change in the policy is also incorporated and implemented.

**6.2.10 During the last four years, had there been any instances of court cases filed by and against the institute? Provide details on the issues and decisions of the courts on these?**

S.No.	Title	Subject	Status
1	Rajendra Singh and other v/s University of Delhi & ORS. LPA No. 285 of 2013,  CM 7404-05/2013 and 17754/2013	To regularize the service of the petitioner working on ad-hoc basis from the date of their initial appointment	The appellants shall continue to work on the same conditions under which they are presently working vide order dated 09.05.2013.  CM NO. 7404-05/2013 and 17754/2013- Disposed as infructuous and no costs Vide order dated 12.03.2015
2	CWP No. 2227/2013	The Counsel for the petitioner sought liberty to withdraw the present Writ petition and file a fresh Writ Petition on the ground that the petitioners were discriminated while other regular appointments were being made in the College	Since the petitioners have withdrawn the writ petition and no specific orders for their continuation in service was prayed for by the counsel for the petitioners before the Hon'ble Court, the interim orders passed by the Division Bench under which the petitioners were continuing is no longer in force.
3	Vijay Kumar and Another V/s. University of Delhi & Ors. WPC No. 6574/2014, CWP No. 6746/ 2014  WPC No 6744/2014	Prying that their financial upgradation may not be withdrawn, given under MACP  Issue appropriate writ, order or direction in the form of writ of certiorari to quash and set aside the order dated 30.06.2014 & 02.09.2014 & Grant the cost of the petition and any other relief , if any this Hon'ble Court deems fit and proper in the facts and circumstances of the cases	The writ petition is dismissed as withdrawn, along with the pending application vide order dated 25.09.2014  Till the relevant documents with copies to the counsel for the petitioners, it is directed that till the next date, no recoveries shall be made from the salaries of the petitioners upon withdrawal of the financial up gradation under MACP.  The next date of hearing on 26.08.2016
4	Rajender Singh and other v/s University of Delhi and others  W.P. (C) 9614/2015 & CM Appln.22769/2015	To regularize their services as Laboratory Assistants/ Laboratory Attendants/	Order Dated 09.10.2015  The writ petition be treated as Representation of petitioners and the same be decided by passing a speaking order and if need be, petitioners be called upon to

S.No.	Title	Subject	Status
	(stay)	Office Attendants in the College.	provide any clarification. Let the representation be decided within a period of eight weeks from today and the fate of the representation be made known to petitioners within a week thereafter so that petitioners can avail of the remedies as available to them, if need be.
5	Giriraj Singh Vs. Govt. of Delhi & Ors.  CWP No. 2296 of 2016 in the High Court of Delhi at New Delhi  CWP 2293 of 2016	That the services of the petitioners be not terminated.  Praying that they were selected against the regular posts but appointed on ad-hoc basis and that their selection could not be termed as backdoor appointment.	The counsel for the petitioners sought liberty to withdraw the application. The Hon'ble Judge permitted the petitioners to do the same and that the application was dismissed as withdrawn. The matter will now come up for further hearing on 21.11.2016, the date already fixed.  Reply to the showcause notice to be filed by the responded within eight weeks. Next date of hearing 21.11.2016
6	CWP No 803 of 2014 Delhi University SC/ST/OBC Teachers Forum & others V/s University of Delhi & others	Regarding reservation of SC/ST/OBC candidates for appointment in Teaching posts.	The writ petition filed by the petitioners was dismissed by the Hon'ble Court. The Hon'ble Court reviewed the application on 11.05.2016 and ordered to issue notice. Notice is accepted by the learned counsel for the respondents and renotified on 22.07.2016.

**6.2.11 Does the Institution have a mechanism for analyzing student feedback on institutional performance? If 'yes', what was the outcome and response of the institution to such an effort?**

University does not have a formal mechanism to obtain student's feedback for its constituent colleges. However the college encourages and welcomes informal feedbacks, suggestions and opinions on the various aspects of the college life. Students' feedback through representation in the staff council committees, alumni and open house sessions does bring forth suggestions. Suggestions regarding improvement in canteen hygiene and quality, improvement in library services, first aid boxes, cleanliness and hygiene have all been improved through student feedback and participation.

**6.3 Faculty Empowerment Strategies**

**6.3.1 What are the efforts made by the institution to enhance the professional**

**development of its teaching and non teaching staff?**

- The college ensures that adequate talks, workshops, orientation courses and in house training are given to teaching and non-teaching staff on a regular basis to enhance their professional and academic development. The college allows the teaching faculty to attend orientation/ refresher courses/ training programs organized by CPDHE/ UGC-ASC/ departments. Participation in conferences/ seminars workshop etc.
- In addition to this, the college also organizes national level seminars/conferences, which also helps in professional enrichment of the faculty.
- Workshop for the laboratory staff skill development program (refer 3.2.4)
- Workshop on virtual learning programme (refer 3.2.4)
- Lecture on good governance
- Further, college grants study leave to the staff for pursuing higher degrees like Ph.D./ postdoctoral programme as per the UGC norms with full pay and allowances. Teaching staff is allowed to go on deputation for administrative purpose and research activities.
- The college allows non-teaching staff to attend various computer training/finance/administration skill enhancement programs organized by DU/Delhi Govt.

**6.3.2 What are the strategies adopted by the institution for faculty empowerment through training, retraining and motivating the employees for the roles and responsibility they perform?**

Members of the staff are regularly nominated for training programs. The information regarding the training programs is circulated to all employees through emails as well as through notices. Academic Leave/special casual leave is provided by the college to attend these courses and motivation is granted by acknowledging their efforts in Principal's Annual Report, through promotions and enhancement of pay and increased responsibilities.

**6.3.3 Provide details on the performance appraisal system of the staff to**



**evaluate and ensure that information on multiple activities is appropriately captured and considered for better appraisal.**

- The self-appraisal form is filled by the teaching faculty for career advancement scheme (CAS) as per DU directives and UGC guidelines.
- The DU proforma for APAR is followed for non teaching staffs which are evaluated by their reporting officer/ the Principal. They are mandatory for their promotions.

**6.3.4 What is the outcome of the review of the performance appraisal reports by the management and the major decisions taken? How are they communicated to the appropriate stakeholders?**

- All the staff members appointed on a regular basis with an initial probation period minimum of one year. The appointment is regularized only after the satisfactory completion of the probation period.
- The self - assessment performa filled - in by the staff members are evaluated and if there is a point of difference on any parameter, that is communicated to the staff member as per norms of the DU. The promotion of the staff members is based on the outcome of the self-appraisal form.

**6.3.5 What are the welfare schemes available for teaching and non teaching staff? What percentage of staff have availed the benefit of such schemes in the last four years?**

- The College has several welfare schemes for its faculty and non-teaching staff members as per the policies of DU in conjunction with those of Government of India e.g. Group Insurance Scheme (GIS), Children Education Allowance, Medical Reimbursement, Leave encashment and Leave Travel Concession/Home Town Concession.
- In addition washing Allowance and Uniform Allowance is provided to Class-IV staff.
- The college also provides Wi-Fi facility to its employees with a unique login-id with password. These facilities are availed by the non-teaching staff also.
- The college provides an opportunity to the wards of staff members having

minimum eligibility marks to get an admission in the college on supernumerary basis. They are also exempted from the college fee.

- The staff members can use all the available facility in the college like college gymnasium, library, college ground etc.
- They get an opportunity to participate in various sports and extra-curricular activities organized by the college and DU.
- The staff members are provided free of interest financial loan for festivals. Such incentive invariably encourages and boosts up motivation among employees.
- Almost all concerned are availing the facility as per their entitlement.

#### **6.3.6 What are the measures taken by the Institution for attracting and retaining eminent faculty?**

- The recruitment of faculty is governed as per the rules and regulations of the DU. Whenever a vacancy arises as per the approved roaster, it is advertised in national dailies and interviews are conducted by a selection committee as per the ordinances of the DU.
- Ad-hoc appointments are made through interviews after displaying the vacancies on the college and DU website. The appointments are purely on merit.

### **6.4 Financial Management and Resource Mobilization**

#### **6.4.1 What is the institutional mechanism to monitor effective and efficient use of available financial resources?**

- For monitoring effective and efficient use of available financial resources, college asks for the budget requirements from various departments with their estimated cost and justification, right in the beginning of the year. The budget proposals as well as utilization certificates are forwarded to the DU only after approval of the GB, the Chairperson and Treasurer GB. Once approved by the DU they are forwarded to the DHE for funding.
- Once budget is sanctioned and GIA (Grant in Aid) is obtained and then

budget is allocated to each of the Departments, Office, Library and Sports in consultation with the stakeholder and assessing their needs.

- Purchases are done strictly with the provisions of GFR-2005 and with due diligence orders are placed to lowest vendor after being satisfied with the quality of goods.
- The AMC is provided for costly and sensitive instruments, assets for providing catering basic necessities like water cooler, RO etc., Computer and its peripherals for their efficient working, safety and longer life span.
- All budgets, balance sheets and utilization certificates are duly approved by the GB of the college. Moreover, a monthly expenditure statement is also sent to DHE.
- All the funds are judiciously spent following GFR 2005 as per the budgetary provisions through local (departmental) technical and purchases committee and central purchase committee.
- It is pertinent to mention that our college accounts are audited by nodal agency ELFA audit by Government of NCT of Delhi annually.

**6.4.2 What are the institutional mechanisms for internal and external audit? When was the last audit done and what are the major audit objections? Provide the details on compliance.**

- The annual internal audit is conducted but the statutory auditor, Chartered Accountant, appointed by the GB after approval from the DU. External audit is also conducted by ELFA audit by Government of NCT of Delhi annually.
- ELFA audit has been done till the financial year 2013-14. CAG audit is also conducted by the Govt. of India. ITR are also filed on annual basis.
- Satisfactory reply and compliance is shown to the various audit objections via Annexure 6b.

**6.4.3 What are the major sources of institutional receipts/funding and how is the deficit managed? Provide audited income and expenditure statement of academic and administrative activities of the previous four years and there serve fund/corpus available with Institutions, if any.**

The college gets 100% grants (Plan and Non-Plan) from the Govt. of NCT of Delhi. The Grant in Aid (GIA) is received in Plan and Non Plan budget heads for both Salaries, Other than Salaries and Capital Assets. The expenses under Lab. Contingency, Sanitation and Office Expenses are under College Budget Head GIA other than Salaries Non-Plan. The expenses under electricity, security and Property Tax were under College Budget Head GIA other than Salaries Plan.

Apart from this fee is collected from students and any deficiency is then made up good by the governance. The expenses on account of student activities are made out of the fees collected and utilized as per the fee structure below upto financial year 2015-16.

S. No.	FEES HEAD*	AMOUNT (Rs.)
<b>A</b>	<b>COLLEGE FEES (ANNUAL)</b>	
A 1.	Course Fees [Only for B.Sc. (H) Polymer Science and B.Sc. (H) Biomedical Science]	<b>10,000/-</b>
A 2.	Course Fees [Only for B.Sc. (H) Computer Science]	<b>15,000/-</b>
<b>B</b>	<b>OTHER COMPONENT OF FEES</b>	
B 1.	Admission Fee ( <b>ONE TIME</b> )	10/-
B 2.	Tuition Fee	180/-
B 3.	Magazine Fee	125/-
B 4.	Library and Reading Room Fee	500/-
B 5.	Identity Card Fee	50/-
B 6.	Garden Fee	200/-
B 7.	Water and Electricity Fee	150/-
B 8.	Laboratory Fee	750/-
B 9.	Computer Laboratory Fee	250/-
<b>C</b>	<b>UNIVERSITY FEES (ANNUAL)</b>	
C 1.	University Enrolment Fees ( <b>ONE TIME</b> )	200/-
C 2.	University Athletic Association Fees	50/-
C 3.	University Cultural Activities Fees	5/-
C 4.	University Development Fee	600/-
C 5.	World University Service Fee	5/-
C 6.	N. S. S.	20/-
C 7.	Special University Fee	10/-
<b>D.</b>	<b>STUDENT'S FUND FEES (ANNUAL)</b>	
D 1.	Games and Sports Fees	200/-
D 2.	Function and Cultural Activities, Seminar and Educational	750/-

	Tour Fees	
D 3.	Library & College Security Fees (Refundable & ONE TIME)	1500/-
D 4.	Students' Aid Fund	50/-
D 5.	Development Fund Fee	500/-
D 6.	Alumni Fund Fee	100/-
D 7.	Placement Brochure Fee	150/-
D 8.	Club* Membership Fee	100/-
D 9.	Society Fee	100/-
B. Sc.(H) Biomedical Science / Polymer Science [A(1)+B+C+D]		Total Rs. 16,555/-
B.Sc.(H) Computer Science (A(2)+B+C+D)		Total Rs. 21,555/-
B.Sc.(H) Electronics / Food Technology / Microbiology (B+C+D)		Total Rs. 6,555/-
B.Sc.(H) Physics / Instrumentation (B+C+D)		Total Rs. 6,555/-

\*The fee structure has been revised from the current academic session 2016-2017.

The audited income and expenditure statements of the last four years are given in the Annexure IV (a-i), which reflect the reserve fund as shown below:

All figures in Rs.						
S.No.	Year	Total Funds Received from			Total funds received during the Year (col. 3 + 4+ 5)	Total expenditure incurred out of column no-6 by college/ university during the year
		U.G.C	G.I.A.	Other/ Own Resource		
1	2	3	4	5	6	7
1	2011-12	3206165.35	117361662.57	2780697.19	123348525.11	94792933.33
2	2012-13	300000.00	129801988.05	3324677.38	133426665.43	101903426.64
3	2013-14	0.00	159535861.55	7497869.24	167033730.79	120705759.06
4	2014-15	2289600.00	135818619.85	6890065.88	144998285.73	121310179.40
5	2015-16	0.00	192719204.45	6032669.88	198751875.33	143496914.85

**6.4.4 Give details on the efforts made by the institution in securing additional funding and the utilization of the same (if any).**

- College receives funding through externally sponsored research projects.
- Sponsorship is also generated for organizing various events in the college.
- The grant received is exclusively used for the purpose it is collected for.

**6.5 Internal Quality Assurance System (IQAS)****6.5.1 Internal Quality Assurance Cell (IQAC)**

- a. **Has the institution established an Internal Quality Assurance Cell (IQAC)? If 'yes', what is the institutional policy with regard to quality assurance and how has it contributed in institutionalizing the quality assurance processes?**

No, there is no separate IQAC but there is a system of internal checks and balances in the management of academics as well as administrative affairs of the college.

Internal assessments of the students, attendance record of the students make the student and teachers maintain quality.

Then, there is Departmental Moderation committee comprising Present Teacher in Charge, Previous Teacher in charge and senior most Faculty member. There is a College Monitoring Committee with Principal, Vice-Principal/ Secretary Staff council and one senior faculty nominated by the Principal. They coordinate to improve the quality.

Biometric attendance for the non teaching staff helps in their regularity and punctuality. Respective Good/ Very Good Annual Appraisal and Assessment Report is also required in ones promotions.

Open door policy to interaction with the students and parents also helps the staff members to ensure quality assurance. The present system is efficient enough to maintain the quality and the college is in the process of drafting institutional policy for formulating an IQAC in synchronization with the college's ethos and perceptions.

- b. **How many decisions of the IQAC have been approved by the management/authorities for implementation and how many of them were actually implemented?**

The college result invariably helps to monitor our working. The management is apprised of all this as mentioned in 6.1.4 and there inputs are always welcomed.

- c. **Does the IQAC have external members on its committee? If so, mention any significant contribution made by them.**

No.

- d. **How do students and alumni contribute to the effective functioning of the IQAC?**

Regular interactions with the students provide inputs of our weak links. The annual meeting with alumina helps us to know the market forces. It is worth mentioning here that the college recognizes an alumnus for his/her outstanding contribution through 'Best Alumni' award presented annually on its Annual day.

- e. **How does the IQAC communicate and engage staff from different constituents of the institution?**

N.A.

- 6.5.2 Does the institution have an integrated framework for Quality assurance of the academic and administrative activities? If 'yes', give details on its operationalization.**

Quality is ensured by implementing all the guidelines of DU and UGC with regard to academic and administrative matters. For instance the reservation policy, the examination framework, syllabus implementation, recruitment policies are all according to the norms prescribed by the DU, UGC and Ministry of Human resource Development. The recruitment is done as per UGC and DU norms.

- 6.5.3 Does the institution provide training to its staff for effective implementation of the Quality assurance procedures? If 'yes', give details enumerating its impact.**

As mentioned in 6.3.1 effective quality assurance is maintained. 13 Faculty members have completed their Ph.D. degrees by availing study leave. Members of the staff are sent on regular training programs/ workshops/ refresher course/ orientation course, training programs for implementation of policies. The administrative staff is trained in the reservation policy, RTI

guidelines, leave rules, NPS etc. The college also organizes seminars/workshops for learning innovations in academic and administrative aspects.

**6.5.4 Does the institution undertake Academic Audit or other external review of the academic provisions? If 'yes', how are the outcomes used to improve the institutional activities?**

No

**6.5.5 How is the internal quality assurance mechanisms aligned with the requirements of the relevant external quality assurance agencies/regulatory authorities?**

N.A.

**6.5.6 What institutional mechanisms are in place to continuously review the teaching learning process? Give details of its structure, methodologies of operations and outcome?**

These mechanisms have been outlined in point 6.2.4(b).

**6.5.7 How does the institution communicate its quality assurance policies, mechanisms and outcomes to the various internal and external stakeholders?**

The institute communicates its policies by Staff Council, departmental meetings, college website, and college annual report.

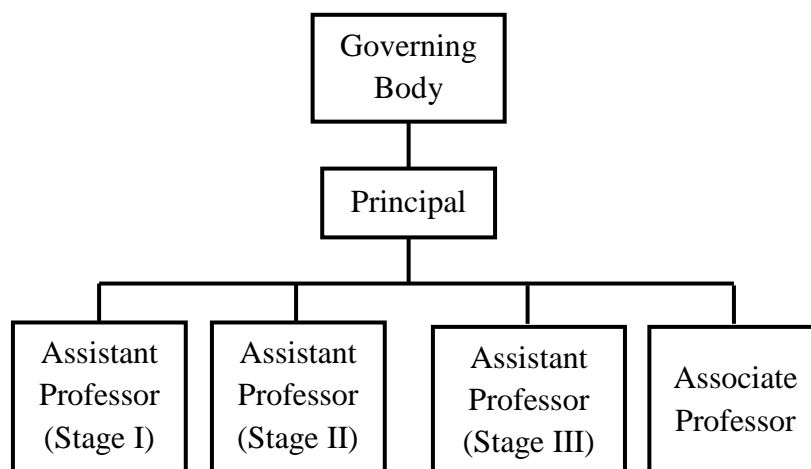
**Any other relevant information regarding Governance, leadership and Management which the college would like to include:**

To improve the efficiency of the institute, several initiatives have been taken on regular basis which have been duly mentioned throughout this criterion.

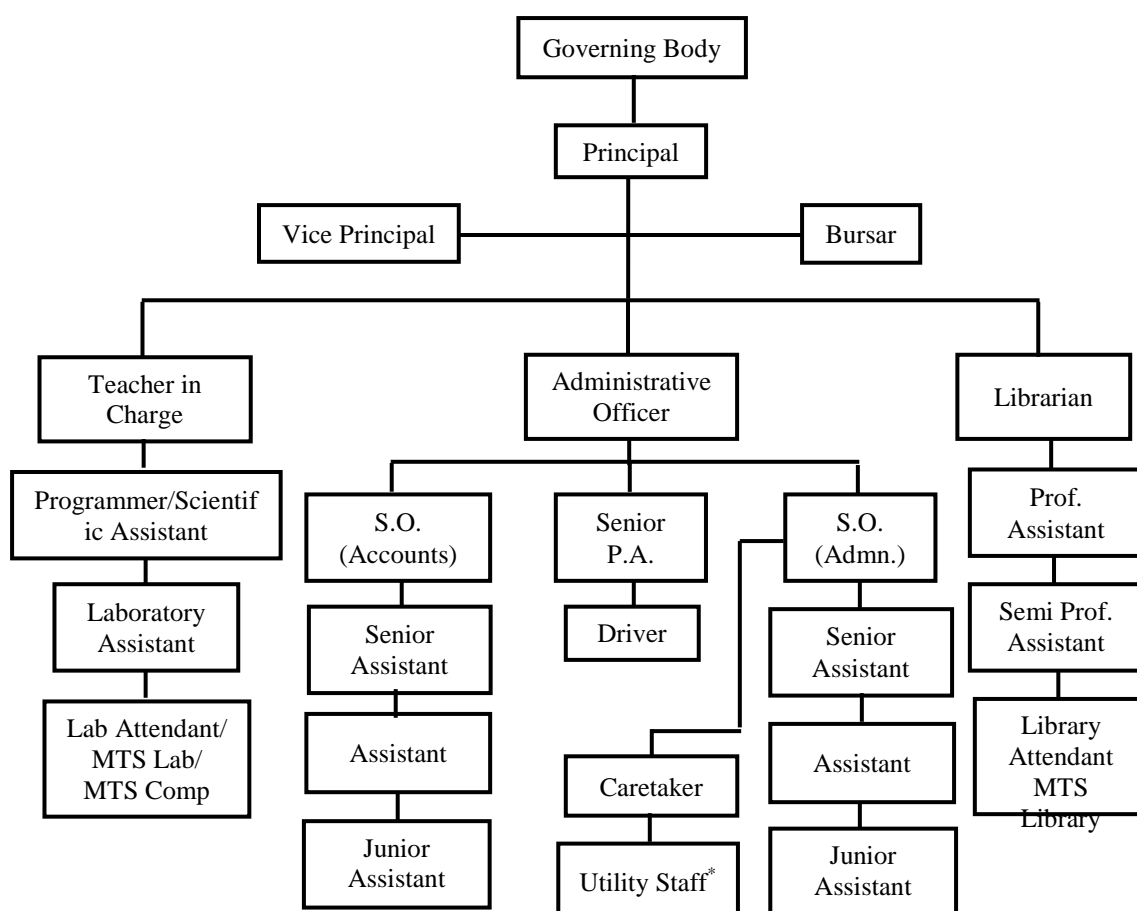


## ANNEXURE 6a

### ORGANIZATIONAL CHART OF THE TEACHING STAFF



### ORGANIZATIONAL CHART OF THE ADMINISTRATION



\*Multi-tasking Staff/Gestetnor operator/Daftri/Attendant etc.

**Annexure 6b**

<b>Year</b>	<b>Para No. &amp; Brief of Para</b>	<b>Audit Para</b>
<b>2006-07</b>	3 – Refund of Security to the Contractor	After getting brief reply of outstanding, the approval from the then Principal, the Security Deposit of Rs.20, 000/- was refunded to the Contractor.
	7 – Installation of Water Meter	Water Meter Installed and regularly payment of water bills made to concerned authority.
	10 - Appointment of daily wages/contract basis	Objection raised in the Audit (10-12) and Para may be treated as settled on the basis of documentary proof.
<b>2007-08</b>	1 – ATR on objection raised recoveries detected by Audit in the previous year.	Recoveries from the Official has been obtained.
	3 – Wrong Credit of Rs. 30 Lakhs.	Amount of Rs.30 Lakhs refunded to DHE after the approval of the DHE vide Ch. No.060128 for Rs.24,60,000/- & 060129 for Rs.5,40,000/- dated 14.07.2014.
	4 – Introduction of new courses	Grant sanctioned for new courses clubbed with the Plan Grant (Non-Recurring). Separate record to be maintain, this is not mentioned in the Sanction order.
	6 - Purchase	All the suggested measures are being followed as can be observed in the current audit reports.
	9 – Insurance of Assets/Property	Steps are being taken for the same but no suitable agency is available till date. Also, the grant from where the insurance expenditure will be incurred is not clear.
	10 – Security Payable	Some of the vendors have already claimed and refunded their respective security, the unclaimed security of Rs. 46,764/- received from different dealers has been booked in the account under security lapse account.
<b>2008-09</b>	11 – Leave Salary and Pension Contribution	Sh. R. K. Sharma has not drawn the arrears of 6 <sup>th</sup> CPC from this office. Therefore no meaning of payment LS & PC on revised basis.
	1 - Purchases	1. Items were purchased from Kendriya Bhandar as a single vendor. However, the KB will be treated as one of the vendor to submit their quotation in subsequent years as per GFR 2009 rules. Ex-post-approval

Year	Para No. & Brief of Para	Audit Para
		of the finance department will be sought. 2. Grant recd. in appropriate head was received only on 28.02.2009 and 02.03.2009. the procurement was done after the receiving this grant.
	2 – Electricity charges	Now the Electricity bills are paying on domestic basis whereas payment was made on commercial basis has been adjusted by BSES in the Electricity bills.
	4 – Income Tax	1. Rent Receipt obtained from the official. All documents obtained related to property for which he has taken Home Loan. 2. Tax deposited by officials. 3. Tax deposited by officials.
	5 – Pay fixation	Pay of the recommended officials re-fixed and other similar cases also.
	6 – Non adjustment of advances bills in r/o NICS	All advances paid to NICS has been adjusted.
	7- Time barred Cheques	Cheques already stale on 31.03.2010. and reply given to Audit Party vide their memo No.6 dt.03.08.2010.
	8 – Expenditure Sanction	All measures have been taken and submitted.
2009-10	1 – Appointment of S. O. (A/c's)	Ex-post-approval will be sought.
	2 – Write off of loss of library books amounting to Rs.41653/-	The amount should be read as 34,380/- (for 172 books) since the beginning of the college 1995 and not for this one year, as listed below, and within the prescribed per year limit in the GFR 194. 2001-02= 5872/- 2002-03= 6222/- 2003-04=2426/- 2004-05=860/- 2005-06=6804/- 2006-07=2605/- 2007-08=2060/- 2008-09=9679/- 2009-10=5226/- 41754/-
	3 – Non deduction of TDS on printing and legal charges	Now the College is deducting TDS on all contractual bills. Income tax on these TDS is also being deducted.
	4 – Review of Pattern of Assistance	The DHE will be providing the needful.

Year	Para No. & Brief of Para	Audit Para
	5 – GIA amounting to Rs.30 Lac. Lying unspent.	Amount of Rs.30 Lakhs refunded to DHE after the approval of the DHE vide Ch. No.060128 for Rs.24,60,000/- & 060129 for Rs.5,40,000/- dated 14.07.2014.
	6 – Non utilization of UGC grant	UGC grant under X Plan was only for the budget heads not covered under GIA from DHE.
	7 – Wrong debit shown by the Bank	Mistake has been rectified.
	8 – Switch over of accounting system from cash basis to accrual basis.	Switched over from cash basis to accrual basis.
	9 – Payment on account of liveries made on pro-forma invoice.	Suggested measures are being followed in the subsequent years.
2010-11 & 2011-12	1 – Difference in unutilized balance of non-recurring grant	Difference has been created by the wrong entries by the Audit Party in the ELFA Reports from the last 5 to 6 years ago. The same was shown to Auditor but remain uncommented in the report submitted.  The unutilized balance amount of Capital Grant (Plan) for Rs.64,34,544.87 has been refunded to DHE vide Ch. No.188360 dt. 27.04.2015.
	2- Blockage if government fund	SETTLED
	3 – Irregularities in Medical Claim Taken by the officials	SETTLED
	4 – Ad-hoc appointment of assistant Professors and attendants without the prior approval of administrative Department	SETTLED
	5 – Honorarium paid to the Staff without approval of the finance department of Govt. of NCT of Delhi	An amount of Rs.1000/- was paid as sitting allowance to the personnel acted as an expert for Sports trail required for admission in this category as per DU norms. As suggested request made to DHE for the ex-post facto approval.
	6(1) – Lump sum amount booked in the liability side under the head provision account without any detail/type.	Provision Account has been adjusted and shown to auditors. Still no comment was received in the submitted report.
	6(2) – Amount lying unadjusted on the liability side of the Balance Sheet of the year 2010-11	1. Amount of Rs.19980/- instead of Rs.190980/- is pending. Correspondence is doing. 2. How the Medical Revolving Fund of Rs.157747/- credited to the Government Account. This is keeping

Year	Para No. & Brief of Para	Audit Para
		for emergency to the students. 3. Amount of Rs.30 Lakh refunded to DHE after the approval of the DHE vide Ch. No.060128 for Rs.24,60,000/- & 060129 for Rs.5,40,000/- dated 14.07.2014.
	6(3) – Advance payment made for purchase of uniform as per the Balance Sheet of 2011-12	No advance payments are now being made to dealers.
	7 – Non deduction of TDS (VAT) on Sanitation Contract.	The College is deducting the TDS (VAT).
	8 – Irregular payment of taxi fare while availing LTC facilities	Amount Recovered from the officials.
	9 – Irregularities/Shortcomings noticed in income tax deducted from the salary of the officials.	The College are now taking Rent Receipt by cheque payment if rent paid more than Rs.8000/-. A.(i) Revised Rent receipt obtained. (ii) Tax collected and deposited from the officials. B. Official submitted all proved documents in r/o his property.
	10 – Appointment of private security guards without obtaining the approval of Finance Department, GNCT of Delhi	Prior approval of DHE was obtained vide Letter No.DHE-3(80)/2002-2003/3746 dated 21/1/2003 and also vide letter No.DHE-3(80)/2004-05/230 Dated 30.4.2004.
	11 – Performance Guarantee/Security	Started.
	12 – New Pension Scheme	Registration No. allotted by NSDL and contribution has now started to deposited with NSDL.
	13 - Physical Verification of assets	Physical verification of the individual departments have been done annually. The assets register is a compilation of all such assets and can be assumed to be verified. However as advised the required will be done in future.
	14 - UGC/Star College Grant	The UGC grant is for XI five year plan and has been utilized in the span of this plan. The unspent is already been refunded to the funding agency.
	15 – Non switching over of accounting from cash basis	Switched over from cash basis to accrual basis.
	16 – Condemnation of assets/equipments.	Process started and pending with DHE for administrative approval.

Year	Para No. & Brief of Para	Audit Para
2012-13	1 – Penal Interest on late refund of LTC Advance	SETTLED
	2- Excess payment of Salary to Sh. Sandeep Kumar Dixit Rs.1638/-	SETTLED
	3-Procurement from single source as proprietary item	Limited tender purchase instead of proprietary item shown in the report.
	4- Purchase of ban items	Ex-post-approval will be sought.
	5- Irregular diversion of funds	Ex-post-approval will be sought.
	6-Re-imbursement of medical expenses against existing provision	DU norms were followed for the payment.
	7 – Grant of Transport allowance and credit of earned leave to teaching staff for attending/duty during vacation period	SETTLED
	8 – Physical verification of consumable and non-consumable items	SETTLED
	9 – Non recording of Service verification certificate in the service book	SETTLED
	10-Pattern of Assistance	The DHE will be providing the needful.
2013-14	1-Reimbursement of medical expenses against existing provisions	The employees of the college have been offered the only available medical scheme of WUS-Health Centre, DU and reimbursement to non members has been stopped with immediate effect.
	2- Purchase of Ban item	Ex-facto approval is sought from the DHE.
	3- Recovery of FPA amounting of Rs. 3350/-	The allowance has been revised as per the direction w.e.f. July 2015.
	4-Non adherence to E-procurement systems	The items were purchase using the 2-bid process and the lender was published on College website, DU website as well as CPP Portal.

## **CRITERION - VII**

### **INNOVATION AND BEST PRACTICES**

## **CRITERION – VII**

### **INNOVATION AND BEST PRACTICES**

#### **7.1 Environment Consciousness**

##### **7.1.1 Does the Institute conduct Green Audit of its campus and facilities?**

Though at present college does not have a formal provision of a green audit but the college has a wonderful green and eco-friendly campus with water harvesting system. The college building is also designed in a manner so that we have green patches between different blocks. Also, the construction of rooms and laboratories is such that it ensures ample sunlight and proper ventilation across the building. The college also has a very active “Eco Club” which regularly conducts awareness drives and programmes. There is a small nursery in the campus where different kinds of plants are grown. We present saplings from the college nursery to our guests and dignitaries during various college functions in order to show case our endeavor to save/grow and have eco-friendly environment.

##### **7.1.2 What are the initiatives taken by the college to make the campus eco-friendly?**

###### **Energy conservation**

Various drives are initiated in each academic session to encourage students and staff members to conserve energy. They are requested to switch off electrical appliances when not in use. To facilitate the same, posters are displayed in each classroom and corridors as well. The college is also in the process of phasing out old tube lights and bulbs and replacing them with LED lights. Right at the time of construction of the building, attention was paid to ensure that rooms and laboratories would get enough sunlight and will be well aired so that the need for artificial energy sources could be reduced to minimum. The classrooms and laboratories have high ceilings and large windows to usher in sunlight and fresh air too.

###### **Water harvesting**

The college has two water harvesting units. All the water collected from the working unit is being discharged into the ground water to increase the ground water table.



**Check dam construction**

We do not have any facility for the same yet.

**Efforts for Carbon neutrality**

Though there is no formal system in place yet but we believe, awareness is the key to bring down the carbon footprint. Hence, a lot of informative programs and activities are regularly organized under various clubs to create awareness and initiate action-based approach in our college. In this regard college has organized several seminars, workshops, talks, plantation drives and various intra and inters college competitions. We also have a paper-recycling unit in the college and also discourage the use of coal in our college canteen.

**Plantation**

The Eco club and NSS team along with Garden committee plan to take up development in a phased manner to enhance the ecology of the college in near future. Tree plantation exercises are regularly carried out in the college. Students of these clubs are personally committed to taking care of the newly planted trees. An effort is on the way to make a herbal garden in the college, for which seeds of herbal plants like aloe-vera, basil, curry-leaves and kulmegto besides many others are procured and planted. In the past few years, approximately 500 saplings have been planted in our college campus.

**Hazardous Waste Management**

The waste management committee of the college works towards finding out the authorized dealers and interacts with them to dispose off the biological waste generated in the college on regular intervals.

**E-waste management**

To overcome complex problem of e-waste management, a multi-disciplinary approach is required to implement the mechanisms for collection, sorting, reusing, repairing and remanufacturing to reduce emissions and save energy. For awareness of this problem among the researchers and students all over India, our college has taken various steps in past few years. A National Seminar on “Management of Waste from Electronic and Renewable Energies” was held on 29-30 January 2010 in the college. This two-day

seminar was organized to identify and discuss major challenges and needs associated with management and sensitization of the various stakeholders from different strata of society and work culture for accountability and traceability based on the 4R principles of recycle, refurbish, re-use and reduce. After the success of this seminar in year 2010, our college organized another National Conference on “E- Waste Sustainability: Needs and Solutions for Its Management” in March 2013. Participants from all over India from various universities presented papers on the same. A lecture series was organized in the college by inviting eminent personalities working in this field. To implement the ideas discussed in conference and to bring awareness among the students about this problem, our college has taken few small steps. The College has also installed an e-waste bin in collaboration with Delhi Government in the college premises to collect e-waste and sensitize students and faculty. Further, the contents of this bin are being handed over to the authorized dealer who can dispose them safely in an organized way. Also, our students have designed various products by utilizing plastic wastes and food waste. These products were put to display in “Antardhwani”, 2015, an inter-college festival organized by University of Delhi.

## **7.2 Innovations**

### **7.2.3 Give details of innovations introduced during the last four years which have created a positive impact on the functioning of the college.**

The college believes that the education is not mere learning of only facts and figures but it is also about the training and igniting of young minds to think beyond textual knowledge. The college has fifteen departments, which caters to eight B.Sc. (Hons.) courses of sciences. It is the endeavor to learn, create, discover and rediscover that motivates the students and teachers alike. Multidisciplinary approach to education is the need of the hour and our college believes and practices the same. From the courses being offered to the workshops, seminars, invited talks, conferences regularly being organized signal the same. Our college regularly updates the students about the new developments in research and industry by inviting speakers from diverse fields and organizing intellectual exchange of information. Each department of the college has their respective departmental societies. The societies not only organize several seminars delivered by experts from industry and academic institutions to apprise the students about the latest developments in the respective fields but also hold

workshops, symposia and conferences from time to time.

In the past few years, several initiatives have been made to encourage out of box thinking and innovations in the area of research and teaching. A fact well indicated by the number of innovation projects granted to the college faculty under the ***University of Delhi Innovation Project Scheme for Inter-disciplinary Research*** in colleges. The distinct feature of these projects is that the three project investigators have to be from at least two different disciplines and ten undergraduate students of the college are selected to work under each project. The college successfully completed ***five*** projects under this scheme in the year 2012-13 and two patents were also filed from one of the projects. During 2013-14, college was sanctioned ***nine*** projects, which were successfully completed in the year 2014-15. Out of these nine projects, our college received “certificate of appreciation” for five Innovation Projects at 'Antardhwani-2015' with four under “Best Display” and one for “Best Innovation Idea”. In the current academic year, our college has been sanctioned ***twelve*** projects. This goes on to show the focus and encouragement for research at undergraduate level. Some of the faculty members are also recognized as PhD supervisors and some have their independent projects funded by external agencies.

The Department of Food Technology of the college was awarded the '**STAR Department Status**' by the **Department of Biotechnology, Government of India** from September 2013. **The Expert Committee of Department of Biotechnology** has now recommended for continuation of Star College Grant at the existing level under the “**Strengthening Component of the Star College Scheme**” to all the four participating science departments, namely Biochemistry, Biomedical Science, Food Technology and Microbiology, currently benefitting under the scheme.

Under the same scheme, a Laboratory Staff Skill Development Program (LSSDP) was organized between 15-18<sup>th</sup>, December 2014. The primary aim of the program was to train and upgrade the skills of the laboratory staff of the Life Sciences Departments of our college. The teaching faculty members of the college were the resource persons for this program.

A Virtual Learning Environment Workshop – ‘Shaping, Teaching and Learning with VLE’ was also held on September 6, 2014. The workshop was organized in collaboration with the Institute of Informatics and Communications, University of

Delhi, South Campus for the faculty members of the college.

For an effective learning environment, it is essential to integrate several methodologies. We have ICT enabled classrooms to enhance learning through audio-visual methods. The staff members and students have access to Wi-Fi network to further expedite learning, knowledge sharing and innovative thinking.

Library of the college maintains a weblog since Dec. 31, 2010. The idea of the blog is to reach out essentially to students and faculty members of the college in particular and is also available for public in general. The web blog comprises of almost all the relevant information pertaining to the library. Homepage of the blog includes notice board, posts (including annual reports) and other useful links. The page 'About the Library' contains information about infrastructure, collection, staff, services and facilities, library committee and rules & regulations of the library. The blog also contains previous years question papers and 'minutes of the library committee pages. The weblog has been visited 28,225 times (as on 22 June, 2016) worldwide. The same can be accessed through <http://bcaslib.blogspot.in>.

Department of Polymer Science has also developed a blog, <http://polybcas.blogspot.in> in order to provide information regarding placements, faculty profile, syllabi, college and departmental activities, notices, alumni details, admission cut offs etc. to students and public at large. This blog acts as a platform to help students and visitors to learn about the on- goings features of the department and also has a provision for leaving a feedback.

We strive for equal and easy access to quality education for all deserving students in our college. In order to provide the same, the college has a provision of fee concession for students belonging to economically weaker sections by a duly constituted committee. The committee screens the students who are in need of financial assistance and are helped accordingly.

The college strongly believes and focuses on holistic development of its students. In order to achieve and deliver this objective, the students are actively encouraged to participate in extracurricular activities. Our students have represented the college in various inter-college and inter-university competitions in the area of dramatics, dance, singing, quiz, debate, rock band and various sports tournaments. On one hand students have got good exposure and platform to showcase their talent and hone their skills. At

the same time, they also have brought recognition and several laurels for the college too.

### **7.3: Best Practices**

**7.3.1** Elaborate on any two best practices in the given format, which have contributed to the achievement of the Institutional Objectives and/or contributed to the Quality improvement of the core activities of the college.

**Title of the Practice I: Regular interactions between various stakeholders i.e. students, academia and industry.**

**Goal:** To introduce practical applications and recent advancements in order to strengthen the theoretical knowledge for the benefit of the society.

**The Context:**

The need was felt that students should be kept updated and with the technology used and research & development activities of scientific institutions and industry. To fulfill this requirement various lectures, seminars, workshops are conducted throughout the year to keep students informed about the developments in the industry and academics.

**The Practice:**

Lectures, seminars and workshops are regularly organized in the college by various departments. Experts from both national and international organizations are invited to share their expertise with the students. Alumni are actively associated in guiding the ongoing batch of students. The career counseling cell has organized several sessions for students on how to face interviews and preparation of curriculum vitae. Students also undergo summer training, internships and participate in projects in institutes of repute and industry.

All departments conduct various lectures, seminars, and workshops for the students, some of them are listed below:

**Invited Lectures:**

- A lecture on “Effective communication” was conducted in the college premises on September 29, 2014 by Dr. Jyoti Doval, on Marketing and Business Communication, from Apeejay School of Management, Dwarka for all final year students.

- “Developing ‘Molecular’ or ‘Cellular’ Based Protocol to Define the Extent of Epileptogenic Zone and Elucidating the Molecular Basis of Intractable Epilepsy (IE)” on 15th September 2014.

### **Seminars:**

- National Symposium on “Infectious Diseases: Advancements in Diagnosis, Therapeutics and Vaccines” (20th and 21st March, 2014).
- National Seminar on “Advancements in Packaging, Food and Social Impact” was organized on 3<sup>rd</sup> Nov 2014.

### **Workshops:**

- A National Workshop on ‘Printed Circuit Board Designing’ was organized in collaboration with Tevatron Technologies Pvt. Ltd. during March 24-26, 2015.
- Students of our college also attended a “Workshop on Business Plan” held at Apeejay School of Management, Dwarka on October 14, 2014. The students were enriched with lectures on financial and legal aspects of Business Plans.
- Students also participated in the workshop on “How to Crack a Case” held on February 12, 2015 at Apeejay School of Management, Dwarka.
- A workshop was conducted for isolation of plant genomic DNA (for School Children from DPS, Vidyutnagar, Dadri) on 19th August 2014.
- “Molecular Modeling in Drug Discovery” in collaboration with CSIR-OSDD by Dr. Anshu Bhardwaj 16th – 18th July 2014 was organized.
- A workshop on “Statistical Analysis of Biological Data” was organised from 9th – 11th October 2014.
- Demonstration of BD Accuri C6 Personal Flow Cytometer was conducted on 14th July 2014.
- Shaping, Teaching and Learning with VLE in collaboration with Institute of Informatics and Communications, University of Delhi, South Campus was organized on 6th September 2014.
- First Laboratory Staff Skill Development Program was conducted from 15th – 18th December 2014.

- A workshop on ROBOTICS in collaboration with CETPA was organized on November 5, 2014. The esteemed guest, Mr. Sanjay Kumar Singh, Chief Technical Consultant, Embedded Systems and Open Source Technologies, CETPA were invited to give the students an insight of the technology involved. Also, a lecture on 'PCB Design and Future' was delivered on November 5, 2014 by Mr. Anurag Gupta and Mr. Rajeev Tiwari, Directors, Tevatron Technologies Pvt. Ltd.
- Department of Instrumentation organized a Two Day workshop on "Line Follower Robotics" in collaboration with EFY Group, publishers of Electronics for You magazine during 11-12 March, 2014.
- A three day National Workshop on "VLSI Designing using Verilog Coding" in collaboration with JB Tech INDIA was organized during July 16-18, 2013. The workshop included the lectures from eminent resource persons, hands-on training in VLSI Embedded system and panel discussions. The workshop aimed at introducing the concept of VLSI chip design to students, research scholars and faculty members of various institutes.
- A workshop on 'Embedded Systems and Robotics' in collaboration with DUCAT was also organized in the college on September 3, 2013.
- A two day Workshop on "Experiments and Research Applications with National Instruments LabVIEW" was organized by Departments of Instrumentation and Electronics jointly on February 2-3, 2012.
- A three day Entrepreneurship Awareness Camp (EAC) for our college students in collaboration with Innovation & Entrepreneurship Development Centre (IEDC), Acharya Narender Dev College (University of Delhi) from January 4 to January 6, 2012 was conducted in our college campus. This camp was sponsored by National Science & Technology Entrepreneurship Development Board (NSTEDB), Department of Science & Technology (Government of India).

### **International Workshop**

- The Department of Food Technology conducted the first International workshop "Better Process Control School for Manufacturers of Low Acid

Foods” at Negombo, Sri Lanka from 21-23 November, 2011 in collaboration with the U.S. Food and Drug Administration (FDA), India Office on invitation from Silver Mill Group under the coordinatorship of Dr. Shalini Sehgal, Associate Professor, Department of Food Technology and co-coordinatorship of Dr. Rizwana, Associate Professor, Department of Food Technology. Mr. John T. Sproul, Assistant Country Director USFDA, India and Dr. Nirupa Sen, Food and Medical Product Safety Coordinator were in attendance on behalf of USFDA, India Office. Seventeen participants including three from Vita Coco (Malaysia) were trained on various aspects of “Aseptic Packaging”.

### **Evidence of Success**

- Students of our college attended a “Workshop on Business Plan” held at Apeejay School of Management, Dwarka on October 14, 2014. The students got a knowhow on financial and legal aspects of business plans. Three teams from the college participated in the event. In the Inter-college competition which was organized in the above workshop and attended by various teams from across Delhi, our students secured 2<sup>nd</sup> prize for the “Best Business” proposal on “Satiety Express” and 3<sup>rd</sup> prize on “Dairy Farming”.
- One student of Department of Instrumentation was selected as the recipient of POSCO Asia Fellowship at University of Delhi.
- Teachers of the college have registered various patents.
- Eight students of Biomedical Science have been awarded with Tata CSIR-OSDD fellowship of amount Rs 15,000/- for a period of 3 months from February 2015 to April 2015.
- Three faculty members Dr. S. K. Shukla (Dept. of Polymer science), Dr. Rizwana (Dept. of Food Technology) and Dr. Anand Bharadvaj (Dept. of Physics) received the “**Teaching Excellence Award for Innovation**” from University of Delhi during the academic session 2014-15 for the innovation project “Agro-Waste Material Management: From Waste to Wealth”.

### **Problems Encountered and Resources Required**

- Masters programs for Instrumentation, Food Technology and Polymer Science



courses are not available in Delhi. Students either apply to other universities or sometimes might have to divert their field of study.

- The financial resources required for a complete maintenance of the high end instruments is a challenge.

**Title of the Practice II: Well-equipped and updated infrastructural facilities for quality education.**

**Goal:** To give hands on training to handle the equipments and instruments used in industry and research laboratories.

**The Context:**

The college offer applied science courses and student after completing their degree find vocation in Industry as well as research laboratory. Hands-on-learning strengthens their practical skills and open vistas for their future growth.

**The Practice:**

The hands-on-training on equipments is provided to facilitate the students to achieve perspective of both theoretical knowledge and practical skills.

- The Department of Biochemistry has well equipped laboratories with LCD projector to deliver practical classes. It has latest equipment like Spectrophotometers (UV-VISIBLE and VISIBLE), Electrophoresis Apparatus (Rod gel, Horizontal gel, Vertical gel, Paper), Auto-Titrator, Chromatography Systems (Ascending, Descending, Gel Filtration, TLC), pH meters, Centrifuges, Laminar Flow, Water Distillation Apparatus, Cooling Cabinets, Trans-illuminators, Vortex Shaker, Heating Mantles, Magnetic Stirrers, Water Baths etc. The well equipped laboratory has the modern instruments like Binocular Microscopes, Electronic Balances, Electrophoresis Unit, B.O.D. Incubator, PC based UV-visible Spectrophotometer, Autoclaves, Laminar Flow, Growth Chamber, Digital Blood Cell Counter, Digital Hemoglobin Meter, Digital Blood Analyzer, pH Meter etc.
- The Department of Biomedical Science is well equipped with various latest and sophisticated instruments including computer-based UV-Visible

spectrophotometers, Thermal Cyclers, Gel Documentation System, Refrigerated High Speed Centrifuges, Orbital Shaker Incubator, Microtome, UV Transilluminator, Microplate ELISA Reader, Digital Colony Counter, Digital Viscometer, Melting Point Apparatus, Binocular Microscopes with Camera and projection system as well as other instruments including Electronic Balances, Autoclave, Colorimeters, Vertical and Horizontal Electrophoresis Units, Electro-Blotting System, Laminar Hood, Magnetic Stirrers, Vortex Shakers, Ice Flaking Machine, Ovens, Flame Photometers Etc.

- The Department of Chemistry is well equipped with a wide range of sophisticated analytical instruments. Some notable instruments are pH-meter, Hot Air Oven, Double Distillation Plant, Vacuum Pump, De-Ionizer, Spectrophotometer, Muffle Furnace, Polarimeter, Potentiometer and Fuming Hood Chamber.
- The Department of Computer Science is well equipped and has excellent infrastructure which includes three fully air conditioned laboratories containing over 120 computer systems networked to powerful servers. The department has high quality accessories such as scanners, printers, projectors and CD/DVD writers. Each terminal provides access to high-end version of software packages like C++, Java, Visual Studio, SQL Server, Ubuntu etc encouraging students to learn latest technologies thus enhancing their software development skills.
- The Department of Electronics is well equipped with the state-of-the art instruments such as Cathode Ray Oscilloscopes and Digital Storage Oscilloscopes (100MHz), CRO demonstration kits, Pulse Generators, Function Generators, Power Meter, Analog and Digital I.C. tester, LCR Q- tester, 8085 and 8086 Microprocessor kits with assembler and disassembler, Microcontroller trainer, Interfacing modules and cards, Universal Programmer, various communication modules experimental kits, LASER kits, Antenna trainer kits, PCB design kits, etc. The Department also has well equipped computer laboratory with various simulation software installed to facilitate the students to gain expertise in IT skills.

- The Department of Food Technology is well equipped with sophisticated instruments and equipments to provide quality education. The list includes Gravimetric Dilutor, UV-Visible Spectrophotometer, Bag Mixer, Texture Analyzer, Trinocular Microscope with Camera, GC, Water Activity Meter, Soxhlet Apparatus, Kjeldahl's digestion unit, Lovibond tintometer, Brookfield's viscometer. The Pilot plant of the Food Technology Department is equipped with Canning Unit, Tray Driers, Deep Freezers, Baking Ovens, Cooling Trolleys, Packaging Machines, Mini Milk Processing Plant, Sieve Shaker, Incubators for shelf life studies. The Department of Food Technology had received a grant of 70 lakhs from the Ministry of Food Processing Industry, Government of India for the upgrade of its infrastructural facilities. The Department has also been given "Star Department Status" under the Star College Scheme of Department of Biotechnology. The department received an additional grant of 10.5 lakhs to strengthen undergraduate teaching by improving the infrastructure.
- The Department of Microbiology has state of the art equipments such as Biological Safety Cabinets, Microscopes, MLXM-Microscope, Trinocular Microscope, Spectrophotometers, UV doublebeam Spectrophotometer, Autoclaves, Incubators, Centrifuge, Shaker incubators, Electrophoresis Set Up, High precision Electronic Balances, pH Analyzers, Cooling Centrifuge, Cooling Cabinet, Reverse Osmosis Purifier, Gel Documentation system, Icematic Machine, Hybridization Oven, Mini Spinner, Dry Heating Block, Auto Pipettes, Thermocycler etc. to carry out various microbiological, biochemical, biotechnological experiments.
- The Department of Instrumentation has well equipped laboratory which provides practical expertise to the students and trains them to design, develop, maintain and trouble-shoot instruments that are being used in varied fields like automation and control, process industries, medicine, quality control etc. The laboratory is equipped with state of the art instruments like NI ELVIS-II Educational Laboratory Virtual Instrumentation Suite supported by Lab VIEW full development system from National Instruments and NI USB Data Acquisition Card, to help students interface and integrate real time signals and

data. It also has Multisim software to simulate electronic circuits and designs. The laboratory also acquaints students with devices used in Process and Control industries like Ratio Control Trainer, Differential Pressure Transmitter, Circular Chart Recorder, Dead Weight Tester, various Flowmeters such as Electromagnetic, Orifice Meter, Ultrasonic etc. It also has advanced Transducer and Instrumentation Trainer, Temperature Transducers, LVDT and Strain Gauge Trainer, Speed Control of DC motor etc. Students learn to design and develop small projects on high performance Microcontroller and Microprocessor kits which are provided with interfacing modules like Temperature Controller, Keyboard, Elevator Simulator Interface, Stepper Motor, LCD etc. The Instrumentation Laboratory also boasts of training students in sophisticated biomedical and analytical Instruments like Plant Growth Chamber, Microprocessors based UV-VIS Spectrophotometer, 3-6 Channel Electrocardiograph, Heart Rate Monitor cum ECG trainer, Respiration Rate Monitor etc.

- The Department of Physics has state-of-the-art laboratories with all latest and sophisticated equipments needed to help the students have an experimental insight into the subject as prescribed by the syllabus. Some of the key equipments include Color Digital Storage Oscilloscope, Microprocessor kits, Spectrometers, LCR Q-testers, Laser Kits, Universal Interferometer, Ultrasonic Grating Experimental kit with CCD Camera, P-E Hysteresis Experiment kit, Digital I.C. Testers etc. Department has introduced both quantitative (problem-oriented) and qualitative (motivational in nature) approach to experiments in our laboratories. Demonstrators are available to help with the practical work when the lab sessions are conducted.
- The Department of Polymer Science has well equipped laboratories to train the students with synthesis, processing and testing of polymers to provide insight into the subject as prescribed by the syllabus. The laboratories have all the latest facilities to meet the requirement of the experimental set-up to the mark of industrial use. Apart from the syllabi experiments, students are also trained to expertise in handling, maintenance and troubleshooting of various equipments available in the laboratories. The department has variety of

equipments including Single Screw Extruder, Two-roll Mill, Injection Molding, Compression Molding, Universal Testing Machine, Impact Tester, Viscometers Flammability Tester, Vicat Softening Point, HDT, Permeability Tester, Resistivity Tester Oscillating Disc Rheometer, Abrasion Tester, Hardness Tester, FTIR etc.

- Library has a collection of 23280 volumes. Apart from the regular subscription, N-LIST (National Library and Information Services Infrastructure for Scholarly Contents) facility of INFLIBNET is also there.
- The Department of Physical Education is equipped with all the necessary facilities. The department organizes “Sports Day” every year. The college has one Basket Ball court, one Volley Ball Court, two Badminton Courts, one Lawn Tennis Court, a Table Tennis room with facility of two tables. In addition to this a sports ground is available for Cricket, Football and has a 200m athletics track and long jump pit.
- The college Gymnasium is equipped with treadmill, cross trainer, rowing machine, two cycles, small multi station gym, free weights etc. and other facilities has been made available for the staff and students.
- The college is connected to University of Delhi LAN system through radio link. An internet facility has been generated with the help of the computers supplied by the University of Delhi. The college has also received several highly sophisticated and useful equipments for its laboratories from University of Delhi.

#### **Evidence of Success:**

- Strong Infrastructural support has helped our staff in procuring various grants and projects. Some of these have even culminated in filing patents by both students and faculty. Our faculty and students have been recognized for their efforts in various forums.
- Campus placement interviews for Polymer Science students were held by M/s. Parag Pentacle on March 26, 2015 and M/s. Premier Polyfilm on April 6, 2015. Eight students have been selected in these two organizations.
- Students have been successfully placed in corporate like WIPRO, GSK,

Britannia, Sun Pharmaceutical industries Ltd, Oriflame, Equity Packaging Inc, Nestle, Marico Ltd., and also Food Safety and Standards Authority of India, Food Analysis and Research Centre, Bureau of Indian Standards, Amity University.

### **Problems Encountered and Resources Required**

- Opportunities to take up post graduate courses are limited for our students of Food Technology, Polymer Science and Instrumentation. Since the post graduate courses of these streams are not available with University of Delhi, students have to seek admission outside Delhi or sometimes change their area of further studies.
- The college is 100% funded by Delhi Government. The delay in release of funds has posed a challenge for the development and maintenance of the infrastructure on few occasions.

### **Contact Details**

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Name of the Vice Principal and NAAC Coordinator	<b>Dr. Shalini Sehgal</b>
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**EVALUATIVE REPORT OF  
THE DEPARTMENTS  
(ERD'S)**



## DEPARTMENT OF BIOCHEMISTRY

1. **Name of the Department** : Biochemistry
2. **Year of Establishment** : 1995
3. **Names of Programmes /Courses offered (UG, PG, M.Phil., Ph.D., Integrated Masters; Integrated Ph.D., etc.):** Not Applicable as the Department of Biochemistry is a Supporting (Allied) Department.

4. **Names of Interdisciplinary courses and the departments/units involved:**

Department of Biochemistry is an allied Department and it is an integral part of some of the courses being offered by the college.

5. **Annual/ semester/choice based credit system (programme wise) :**

Annual system: 1995-2010

Semester system: 2010 onwards

6. **Participation of the department in the courses offered by other departments**

Department of Biochemistry is an allied Department and, syllabus-wise, it draws from some of the courses being offered by the college.

7. **Number of Teaching posts:**

Posts	Sanctioned	Filled
Assistant Professor	1	Promoted to Associate Professor

8. **Faculty profile with name, qualification, designation and specialization.**

Name	Qualification	Designation	Specialization	No. of Years of Experience
Dr. Anita Sondhi	Ph. D	Associate Professor	Medical Biochemistry	21 years (18 years+ in this college and three years at Maulana Azad Medical College)

9. **Student -Teacher Ratio (program wise):** 12:1

**10. Number of academic support staff (technical) and administrative staff; sanctioned and filled :**

Post	Filled
Lab Assistant	02

**11. Qualifications of teaching faculty with DSc/ DLitt/ PhD/ MPhil /PG:**

Same as mentioned in point 08 above.

**12. Departmental projects funded by DSTJ-FIST; UGC, DBT, ICSSR, etc. and total grants received:**

The Department of Biochemistry is one of the recipient departments for Department of Biotechnology (Star College Scheme), Government of India, since 2010. Total Grants received till date is 5 lakh (Non-recurring) and approx. 6.5 lakh (Recurring).

**13. Publications:**

**Publications per faculty: 04** (Annexure-I)

**14. Faculty as members in**

**a) National committees b) International Committees c) Editorial Boards .....**

- Dr. Anita Sondhi is member, Faculty of Interdisciplinary and Applied Sciences (FIAS), University of Delhi, from April 2016 to March 2019
- Dr. Anita Sondhi was member, Faculty of Interdisciplinary and Applied Sciences (FIAS), University of Delhi, from April 2010 to March 2013

**15. Details of Infrastructural facilities**

- Library:** College has a common facility with adequate number of books for students studying Biochemistry as a subject.
- Internet facilities for Staff & Students:** The Department has been provided with internet Connectivity.
- Class rooms with ICT facility:** All lecture rooms have lectures-via-projection facility.
- Laboratories:** The Department of Biochemistry has well equipped

laboratories with LCD projector to deliver practical classes. It has latest equipment like Spectrophotometers (UV-VISIBLE and VISIBLE), Electrophoresis Apparatus (Rod gel, Horizontal gel, Vertical gel, Paper), Auto-Titrator, Chromatography systems (Ascending, Descending, Gel Filtration, TLC), pH meters, Centrifuges, Laminar Flow, Water Distillation Apparatus, Cooling Cabinets, Trans-illuminators, Vortex Shaker, Heating Mantles, Magnetic Stirrers, Water Baths etc

#### **16. Details on student enrichment programmes (special lectures /workshops / seminar) with external experts:**

Student Groups (5-6 students) are sent routinely to various Diagnostic Centers / Hospitals / Clinical laboratories to understand the practical implications of the subject and to understand the clinical perspective of the subject.

#### **Industrial visits/exposure visits by the students/summer training, winter training**

Students of B.Tech (Food Technology, Semester IV) were assigned the project: Biomolecule Quantitation: A Clinical perspective and the role of diet in disease management and the following centers were visited as per the details mentioned.

S.No	Academic Session	Name of the Institute	Duration	Number of Students
1.	2014-2015	Siddharth laboratory, Sector-7, Rohini, New Delhi	1 Day	5
2.	2014-2015	Divyaprastha Hospital, palam, New Delhi	1 Day	10
3.	2014-2015	Raj Lab Diagnostic Center, Dwarka Mor, New Delhi	1 Day	10
4.	2014-2015	Holy Family Hospital, Clinical Chemistry Lab, Okhla Road, New Delhi	1 Day	5
5.	2014-2015	Sardar Vallabhbhai Patel Hospital East Patel Nagar, New Delhi	1 Day	5
6.	2014-2015	Delhi X-ray and lab, Najafgarh, New Delhi	1 Day	5

Students of B.Sc (H) Biomedical Sciences, IV semester and B.Sc (H) Food technology, IV semester were assigned projects to understand the practical implications of Biochemistry and for which they visited the Centers as per the following details:

S.No.	Academic Session	Name of the Institute	Duration	Number of Students
1.	2013-2014	Kalawati Saran Children Hospital, Bangla Sahib Road, New Delhi	1 day	5
2	2013-2014	Dhanwantri Laboratories, Dwarka, New Delhi	1 day	5
3.	2013-2014	Capital X-ray scan Clinic, New Krishna Park, New Delhi	1 day	5
4.	2013-2014	Sanjeevani Path labs, Dwarka, New Delhi	1 day	5
5	2013-2014	Star Imaging and Pathological Laboratory, Janak Puri, New Delhi	1 day	12
6.	2013-2014	Metro Diagnostic Center, Ashok Nagar, New Delhi	1 day	5
7.	2013-2014	Sharma Diagnostic Center, Dwarka, New Delhi	1 day	5
8.	2013-2014	Dr Lal pathological lab, Dwarka, New Delhi	1day	10
9.	2013-2014	Dr Lal Pathological Lab, Palam, New Delhi	1day	5
10.	2013-2014	Dr Ram Manohar Lohia Hospital, Baba Kharag Singh Marg, New Delhi	1day	6
11.	2013-2014	Star Pathology Lab Pvt Ltd, Ramphal Chowk, Dwarka, New Delhi	1 day	7
12	2013-2014	Star Imaging and Path Lab Pvt Ltd , Tilak Nagar, New Delhi	1 day	6
13	2013-2014	Apex Hospital, Narayana Vihar, New Delhi	1 day	6
14	2013-2014	Dr Lal Path Lab, Ashok Vihar, New Delhi	1 day	6
15	2013-2014	Get Well Diagnostic Centre, Madhu Vihar, New Delhi	1 day	6
16	2013-2014	SRL Diagnostics, Vasant Vihar New Delhi	1day	7

### 17. Teaching methods adopted to improve student learning

We provide a right environment for learning, irrespective of students' academic capabilities, gender and socio-economic background. This is achieved through techniques and methods including power point presentation and interactive classes. We regularly send groups of students to various hospitals, clinical laboratories, diagnostic centers to understand the real life application of the subject.

### 18. Participation in Institutional Social Responsibility (ISR) and Extension activities

Full cooperation, contribution and participation is extended by the faculty in taking up the cause , responsibility and concerns raised by Gender Sensitizing Committee, Student Welfare Committee, Equal Opportunity Cell,

NSS, Eco club and other forums of the college. The Institutional social responsibility is, thus, handled with total commitment.

## 19. SWOC analysis of the department and Future plans

### Strengths:

Dedicated and Committed Faculty member

Well- equipped laboratories

Excellent Library facilities with latest text books and Reference books

### Weaknesses:

More faculty members and staff is required to strengthen the department.

### Opportunity:

Virtual Laboratories for a few experiments will save lot of national money and learning would be more fun as well

### Challenges:

- To be as technology savvy as the students
- To make the lectures more crisp and informative
- To undertake tutorials regular on-line evaluations/tests.

### List of publications in peer reviewed international journals.

1. Agrawal K.P., Agrawal A.R., **Sondhi A.**, Chhabra S.K., Gangal S.V., Dolly Mehta (2005), "Basis of rise in intracellular sodium in airway hyperresponsiveness and asthma. **Lung Nov- Dec; 183(6):375-387.**
2. Chhabra S.K., **Khanduja A.** Jain D. (1999), "Increased intracellular calcium and decreased activities of leucocyte Na,K- ATPase Ca<sup>2+</sup>-ATPase in asthma" **Clinical Science 97,595-601,**

### List of publications in peer reviewed national journals.

1. **Sondhi A.** and Talukdar B. (2000), "Effect of Corticosteroids on elevated intracellular sodium, plasma lipid peroxide levels and reduced Na<sup>+</sup>, K<sup>+</sup>-ATPase activity in patients of bronchial asthma, **Indian Journal of Clinical Biochemistry Aug: 15(1):44-47,**

2. Chhabra S.K., **Khanduja A.**, Jain D. (1999), "Decreased Sodium- Potassium and Calcium Adenosine Triphosphatase activity in asthma: Modulation by inhaled and oral Corticosteroids", **Indian Journal of Chest Diseases** Feb, **41:15-26**,

Name of Journals in which faculty has published papers	Impact Factor	SNIP (2012)	SJR (2012)
Lung	1.899	1.137	0.867
Clinical Science	4.317	1.535	1.625

## DEPARTMENT OF BIOLOGY

1. **Name of the Department** : Biology
2. **Year of Establishment** : 1995
3. **Names of Programmes / Courses offered (UG, PG, M.Phil., Ph.D., Integrated Masters; Integrated Ph.D., etc.)** : Allied Department.
4. **Names of Interdisciplinary courses and the departments/units involved:**

Department of Biology is an allied, supportive department and it is an integral part of the various courses like B.Sc.(H) Microbiology, Biomedical Sciences, Food-Technology, & Instrumentation being offered by the college. Under FYUP, all the students study Environmental Science course & which are of interdisciplinary in nature.

5. **Annual/ semester/choice based credit system (programme wise) :**

Annual system: 1995-2010

Semester system: 2010 onwards

6. **Participation of the department in the courses offered by other departments**

The department offers credit courses to the students of B.Sc.(H) Microbiology, Biomedical Sciences, Food-Technology and Instrumentation

7. **Courses in collaboration with other universities, industries, foreign institutions etc.**

The department used to offer B.Sc. in Life Sciences as well as B.Sc.(H) in Botany & Zoology and Lab. Techniques course of IGNOU.

8. **Details of courses/programs discontinued (if any) with reasons**

The courses offered by the department as mentioned in the point No.7 was discontinued when the study centre of our college was closed.

9. **Number of teaching posts sanctioned :**

Posts	Sanctioned	Filled
Assistant Professor	03	03 (Promoted to Associate Professors)

**10. Faculty profile with name, qualification, designation and specialization.**

Name	Designation	Qualifications	Specialization	No. of Years of Experience	No. of Ph.D. / M. Phil / M. Tech / M. Sc. Students supervised
Dr. N.S. Abbas	Associate Professor	M.Sc., Ph.D.	Molecular Biology & Plant Biotechnology	23 years	01
Dr. Anil Kumar Bali	Associate Professor	M.Sc., M. Phil, D. Phil, Post Doc.	Microbial Molecular Biology and Biotechnology	23 Years 7 months	--
Dr. Sujata Bhardwaj	Associate Professor	M.Sc., Ph.D.	Ethnobotany and Environmental studies.	18 years 10 months plus	--

**11. List of senior visiting faculty:**

Visited as per the information provided by the Main Departments like B.Sc.(H) Microbiology, Biomedical Sciences, Food-Technology and Instrumentation.

**12. Student -Teacher Ratio (program wise): 12:1****13. Number of academic support staff (technical) and administrative staff; sanctioned and filled :**

Post	Filled
Lab Assistant	04

**14. Qualifications of teaching faculty with DSc/ DLitt/ PhD/ MPhil /PG:**

Same as above

**15. Number of faculty with ongoing projects from****a) National :**

Name	Project code	Title of the Project	Funding Agency	Amount
Dr. N. S. Abbas	BCAS-308 (2015-16)	Exploring the Involvement of Mechanotransduction Network in inter-individual differences through Ayurgenomics approach	University of Delhi	Six Lakh



Name	Project code	Title of the Project	Funding Agency	Amount
Dr. A. K. Bali	BCAS-301 (2015-16)	Development of Norms of Selected Autonomic Nervous System Functions, Lipid Profile, Electrolyte and Selected Respiratory Variables of College Students with and without Sports Background	University of Delhi	Six Lakh

**16. Publications: Prior to 2012**

Name of the faculty	Publications in journal	Chapters in books	Publications in Conference Proceeding	Paper presented in conference
Dr. N. S. Abbas	02	03	02	Nil
Dr. Anil Kumar Bali	03	Nil	06	03
Dr. Sujata Bharadwaj	03	Nil	Nil	Nil

**Publications after 2012:**

Name of the faculty	Publications in journal	Chapters in books	Publications in Conference Proceeding	Paper presented in conference
Dr. N. S. Abbas	02	Nil	Nil	Nil
Dr. Anil Kumar Bali	01	05	Nil	Nil
Dr. Sujata Bharadwaj	Nil	Nil	01	Nil

**a) Publication per faculty**

Annexure I

**\*Number of papers published in peer reviewed journals (national/international) by faculty and students**

Dr. N. S. Abbas : 04

Dr. Anil. Bali : 04

**Number of publications listed in International Database (For E- Web of Science, Scopus, Humanities International Complete, Dare Database- International Social Sciences Directory, EBSCO host, etc.)**

Dr. Anil Bali: 8

**17. Areas of consultancy and income generated:**

Dr. Anil Bali

Taught B.E. (Biotechnology) students at Netaji Subhas Institute of Technology (NSIT), University of Delhi, Under Consultancy Program. Paid as per AICTE rules.

**18. Faculty as members in****a) National committees b) International Committees c) Editorial Boards ...**

Dr. N. S. Abbas

Member of Faculty of Sciences, University of Delhi from 2012 to 2014.

**19. Students projects :****a) Percentage of students who have done in-house projects including inter departmental/ programme.**

All students (Annual mode) undertook the projects as part of their curriculum

**b) Percentage of students placed for projects in organizations outside the institution i.e.in Research laboratories/Industry/other agencies.**

100%, Annual mode

**20. Awards/ Recognitions received by faculty and students:**

Dr. Anil Bali

1. Medal for the first position in M.Phil.
2. USSR scholarship for Ph.D. in the Moscow State University (Not availed)
3. Commonwealth Scholarship for D.Phil. in the University of Sussex , U.K
4. Margaret Grant Fellow, University of Sussex, U.K.
5. Pool Officer, Scientist's Pool. Scheme ,CSIR , India

**21. List of eminent academicians and scientists/ visitors to the department:**

Visited as per the information provided by the Main Departments like B.Sc.(Hons.) Microbiology, Biomedical Sciences, Food-Technology, & Instrumentation.

**22. Seminars/ Conferences/Workshops organized & the source of funding:****a) National**

Dr. Anil Bali:

1. Course Coordinator for the Refresher course in “Biotechnology and its applications (Interdisciplinary)” from July 21 to August 10, 2009 at the center for Professional development in Higher Education (CPDHE) at the University of Delhi, India Funded by UGC.

Dr. N. S. Abbas:

1. Course coordinator organized 10 weeks training programme for the faculty members, conducted by University of Delhi in 2008. Funded by WHO.
2. Co-ordinator, organiser and Editor for the National Conference on Solid State Chemistry and Allied Areas organized by Bhaskaracharya College of Applied Sciences (University of Delhi) in association with Indian Association of Solid State Chemists and Allied Scientists, May 08-10, 2015.

**23. Details of Infrastructural facilities:**

- a) **Library:** The students have access to our college library. There is a complete section devoted to biology. The library has multiple copies of biology books which are relevant to the syllabus. e- Books are also available.
- b) **Internet facilities for Staff & Students:** Internet facilities for Staff & Students are available. Wi-fi connectivity is also there.
- c) **Class rooms with ICT facility:** Classrooms with ICT facility are available. The department has one dedicated room with projector facility.
- d) **Laboratories:** Compound Microscope, Binocular microscope, Trinocular Microscope, Florescent microscope, Microscope, B.O.D. Incubator, Deep Freezer, Vacuum Pump, pH Meter, Electronic Balances, Almirah, Lab. Stool, Fridges, Hot Oven, Weight Box, Water Bath, Hot Plate, Magnetic Stirrer, Vortex Shaker, Electrode, Lab Table 5X2, Lab table 4X2, Computer chair, Reagent rack, Door Case, Digital Photo calorimeter , Microwave, Ultra Violet

Lamp, Computer with Printer, Double Dis. Units Quartz, Magnetic Stirrer, Spectrophotometer single /doubleBeam, Digital UV/VIS Spectrophotometer, High Precision Electronics Balances, Auto clave, Laminar flow, Water purification system, Ice Flaking machine Refrigerated Centrifuge Machine, Glucanometer, Haemocytometer, Blood analyzer , LCD Projector etc.

#### **24. Teaching methods adopted to improve student learning**

Our main focus is on active Teaching and motivating the students for learning. Aids that are used for class room teaching includes power point presentations, seminars, virtual Labs, models, Specimens, regular short tests, interactive classes group discussion, written assignment, student presentation, group presentation, projects, workshops and Hands-on-training .

#### **25. Participation in Institutional Social Responsibility (ISR) and Extension activities**

Students of our college participate in various NSS activities Like Blood donation camps, spreading awareness about Eye and organ donation, collection of old clothes books for the needy. Students actively participate and volunteer during hour of need in society eg. Natural calamities, Common wealth games etc.

#### **26. SWOC analysis of the department and future plans:**

##### **Strengths:**

Well qualified, dedicated, experienced and committed faculty members who are actively involved in every college activities besides regular teaching. Well Equipped Laboratories, Excellent library facilities with latest textbooks & Reference books. Lot of emphasis is also laid on Co-curricular activities.

##### **Weakness:**

The instruments repair takes a lot of time and precious time is wasted. Difficult to replace expensive instruments as enough grant is not available.

##### **Opportunities:**

Biology has become such a vast research enterprise that it is not generally studied as a single discipline, but as a number of clustered sub-disciplines. The multi-disciplinary initiative is significant for several reasons. First of all, it represents

the culmination of a long cherished aspiration of the Institute. Equally significant is its historical moment, namely, the beginning of the new century that is aptly called the post-genome era. With the challenges posed by environmental issues on existing flora and fauna the significance and scope of Biology has widened, than ever before. After successful completion of graduation in Biological Sciences options are in plenty not only confined to India, numerous opportunities are also available abroad as well.

### **Challenges:**

The area of Biology being multi-interdisciplinary in nature, it has wider scope both nationally and internationally. To motivate the students to learn and understand advanced level of Biology. In addition, to create Self-Learners, to make students realize their potential.

### **Faculty Publications**

#### **Dr. N. S. Abbas:**

1. Sehgal C B and **Abbas N S** (1994) **“Somatic Embryogenesis and plant regeneration from Hypocotyl tissue of Trachyspermum ammi (L.)”** Sprague. Phytomorphology 44: 265-271. ISSN 0031-9449
2. Sehgal C B and **Abbas N S** (1996), **“Induction of triploid plantlets from the endosperm culture of Mallotus Philippensis Muell”**. Arg. Phytomorphology 46: 283-289. ISSN 0031-9449
3. Tripathi A, **Abbas N S** and Nigam N S, (2014 ) **“Micropropagation of an Endangered Medicinal Herb Ocimum citriodorum Vis”**., Journal of Plant Development Sciences, Vol 6 (3): 365- 374, 2014, ISSN 0974-6382 (Print); ISSN 2348- 9170 (Online) (NAAS Rating 2.35) .
4. Tripathi A, **Abbas N S** and Nigam N S, (2016) **“In Vitro Culture-An Alternative Method for the Enhanced Production of Some Volatile Components of Ocimum Citriodorum Vis”**, Journal of Scientific and Technol Research, Vol. 8(1), 29-39.

**Proceedings:**

1. **Abbas N. S. and Sehgal C. B. (1996), “Somatic embryogenesis and plant regeneration from seedling explants of *Trachyspermum ammi* (L.)”** Sprague, Proceeding 84<sup>th</sup> Indian Science Congress Association 3: 60.
2. **Abbas N S, (1992), Triploid plantlets from endosperm culture of some Euphorbiaceae. 1992 World Congress on Cell & Tissue Culture. Journal of Tissue Culture Association, vol 28, Number 3, ISSN: 0883-8364.**

**Chapters:**

1. **Sehgal CB, Verma B and Abbas NS, (1994), “Histological and histochemical studies on the suspensor of some legumes”. In : Modern Trends in Plant Sciences, Vol 1. ed. YPS Pudir, Dehradun, India PP 73-83. ISBN : 81-7089-232-5.**
2. **Sehgal CB, Verma B and Abbas NS (1994), “Degradation of protein bodies in cotyledonary cells during seed germination in *Arachis hypogaea* L. cv, M-13” In: Modern trends in plant Science, Vol 1 ed. YPS Pudir, Dehradun, India, PP 130-139. ISBN : 81-7089-232-5.**
3. **Sehgal CB, Khurana S and Abbas NS (1994), “in vitro regeneration of triploid plantlets from the endosperm of *Emblica officinalis* Gaertn”. In Advances in Agricultural Research in India, Vol 2, ed. YPS Pudir, Dehradun, India, PP 1-19. ISBN : 81-7089-232.**

**Dr. Anil Bali:**

1. **A. Contreras, Drummond M., Bali A., Blanco G., Garcia E., Bush G., Kennedy C. and Merrick M.. (1991), “The product of the nitrogen fixation regulatory gene *nfr X* of *Azotobacter vinelandii* is functionally and structurally homologous to the uridylyl transferase encoded by *gln D* in enteric bacteria”. J. Bacteriol 173: 7741-7749 (Impact factor; 3.702, cited by 62).**
2. **Bali A., Blanco G, Hill S and Kennedy C, (1992 ), “Excretion of Ammonia by *nifL* gene of *Azotobacter vinelandii* fixing nitrogen” Appl. Environ. Microbiol. 58: 1711-1718 (Impact factor; 3.128; cited by 83).**

3. Goldman S., Beckman D.L and **Bali A.**, Monika E. M., Gabbert K. K. and Kranz G.. (1997), **“Molecular and Immunological analysis of an ABC Transporter complex required for Cytochrome C Biogenesis”**. J. Mol. Biol. 268: 724-738 (Impact factor; 5.673; cited by 78).
4. Kumar P, **Bali A K** and Kapur L (2016), **“A comparative study of Heart rate variability (time Domain) of selected variables of Male science students from sports and non- sports background”**. Online International Interdisciplinary Research Journal VI : 267-272 ( Impact factor ; 3.113)

#### **International Proceedings:**

5. Kennedy C and **Bali A.**, Blanco G., Contreras A., Drummond M., Merrick M., Walmsley J. and Woodley P. (1991), **“Regulation of expression of genes for Three nitrogenases in Azotobacter vinelandii. In Nitrogen Fixation”**: Polisinelli M., Matterssi, R and vinecenzini, M.G.(eds.) Kluwer Academic Publishers,Dordrecht, The Netherland pp. 13-23 (ISBN no. 0-7923-1410-7) (cited by 4 )
6. Blanco G., Woodley P., Drummond M., **Bali A.** and Kennedy C ,(1993), **“The nif L gene of Azotobacter vinelandii : Novel feature of sequence , expression and mutant phenotypes, In New Horizons in Nitrogen Fixation”**, Placious ,R., Mora ,J and Newton W.E.(eds.) Kluwer Academic Publishers, The Netherlands pp. 429-433 ( ISBN no. : 0-7923-2207-X ) .
7. **Bali A.**, Hill S., Santero A., Toukdarian A., Walmsley J. And Kennedy C. ( 1988), **“NifA and Ntr C activate separate nitrogen fixation pathways in Azotobacters. Bothe, debruijn and Newton (eds.) Nitrogen Fixation: Hundred after”**; Gustav Fischer, Stuttgart, New York pp. 316 ( ISBN no. 3-437-30587-5) .
8. **Bali A.** and Kennedy C , ( 1990), **“Genetic analysis of nif A- and nif L-like genes in Azotobacter vinelandii , Gresshoff, Roth, Stacey and Newton (eds.) Nitrogen Fixation : Achievements and Objectives”**, Chapman and Hall, New York ,London pp. 510 (ISBN no. 0-412-02591-4 )
9. Walmsley J., Woodley P and **Bali A.**, Dean D. And Kennedy C. (1990), **“Involvement of regulatory genes nifA, vnfA, nfrX, ntrD and structural**

**nif USVM in expression and activity of the three nitrogenases in Azotobacter vinelandii. Gresshoff, Roth, Stacey and Newton (eds. ) Nitrogen Fixation: Achievements and Objectives**", Chapman and Hall, New York, London pp. 599 ( ISBN no. 0-412-02591-4)

10. Kennedy C.K., Pau R.N. and **Bali A.**, Contreras C., Drummond M.H., Mitchenall L. A. And Woodley P. R. (1989), **"Regulation of nitrogen fixation genes in Azotobacters "**. AFRC-IPSR-Ann. Rep . pp 105-108 ( CAS Registry no. 7439-89-6; 9013-04-1, Record no. 19911624129 ).

### Chapters:

11. Publications of the following chapters online as Central Board of Secondary Education nominated Ideator (Biology) of the committee on C.B.S.E. (International) for class XI and XII (2014). Unit 5: Life and its Chemistry. (Chapter in the book)
12. C.B.S.E. (International), 2014-- Unit 6: Biomolecules. (Chapter in the book) (Biology)
13. C.B.S.E. (International), 2014-- Unit 7: Study of Cell –Tools and Techniques. (Chapter in the book) (Biology)
14. C.B.S.E. (International), 2014- Unit 8: Structure and Function of Cell . (Chapter in the book) (Biology)
15. C.B.S.E. (International), 2014- Unit 9 : Cell Cycle (Chapter in the book) (Biology)

### Patent:

16. Ammonia Production (by nif L mutant of Azotobacter vinelandii; Mutant nitrogen fixing bacterium). **Bali A.**, Blanco G and Kennedy C, (1991) (Inventors). Submitted by British Technology Group Ltd. (U.K.) to USA, Japan, Canada in September, 1991. Published in Derwent Biotechnology Abstract, U.K. (Patent GB2259302-A).

### Papers presented in National Symposium / Conferences

17. **Bali A K**, (1995) **"Regulation of the expression of nitrogen fixation genes in Klebsiella and Azotobacters at National Symposium on the role of Plant**



**Biotechnology in improving Agriculture”** at Rajasthan University, Jaipur, March 23<sup>rd</sup> to 25<sup>th</sup>, 1995.

18. **Bali A. and Kranz R G**, (1996) **“Cytochrome c Biogenesis in Photosynthetic and Symbiotic bacteria and its role in symbiotic nitrogen fixation”** at National Symposium on Current trends in Plant Biochemistry and Biotechnology organized at CCS Haryana Agriculture University, Hissar, India from Feb., 23<sup>rd</sup> to 25<sup>th</sup> 1996.
19. **Bali A. K. and Lodha M.L.** (1996), **“Azorhizobium caulinodans – Sesbania rostrate, Symbiotic system – An Overview”** at National Symposium on Current trends in Plant Biochemistry and Biotechnology organized at CCS Haryana Agriculture University, Hissar, India from 23<sup>rd</sup> to 25<sup>th</sup> 1996.

**Dr. Sujata Bhardwaj**

1. **Bhardwaj S., and Gakhar, S.K** (2008), **“Ethnobotanicals used by the tribals of Mizoram for furniture and household equipments”**. Indian. J. Trad. Knowledge. 7(1):134- 137. (Impact factor - .411, ISSN nos 0972 -5938).
2. **Bhardwaj S and Gakhar, S.K** (2005), **“Ethnomedicinal plants used by the tribals of Mizoram to cure cuts and wounds.”** Indian. J. Trad. Knowledge. 4(1): 75-80.
3. **Bhardwaj S and Gakhar, S.K** (2003), **“Ethno-medicinal plants used by the tribals of Mizoram to cure dysentery”**. Ethnobotany 15:51-53 (ISSN nos 1547-3465)

**Proceedings :**

4. **B Seema Talwar, Nupur Mundal, Promila Mathur, and Bhardwaj S**, (2016) **“Clove Oil : As Biocontrol Agent”** ; 2<sup>nd</sup> International Conference on Public Health : Issues, challenges, opportunities, prevention, awareness (Public Health : 2016) organised by Krishi Sanskriti on 21st May 2016 held at JNU.

## DEPARTMENT OF BIOMEDICAL SCIENCE

1. **Name of the Department** : Biomedical Science
2. **Year of Establishment** : 2004
3. **Names of Programmes / Courses offered (UG, PG, M.Phil., Ph.D., Integrated Masters; Integrated Ph.D., etc.)**

- Undergraduate course in Biomedical Science (CBCS)  
B.Sc (H) Biomedical Science (2015 – onwards)
- Undergraduate course in Biomedical Science  
B.Sc (H) Biomedical Science (2004 – till date)
- Four Year Undergraduate Program in Biomedical Science  
B.Sc (H) Biomedical Science (2013, ONLY 1 Batch)

4. **Names of Interdisciplinary courses and the departments/units involved**

The Department of Biomedical Science offers the following Generic Elective courses for students of other departments:

- Basics of Immunology
- Biological Chemistry
- Biosafety and Bioethics
- Biostatistics
- Bridging Information Technology and Biotechnology
- Concepts in Biotechnology
- Concepts in Medicinal Chemistry and Drug Development
- Intellectual Property Rights (IPR) for Biologists
- Pathological Basis of Diseases
- Pharmacology and Toxicology
- Tools and Model Organisms in Biomedical Research

**5. Annual/ semester/choice based credit system (program wise)**

Annual system: 2004-2010

Semester system: 2010 onwards

Four-Year Undergraduate Program (Erstwhile): 2013 only

Choice Based Credit System: 2015 onward

**6. Participation of the department in the courses offered by other departments.**

The Department faculty has been involved in the teaching various papers of Food Technology, Instrumentation and Microbiology Department.

**7. Courses in collaboration with other Universities, Industries, Foreign Institutions etc. Other courses offered by the Department.**

The Department of Biomedical Science of the college in collaboration with Acharya Narendra Dev College jointly started a new **add-on course in “Bioinformatics and *in silico* Drug Discovery”** in 2012 for the undergraduate students. The primary aim of this course is to suit the fast track needs of bioinformatics and *in silico* drug discovery divisions of pharmaceutical companies and research organizations. Keeping this in view, the blueprint of the course structure is formulated in consultation with the members of the course advisory committee that consists of eminent scientists from academia as well as industry. This course includes both lectures and hands-on sessions on sequence and microarray analyses, phylogenetic analysis, importance of Bayesian statistics, molecular modelling and protein-drug docking.

**8. Details of courses/programmes discontinued (if any) with reasons**

FYUP was started from 2013-14 and has been discontinued from 2014-15, as per the University of Delhi directives.

**9. Number of Teaching posts**

Posts	Sanctioned	Filled
Assistant Professors	7	3

**10. Faculty profile with name, qualification, designation, specialization,  
(D.Sc./D.Litt./Ph.D. / M. Phil. etc.)**

Name	Qualification	Designation	Specialization	No. of Years of Experience	No. of Ph.D./M.Phil./M.Sc. Students supervised
Dr. Uma Chaudhry	M.Sc. (Madurai Kamaraj University), Ph.D. (D.U)	Assistant Professor	Molecular Biology and Medical Biotechnology	11 years and 11 months if teaching and 2 years of RA	02 (PhD Students) 01 registered
Dr. Shivani G. Varmani	M.Sc., Ph.D. (AIIMS)	Assistant Professor	Medical Biochemistry and Biotechnology	10 years 10 months	-
Dr. Uma Dhawan	M.Sc., Ph.D. (D.U.) M.Sc. (Edinburgh, UK)	Assistant Professor	Human Genetics and Bioinformatics	10 years 10 months	01 M.Sc. Student

**11. Percentage of lectures delivered and practical classes handled (program wise) by temporary faculty**

FOR 2015-16 ODD SEMESTER

Program	% of Theory Classes taken by Temporary Faculty	% of Practical Classes taken by Temporary Faculty
Choice Based Credit System (CBCS)	50 %	33.3 %
Three Year Program	15 %	25 %
Four Year Under-Graduate Program (FYUP)	85 %	62.5 %

**12. Student -Teacher Ratio (programme wise) 12:1**

**13. Number of academic support staff (technical) and administrative staff; sanctioned and filled**

Post	Filled
Technical	03

**14. Qualifications of teaching faculty with DSc/ D.Litt/ Ph.D/ MPhil / PG.**

<b>Name</b>	<b>Qualification</b>
Dr Uma Chaudhry	Ph.D.
Dr Shivani G Varmani	Ph.D.
Dr Uma Dhawan	Ph.D.

**15. Number of faculty with ongoing and completed projects from a) University, b) National and c) International funding agencies and grants received:**

Total number of projects undertaken by faculty 2012 onwards: **9**

**a) National****Dr Uma Chaudhry**

- Principal Investigator for the DU Innovation Project (2015-16) BCAS 305 titled “To explore the potential of Biosimilars as cost effective therapeutic products”. (**Rs. 6,00,000/-**).
- Principal Investigator for the DU Innovation Project (2012-13) BCAS 102 titled “Studies to assess the quality of fruits and vegetables with respect to microbial load and the remedial measures for their control”. (**Rs. 10,00,000/-**).
- UGC sponsored project entitled ‘Characterization of Pkn1 and IncA proteins as potential vaccine candidates of *Chlamydia trachomatis*.’ (2011-14) for a period of 3 Years. (**Rs. 11,31,278/-**)

**Dr. Shivani G Varmani**

- Principal Investigator for Delhi University Innovation Project (2013-15), BCAS-205, titled “Development of edible packaged health snack from fruit and vegetable waste and its effect on healthy respondents”. (**Rs. 5,00,000/-**).
- Principal Investigator for Delhi University Innovation Project (2012-13), BCAS103, titled “Development of low cost nutritious bar and its packaging in sustainable nano bio polymer”. (**Rs. 10,00,000/-**).

- Co-Investigator for UGC project- titled “Effect of religious fasting on weight loss of Indian adults” from 2012-2015. (Rs. 5,05,000/-)

#### **Dr. Uma Dhawan**

- Principal Investigator for the DU Innovation Project (2015-16) BCAS 308 titled “Exploring the Involvement of Mechanotransduction Network in Inter-individual Differences through Ayurgenomics Approach”. (Rs. 6,00,000/-).
- Principal Investigator for the DU Innovation Project (2013-15) BCAS 209 titled “Genetic curation of ataxia phenomes for establishment of predictive and rapid diagnostic paradigm”. (Rs. 5,50,000/-).
- Involved in DU Innovation Project (2013-15) BCAS 207 titled “Understanding the Burden of Vitamin B12 and Folate Deficiency in Young Indians”. (Rs. 7,50,000/-)

#### **16. Departmental projects funded by DST-FIST; UGC, DBT, ICSSR, etc. and total grants received**

Star College Grant funded from DBT (December 2010 till date): The Department has received Rs 5 lakhs non-recurring and Rs 6.5 lakhs recurring grant from Department of Biotechnology for support of undergraduate teaching and research.

#### **17. Research Centre/ facility recognized by the University**

Dr. Uma Chaudhry and Dr. Uma Dhawan are recognized by University of Delhi as Research guides for supervising PhD students.

#### **18. Publications: Publications per faculty**

Name of the Faculty	Publications in Journals	Publications in Proceedings	Chapters in Books	Books Edited	Books with ISBN/ISSN Numbers	Total Publications
Dr. Uma Chaudhry	13	----	01	03	----	17
Dr. Shivani G. Varmani	19	----	----	----	----	19
Dr. Uma Dhawan	10	----	----	----	----	10

**Details of Publications as per Annexure - I****19. Faculty as members in****a) National committees****b) International Committees****c) Editorial Boards****d) University Committees****Dr Uma Chaudhry**

- Member of Committee of Courses for Hons, Post-graduate and Research Studies in Biomedical Sciences from 3rd July 2007 to 2nd July, 2009.
- Member of Departmental Research Committee of Dr. B. R. Ambedkar Center for Biomedical Research, University of Delhi from 1st February, 2009 onwards.

**20. Student projects** All students have undertaken projects as part of their curriculum

**(a) Percentage of students who have done in-house projects including inter departmental/program**

Name of the students	Name of the Supervisor	Name of the Project
Shruti V	Dr. Uma Dhawan	Inherited Cerebellar Ataxias: A review.
Arpan Pandey Sumit Dahiya	Dr. Uma Chaudhry Prof. Daman Saluja from Dr B R Ambedkar Centre for Biomedical Research	Functional analysis of hypothetical proteins of <i>Chlamydia trachomatis</i> : an in-silico approach for prioritizing the targets
Shefali Rai, Anjali Dhingra, Asmita Patel, Nancy Garg, Sonu Singh Rajput, Md. Tasleem	Dr. Uma Chaudhry	NAAT based detection of food pathogens
31 students of B. Sc. (Hons) Biomedical Science II year batch of 2014-15	Dr. Uma Chaudhry	Health of Indians in the 21st Century

**INNOVATION PROJECTS**

S.No	Project Code	Project Title	Year	Students
1	BCAS – 309	Identification of Genetic Factors for Coronary Artery Disease and its association with other atherogenic factors in young Indians	2015-16	Rahul Madaan Swapnila Sakshi Behl Dolly jain Saswata Bhattacharya Bhawna Kumari Simran Lakhina
2	BCAS – 308	Exploring the Involvement of Mechano-transduction Network in Inter-individual Differences through Ayurgenomics Approach	2015-16	Akshaya Nambiar Sidhant Kalia Bhawna Sama Garima Mehta Guneet Gill Prakriti Chhabbra Ana
3	BCAS – 305	To explore the potential of biosimilars as costeffective therapeutic products	2015-16	Anuvrat Sircar Vaishali Joshi Ayushi Chhabbra Stabonia Maji Shriya Madan
4	BCAS - 304	To understand the role of maternal factors in childhood obesity and promote metabolic fitness	2015-16	Divya Bindra Divya Khurana Pragya Ahuja Shruti
5	BCAS – 303	Development of novel eco-friendly printable packaging films for industrial applications.	2015-16	Piyush Wadhwa Sabita Yadav
6	BCAS – 209	Genetic curation of ataxia phenomes for establishment of predictive and rapid diagnostic paradigm	2013-15	Shweta Warriar Sukrit Mahajan Nitu Annu Kala Aakash Dudhmande Aishwarya Jain
7	BCAS - 207	Understanding the Burden of Vitamin B12 and Folate Deficiency in Young Indians	2013-15	Arushi Batra Neha Shukla Pooja Saini Prashant Rawat
8	BCAS – 205	To prepare edible packaged, low cost health snack from fruit and vegetable waste and study its effect in healthy respondents	2014-15	Harit Panda Kritika Mehta Himali Arora
9	BCAS – 103	Development of Cost-Effective Nutritious Multi Cereal Bar and its Sustainable Packaging Using Nano-Biopolymer	2012-13	Shivangi Jain Annesha Dutta Hemant Joshi
10	BCAS – 102	Studies to assess the quality of fruits and vegetables with respect to microbial load and the remedial measures for their control	2012-13	Anoushka Khanna Arpan Pandey Preeti Jindal



**21. Awards / Recognitions received by faculty and students****Academic achievements of the faculty:****Dr. Uma Chaudhry**

- Received a Research Award for a period of two years (2016-18) from University Grants Commission (UGC) to undertake an independent research.
- Part of the team of BCAS 305 DU Innovation project which was selected among best twenty projects of University of Delhi for display at the Foundation Day celebration on 1st May, 2016.
- Awarded with two months Summer Research Fellowship from Indian National Science Academy (INSA) during 15th May 2014 to 14th July 2014 to work on her project titled “Elucidating various inhibitors of glutamate racemase of Mycobacterium tuberculosis” under the supervision of Dr. Madhu Chopra at Dr. B. R. Ambedkar Center for Biomedical Research, University of Delhi.

**Dr. Shivani G Varmani**

- Best Display Award for the DU Innovation Project BCAS 205 entitled “To prepare edible packaged low cost healthy snack from fruit and vegetable waste and its effect on healthy respondents at University of Delhi Academic and Cultural Festival “Antardhwani-2015”, February 20-22, 2015.
- Best Poster (Second Prize) at 4th International conference on updating Food Technology: A challenge towards Public Health Nutrition on May 7 – 8, 2014.
- International federation of clinical chemistry and laboratory medicine (IFCC) Registration Bursary award to attend the 10th Asian Pacific Congress of Clinical Biochemistry to be held in conjunction with the AACB's 42nd Annual Scientific Conference at Perth, Australia from 18-23 September 2004.

- Prof. Sita Devi Award for Best Paper at 29th Annual Conference of Association of Clinical Biochemists of India, Feb 2003.
- Best Poster Award at 9th Asian-Pacific Congress of Clinical Biochemistry & 28th Annual Conference of Association of Clinical Biochemists of India, New Delhi, March 2002.

**Dr Uma Dhawan**

- UGC- Raman Fellowship for Post-Doctoral Research at Boston University, Massachusetts, USA (2015-16).
- Part of the team of BCAS 308 DU Innovation project which was selected among best twenty projects of University of Delhi for display at the Foundation Day celebration on 1st May, 2016.
- Best Display Award for the DU Innovation project entitled “Genetic curation of ataxia phenomes for establishment of predictive and rapid diagnostic paradigm” at University of Delhi Academic and Cultural Festival “Antardhwani-2015”, February 20-22, 2015.
- *Universitas 21* Fellowship awarded by University for doing one year masters in Bioinformatics from The University of Edinburgh, UK (2010-2011).

**Patents filed / obtained by the faculty****Dr Uma Chaudhry**

- Patent has been filed for the method of diagnosis of Chlamydia trachomatis and preliminary file number is 1589/DEL/2005, Indian Patent Office.
- Patent has been filed for the prototype kit for diagnosis of Chlamydia trachomatis and patent application number is 3437/DEL/2005.
- Awarded with US Patent on PCR-based detection method for Chlamydia trachomatis and (Patent no. 9,139,883) on 22nd September, 2015. Daman Saluja, Uma Chaudhry, Mashook Ali, Poonam Sachdeva, Achchhey Lal Patel

**Dr. Shivani G Varmani**

- INDIA – Patent Application No. 471/DEL/2013, Dated – February 19, 2013 entitled “Nutritional Compositions And Methods For Manufacturing The Same”
- INDIA – Patent Application No. 473/DEL/2013, Dated – February 19, 2013 entitled “Coating Compositions And Methods For Preparation There Of”

**Students Awards and Recognitions**

- Sukrit Mahajan and Shweta Warriar were awarded “Best Student Award” for the year 2014-15 by the college.
- Anuvrat Sircar and Stabonia Maji were awarded “Best Student Award” for the year 2015-16 by the college.
- Rajat Mann and Akash T. S. are the recipients of KVPY fellowship (2015-16).
- Eight students of B. Sc. (Hons) Biomedical Science (2012-15 batch) were awarded with prestigious TATA CSIR OSDD scholarship of Rs 15,000/- for the period of three months (February 2015 to April 2015) for their research work on ‘P2I: Predicting Potential Inhibitors for *Mycobacterium tuberculosis*’ under the mentorship of Dr. Shivani G. Varmani and Dr. Uma Chaudhry from the department and Dr. Anshu Bharawaj, Scientist from CSIR-OSDD group. Names of the students awarded with the scholarship are Anjali Dhingra, Harit, Himali Arora, Kritika Mehta, Nikena, Prashant Rawat, Shefali Rai, Sweta.

**22. List of eminent academicians and scientists / visitors to the department**

Dr. Jan Wildenhain, University of Edinburgh, United Kingdom	14.12.2011
Dr. Madhu Chopra, ACBR, University Of Delhi	19.12.2011
Dr. B. C. Das, ACBR, University Of Delhi	19.02.2013
Dr. Shantanu Sengupta, CSIR-IGIB, Delhi	19.02.2013
Dr. Tripti Bhatnagar, Director, Codon Biotech	05.03.2013
Dr. Gayatri Prakash, Daulat Ram College, University Of Delhi	16.12.2013

Dr. Pushkar Sharma, National Institute of Immunology, Delhi	20.03.2014
Prof. K Natrajan, ACBR, University Of Delhi	21.03.2014
Dr. Vipin Singh, Amity University	21.03.2014
Dr. Deepak K. Saini, IISc Bangalore	21.03.2014
Prof. Daman Saluja, ACBR, University Of Delhi	21.03.2014
Dr. Pawan Malhotra, ICGEB, Delhi	21.03.2014
Dr. Anshu Bharadwaj, CSIR-IGIB, Delhi	16.07.2014
Dr. Janardhan, ICT, Hyderabad	16.07.2014
Dr. Manju Bala, Safdarjung Hospital, Delhi	24.07.2014
Prof. Yogendra Singh, CSIR-IGIB, Delhi	25.08.2014
Dr. Aparna Dixit, NBRC	15.09.2014
Dr S Ramachandran, CSIR-IGIB, Delhi	09.10.2014
Dr B S Singh, IIHMR, Delhi	11.10.2014
Dr Gagan Dhawan, ANDC, University of Delhi	10.10.2014
Prof. V.C Kalia, CSIR-IGIB, Delhi	29.10.2014
Dr Debasis Dash, CSIR-IGIB, Delh	11.01.2015
Dr Satish Chandra Garkoti, Jawaharlal Nehru University, New Delhi	24.02.2015
Dr Pradeep Burma, University of Delhi, South Campus	04.03.2015
Prof Vani Brahamachari, ACBR, University Of Delhi	04.03.2015

### 23. Seminars/ Conferences/Workshops organized & the source of funding

#### a) National

- Department of Biomedical Science along with Microbiology trained students and interested non-teaching staff members in a workshop in field of 'Immunodiagnosics: Rapid Detection Methods' on May 24, 2016.
- One day workshop on "Acute Myeloid Leukemia: molecular aspects" organized jointly by the Department of Biochemistry and Department of Biomedical Science in March, 2015.
- Organized a two-day workshop on "Proteomics and Proteogenomics" for undergraduate students at BCAS, University of Delhi sponsored by DBT Star College Scheme on January 9 and 10, 2015.
- First Laboratory Staff Skill Development Program (LSSDP-2014)

organized for the laboratory staff of the various Life Sciences Departments at BCAS from December 15-18, 2014.

- Training Program for college students on “Modern Methods in Drug Discovery” on October 17, 2014.
- Organized a three-day workshop on “Statistical Analysis of Biological Data” for undergraduate students of the college. The workshop was sponsored by DBT Star College Scheme and was held from 9th to 11th October, 2014.
- Organized a camp for blood group determination of the students and staff of the college sponsored by DBT Star College Scheme on September 11, 2014.
- Organized a seminar on “The Swachh Technologies: Microbial Factories” by Dr. V. C. Kalia, Chief Scientist, CSIR-IGIB, Delhi as a part of Swachh Bharat Abhiyan initiative at Bhaskaracharya College of Applied Sciences, University of Delhi sponsored by DBT Star College Scheme on 29th October, 2014.
- Organized a three-day workshop on “Molecular modelling in drug discovery” for undergraduate students of the college in collaboration with CSIR-Open Source Drug Discovery unit. The workshop was sponsored by DBT Star College Scheme and was held from 16th to 18th July, 2014.
- National Symposium on Infectious Diseases: Advancement in diagnosis, therapeutics and vaccines held from 20th-21st March, 2014 at Bhaskaracharya College of Applied Sciences, University of Delhi, Dwarka, New Delhi-110075. Source of Funding: DST and DBT.
- Hands-on training was jointly organized by Biomedical Science Department of our College along with Biochemistry Department of Shivaji College, University of Delhi and Open Source Drug Discovery (OSDD) Group at Institute of Genomics and Integrative Biology on ‘Protein modeling & docking studies for rational drug design’ in December 2013.

- Workshop on “Gene Expression Analysis” was organized for II Year students of the Department. Resource Person was Dr Tripti Bhatnagar on 29<sup>th</sup> and 30<sup>th</sup> August 2012.

#### For other organizations:

Workshop on Advances in Biology and Biotechnology was held at DPS Dwarka on 11th January, 2014 to acquaint DPS school teachers with the latest trends in Biotechnology and familiarize them with bacterial culture methods and storage methods. Teachers were given bacterial samples and media for processing in their labs.

#### 24. Student profile programme/course wise:

Name of the Course/programme (refer question no. 4)	Enrolled		Pass percentage
	*M	*F	
B.Sc (H) Biomedical Science (2011-12)	18	26	I Year 94.59 % III Year 100 %
B.Sc (H) Biomedical Science (2012-13)	32	37	I Year 66 % II Year 100% III Year 81.82 %
B.Sc (H) Biomedical Science (2013-14)	17	22	I Year 100 % II Year 78% III Year 63.16 %
B.Sc (H) Biomedical Science (2014-15)	22	24	I Year 90.24 % II Year 100% III Year 62.5%

\*M = Male \*F = Female

**25. Diversity of Students**

<b>Name of the Course</b>	<b>Total Students</b>	<b>% of students from the same state</b>	<b>% of students from other States</b>	<b>% of students from abroad</b>
B.Sc (H) Biomedical Science (2011-12)	44	84.09	15.9	00
B.Sc (H) Biomedical Science (2012-13)	69	78.2	20.28	1.44
B.Sc (H) Biomedical Science (2013-14)	39	84.6	15.3	00
B.Sc (H) Biomedical Science (2014-15)	46	73.9	23.9	2.17
B.Sc (H) Biomedical Science (2015-16)	40	70	30	00

**26. How many students have cleared national and state competitive examinations such as NET, SLET, GATE, Civil services, Defense services, etc.?**

- Our students are not eligible to appear for NET, GATE and SLET directly after graduation.
- Mr. Ankit Kumar has cleared Defense Services with Rank 212 this year.

**27. Student progression**

<b>Student progression</b>	<b>Against % enrolled</b>
UG to PG	~76%
PG to Ph.D.	~24%
Employed <ul style="list-style-type: none"> <li>• Campus selection</li> <li>• Other than campus recruitment</li> </ul>	15%

**28. Details of Infrastructural facilities****(a) Library**

The college library functions as an information resource center for the college. The library is housed in a spacious and well-lit three-storied building known as the library block. It has a collection of 23280 text as well as reference books, 336 bound volumes of journals, 1238 CD-ROMS/DVD-ROMS, and many regular magazines and newspapers. It has a spacious reading room, open stack system and a reference section. The library has a separate section having 20 computers along with internet facility for the students. The Library has a Teacher's Lounge for more informal and relaxed reading. Article indexing of the journals are available in digitized form. These databases are widely used by students and faculty for their research projects. The library organizes Book Exhibitions and Displays in the college. This helps the students and teachers to know about the latest literature available in the field of their interest.

The college library is fully automated using latest hardware and software with OPAC (Open Public Access Catalogue) facility. The library has a wireless intranet. In future the library proposes to install RF, Web-OPAC and Biometrics technology. Students can refer to the library on all working days.

**(b) Internet facilities for Staff & Students**

The college has Wi-Fi facility for all students and staff.

**(c) Class rooms with ICT facility**

Both laboratories in the department have over-head projectors installed.

**(d) Laboratories**

- The laboratories of the Biomedical Department are well equipped with various latest and sophisticated instruments including computer-based UV-Visible spectrophotometers, thermal cyclers, gel documentation system, refrigerated high speed centrifuges, orbital shaker incubator, microtome, UV transilluminator, microplate ELISA reader, digital colony counter, digital viscometer, melting point apparatus, binocular



microscopes with camera and projection system as well as other instruments including electronic balances, autoclave, colorimeters, vertical and horizontal electrophoresis units, electro-blotting system, laminar hood, magnetic stirrers, vortex shakers, ice flaking machine, ovens, etc.

- Laboratories are equipped with projectors for visualization of animated materials or virtual labs.

**29. Number of students receiving financial assistance from college, university, government or other agencies**

- Ms. Vandana of B. Sc. (Hons) Biomedical Science III Semester (2011-12)
- Ms. Kirti of B. Sc. (Hons) Biomedical Science III Semester (2014-15)
- Ms. Kirti of B. Sc. (Hons) Biomedical Science V Semester (2015-16)
- Mr. Sumit of B. Sc. (Hons) Biomedical Science I Semester (2015-16)
- Mr. Lokesh of B. Sc. (Hons) Biomedical Science I Semester (2015-16)

**30. Details on student enrichment programmes (special lectures / workshops / seminar) with external experts**

*Industrial visits/exposure by the students/summer training, winter training*

S.No.	Year	Name of the Institute	Duration	Number of Students
1.	2011-2012	Brainstorming Session on R & D Output Indicators (Biotech and Pharma Industry) in PHD CHAMBER OF COMMERCE AND INDUSTRY, PHD House, 4/2 Siri Institutional Area on 11 <sup>th</sup> July 2011	30.05.2012	10
2	2012-2013	Pharma Tech India 2012 in PHD CHAMBER OF COMMERCE AND INDUSTRY, PHD House, 4/2 Siri Institutional Area on 11 <sup>th</sup> July 2011.	05.07.2012	20
3.	2013-2014	All India Institute of Medical Sciences	11.02.2014	15
4.	2014-2015	Yakult, Sonapat	22.09.2014	30
5.	2014-2015	Mushroom Cultivation Center, Murthal, Haryana	12.08.2015	30

S.No.	Year	Name of the Institute	Duration	Number of Students
6.	2014-2015	Superior Industries (Brewery), Faridabad	08.10.2014	30
7.	2015-2016	Workshop-cum-Camp on Foldscope, an origami microscope at Sri Venketeswara College from 9.00 a.m. to 2.30 p.m. and public lecture at Gargi College from 4.00 to 6.00 p.m. (Organized by DBT)	16.12.2015	22

***Guest Lectures delivered (Name of the Expert, Talk Title)***

S. No	Year	Name of The Speaker /Resource Person	Topic of Presentation
1	2011	Dr. Gayatri Prakash, Daulat Ram College	Use of microscopic techniques in Biomedical Science
2	2011	Dr. Jan Wildenhain University of Edinburgh, United Kingdom	A Hitchhiker's Guide to Cheminformatics and Drug Discovery
3	2011	Dr. Madhu Chopra, Dr B R Ambedkar Center for Biomedical Research, University of Delhi	Applications of Fluorescence Spectroscopy in Biomedical Science
4	2012	Dr. Tripti Bhatnagar, Codon Biotech	Gene Expression Analysis
5	2013	Prof. B. C. Das Dr B R Ambedkar Center for Biomedical Research, University of Delhi	Human Papillomavirus in the causation of Human Cancer
6	2013	Dr. Shantanu Sen Gupta	Vitamin B12 deficiency: A silent epidemic
7	2014	Dr. Pawan Malhotra	Novel Drug Targets from asexual blood stages of <i>Plasmodium falciparum</i>
8	2014	Dr. Pushkar Sharma	Signaling, Trafficking and Malaria Parasite
9	2014	Prof. K. Natrajan Dr B R Ambedkar Center for Biomedical Research, University of Delhi	Mycobacterium tuberculosis: Dealing with the Immortals of the Lung
10	2014	Prof. Daman Saluja Dr B R Ambedkar Center for Biomedical Research, University of Delhi	Developing point of care diagnostic for infectious diseases: challenges and opportunities
11	2014	Dr. Deepak K. Saini	Anti – microbial therapeutics: Old dog...but new tricks!!

S. No	Year	Name of The Speaker /Resource Person	Topic of Presentation
12	2014	Dr. Anshu Bhardwaj	'Data Intensive Drug Discovery'
13	2014	Dr. Vipin Bhardwaj	Next generation sequencing
14	2014	Dr. S. Ramachandran	Integration of gene expression and metabolic reactions models provides insights into robustness and drug target points in <i>M. tuberculosis</i>
15	2014	Dr Yogendra Singh	Survival Strategies of Bacterial Pathogens
16	2014	Dr Manju Bala	<i>Gonorrhea</i> Control: What is the status today?
17	2015	Dr Helen Collins	"The role of iron chelation in immune responses in chronic inflammation"
18	2016	Dr Vinod Scaria	"Personal Genomics for Precision Medicine"

### 31. Teaching methods adopted to improve student learning

Lectures, power point presentations, seminars, virtual Labs, quizzes, regular short tests, interactive classes, visit to scientific institutes such as ICGEB, hand outs, Lab Manuals, Survey, group discussion, written assignment, student presentation, group presentation, projects, workshops and Hands-on-training.

### 32. Participation in Institutional Social Responsibility (ISR) and Extension activities

- Dr. Uma Dhawan was one of the coordinator for the Pre-Entrance Summer School for M.Sc.-Ph.D Combined degree Program of ACBR, University of Delhi, organized by Institute of Life Long Learning, University of Delhi from 28th May to 13th June 2016 for economically weaker section of the society.
- The Department took an initiative to organize a blood camp on 11th September 2014 to determine the blood group of the students and staff of the college who did not know their blood groups and a database of blood group of all the students who volunteered in this initiative was prepared for use in case of any emergency.
- Dr. Uma Dhawan and her team were involved in a project entitled 'Understanding the Burden of Vitamin B12 and Folate Deficiency in Young Indians' that had societal benefits. During this study, awareness

especially amongst the youths of India towards vitamin B12 and folate deficiency was created. General public awareness was also created at Annual cultural festival of University of Delhi, Antardhwani 2014 and 2015.

- To encourage and attract school students towards research based scientific courses, the faculty of the department was also involved in all the six DST funded INSPIRE (Innovation in Science Pursuit for Inspired Research) science camps organized by the college for the school students of class XII.
- The faculty and students of the department are actively involved in Eco club and NSS activities.

### **33. SWOC analysis of the department and Future plans**

#### **Strengths:**

1. The laboratories of Biomedical Science Department are well equipped with various latest and sophisticated Instruments.
2. Well qualified faculty and have strong inclination towards research as showcased by introduction of various research projects
3. Lot of emphasis is also laid on Co-curricular activities.
4. Department Faculty is Tech savvy and has a high team spirit.
5. Started lecture series to acquaint students to latest developments in Research.
6. Laboratory staff is suitably trained to help conduct the practicals.

#### **Weakness:**

Specialized Instruments have frequent breakdowns because of non-conductive environment of the Department (as a result of non availability of ACs)

#### **Opportunity:**

This course provides an excellent opportunity for the students with biological science background to pursue career in research, academics, management, pharmaceutical and biotechnology industry.

**Challenges:**

1. No appointments in University of Delhi for the last few years which has led to lack of permanent faculty in the Department.
2. Placing undergraduate students in summer training Institutes.
3. More collaboration is needed with Industries.

**ANNEXURE – I****Publications in Peer Reviewed Journals by the Department Faculty:****Dr Uma Chaudhry**

- Golechha M, Sarangal V, Bhatia J, Chaudhry U, Saluja D, Arya DS. (2014) Naringin ameliorates pentylenetetrazol-induced seizures and associated oxidative stress, inflammation, and cognitive impairment in rats: possible mechanisms of neuroprotection. *Epilepsy Behav*; 41:98-102. doi: 10.1016/j.yebeh.2014.09.058. PMID: 25461197. (Impact Factor 2.225)
- Patel AL, Mishra PK, Sachdev D, Chaudhary U, Patton DL, Saluja D. (2014) Seroprevalence of antibodies against Pkn1, a novel potential immunogen, in Chlamydia trachomatis-infected Macaca nemestrina and human patients. *Biomed Res Int*. VOL 2014 Article ID 245483. doi: 10.1155/2014/245483. PMID: 25032212. (Impact Factor 1.579)
- Mishra PK, Chandra SC, Raj SR, Chaudhry U, Saluja D. (2013) Functional analysis of hypothetical proteins of *Chlamydia trachomatis*: an *in silico* approach for prioritizing the targets. *J Comput Sci Syst Biol* , 7:1 ; (Impact factor 2.5)
- Patel AL, Chaudhry U, Sachdev D, Sachdeva PN, Bala M, Saluja D. (2011) An insight into the drug resistance profile & mechanism of drug resistance in *Neisseria gonorrhoeae*. *Indian J Med Res* 134, pp 419-431 (Impact factor 1.66)
- Patel AL, Sachdev D, Nagpal P, Chaudhry U, Sonkar SC, Mendiratta SL, Saluja D. (2010) Prevalence of Chlamydia infection among women visiting a gynaecology outpatient department: evaluation of an in-house PCR assay for

detection of Chlamydia trachomatis. *Ann Clin Microbiol Antimicrob.* 8;9:24. (Impact factor 1.5)

- Kumar N, Shukla S, Kumar , Suryawanshi A, Chaudhry U, Ramachandran S, Maiti S. (2008) Intrinsically disordered protein from a pathogenic mesophile Mycobacterium tuberculosis adopts structured conformation at high temperature. *Proteins.* May 15; 71(3):1123-33. (Impact factor 2.92)
- Kumar A, Chandolia A, Chaudhry U, Brahmachari V, Bose M. (2005). Comparison of mammalian cell entry operons of mycobacteria: in silico analysis and expression profiling. *FEMS Immunol Med Microbiol.* Feb 1;43(2):185-95. (Impact factor 2.68)
- Ramachandran S, Nandi T, Shukla S, Rajasekhar M, Chaudhry U and Banerjee A. (2004.) *In silico* biological analysis of genomic information of pathogenic bacteria. *J. Immunol. Immunopathol.* 6(S-1); 30-31. (Impact factor 1.78)
- Uma Chaudhry, Krishna Ray, Manju Bala and Daman Saluja. (2002). Mutation patterns in *gyrA* and *parC* genes of ciprofloxacin resistant isolates of *Neisseria gonorrhoeae* from India (New Delhi). *Sexually Transmitted Infections.* 78(6): 440-444. (Impact factor 3.078)
- Uma Chaudhry and Daman Saluja. (2002). Detection of *Neisseria gonorrhoeae* by PCR using *orf1* gene as target. *Sexually Transmitted Infections.* 78(1): p72. (Impact factor 3.078)
- Uma Chaudhry, Krishna Ray, Manju Bala and Daman Saluja. (2002). Multiplex PCR based detection of *Neisseria gonorrhoeae*. *Current Science.* 83(5): 634-640. (Impact factor 0.935)
- Kuzhandhaivel S. Vetrivel, Shanmugiah K. Pandian, Uma Chaudhary and Kuppamuthu Dharmalingam. (2000). Purification, cloning, and DNA sequence analysis of a chitinase from an overproducing mutant of *Streptomyces peucetius* defective in daunorubicin biosynthesis. *Canadian Journal of Microbiology.* 47: 179 -187. (Impact factor 1.2)

- Uma Chaudhary and Daman Saluja. (1999). Detection of *Neisseria gonorrhoeae* by Polymerase Chain Reaction (PCR). **Indian Journal of Clinical Biochemistry**. 14 (2), 135-142. (Impact factor:1.66)

**Dr. Shivani Varmani**

- Luthra K, Vasisht S, Chhabra S, Raju KR, Agarwal DP, Manchanda SC, Srivastava LM. Lp(a) (1998) Phenotypes and levels in angiographically proven coronary heart disease patients and controls. **Indian Journal of Clinical Biochemistry** 13 (1): 12-19. (H Index=20)
- Chhabra S, Agarwal DP, Vasisht S, Luthra K, Narang R, Manchanda SC, Srivastava LM and Das N. (2000) Study of apolipoprotein E polymorphism in normal healthy controls from northern India. **Disease Markers**. 16:159-161. (Impact factor: 1.562)
- Chhabra S, Narang R, Krishnan LR, Vasisht S, Agarwal DP, Srivastava LM, Manchanda SC and Das N. (2000) Apolipoprotein C3 SstI polymorphism and triglyceride levels in Asian Indians. **BMC Genetics** 3: 9 (Impact factor: 2.356)
- Luthra K, Vasisht S, Bharghav B, Chhabra S, Das N, Misra A, Agarwal DP, Pandey RM, Srivastava LM. (2002) Apolipoprotein E polymorphism in Northern Indian patients with coronary heart disease: phenotype distribution and relation to serum lipids and lipoproteins. **Molecular and Cellular Biochemistry** 232:97-102.( Impact factor: 2.388)
- Chhabra S, Agarwal DP, Luthra K, Narang R., Manchanda SC, Srivastava LM and Das N. (2003) Study of apolipoprotein C3 SstI polymorphism in healthy volunteers from Northern India. **Indian Journal of Clinical Biochemistry**. 18 (2) 34-38 (H Index=20)
- Chhabra S, Narang R, Krishnan LR, Vasisht S, Agarwal DP, Srivastava LM, Manchanda SC and Das N. (2004) Apolipoprotein C3 SstI in the risk assessment of CAD. **Mol Cell Biochem**. 259 (1-2):59-66. .(Impact factor: 2.388)
- S. Chhabra , R. Narang , R. Lakshmy and N.Das. (2005) APOA1-75G>A substitution associated with severe forms of CAD , lower levels of HDL and

apoA-I among Northern Indians. *Disease Markers* 21(4):169-174. (Impact factor: 1.562)

- Garg M and Varmani S. (2014) Nutritional health status of North Indian adults. *International Journal of Food and Nutrition Sciences*. Vol 3 (3): p 118-121. (Impact factor: 1.021)
- Garg M, Sharma S, Varmani S, Sadhu S. (2014) Drying kinetics of thin layer pea pods using tray drying. *International Journal of Food and Nutrition Sciences*. Vol 3 (3): p 61-66. (Impact factor: 1.021)
- Varmani S, Panda H, Sadhu S, Garg M. (2014) Beta Thalassemia major and osteoporosis: etiology, pathogenesis, diagnosis and management. *International journal of Pharmacy and Integrated Life Sciences*. Vol 2(7): p 64-78. (Impact factor: 1.9)
- Sadhu S, Chakraborty S, Garg M, Varmani S. (2014) Polymers in Energy harvesting. *International Journal of Engineering science invention*. Vol3 (4): p1-5 (Impact factor: 1.786)
- Sadhu S, Soni A, Varmani S, Garg M. (2014) Preparation of starch polyvinyl alcohol (PVA) blend using potato and study of its mechanical properties. *International journal of Pharmaceutical science invention*. Vol3 (3):p 33-37(Impact factor: 1.695)
- Varmani S and Garg M. (2014) Health benefits of Moringa Oleifera: a miracle tree. *International Journal of Food and Nutrition Sciences*. Vol 3 (3): p 111-117 (Impact factor: 1.021)
- Varmani S, Arora H, Garg M, Sadhu S. (2014) Iron overload and chelation therapy in beta thalassemia major. *International journal of Pharmacy and Integrated life Sciences*. Vol 2(7): p 47-63.( Impact factor:1.9)
- Varmani S, Mehta K, Garg M, Sadhu S. (2014) Diabetes mellitus in beta thalassemia major-pathogenesis and management strategies. *International Journal of Food and Nutrition sciences*. Vol 3 (3): p 127-131. (Impact factor:1.021)



- M. Garg, S. Wason & S. G. Varmani. (2015) To Study Physical Activity Levels, Body Composition and Association of Body Mass Index with Anthropometric Measurements in Young Indian Adults. *Intl. J. of Pharm. and Integ. Life Sci.*, Vol. 3(8), Pages 36-50 (Impact factor: 1.9).
- M. Garg, P. K. Sabharwal, S. Sharma, S. G. Varmani and S. D. Sadhu. (2015) Evaluation Of Mathematical Models To Describe Thin-Layer Drying And To Determine Drying Rate Of Potato Peels Using Tray Drying. *Intl. J. of Sci. Eng. and Appl. Sci.*, Vol. 1(7), Pages 1-15. (Impact factor :3.466)
- M. Garg, S. Wason & S. G. Varmani. (2015) “Understanding Physical Activity and Quality of Life among Young Indian Adults”; *Intl. J. of Pharm. and Integ. Life Sci.*, 2015, Vol. 4(1), Pages 16-32. (Impact factor: 1.9).
- Chhabra S, Narang R, Manchanda SC, Srivastava LM, Agarwal DP and Das N. Gene symbol Apo A1, Disease: (2000) Atherosclerosis associated with coronary artery disease (double vessel disease). Hum. Gene. Mutations (Section), *Hum Genet* 107: 201-204 (on page 204). (Impact factor: 4.522)

#### Dr Uma Dhawan

- Nithin Krishna, Surendra Mohan, B.S. Yashavantha, A. Rammurthy, H.B. Kiran Kumar, Uma Mittal, Shivani Tyagi, Mitali Mukerji, Sanjeev Jain, Pramod Kumar Pal, Meera Purushottam (2007). SCA 1, SCA 2 & SCA 3/MJD mutations in ataxia syndromes in southern India. *Indian J Med Res.* (Impact factor: 1.66)
- Uma Mittal, Sangeeta Sharma, Dheeraj K., Pramod Kr. Pal, Achal K. Srivastava, Mitali Mukerji (2005). Insights into the mutational history and prevalence of SCA1 in the Indian population through anchored polymorphisms. *Human Genetics.* (Impact factor: 4.522)
- The Indian Genome Variation Consortium. (2005) The Indian Genome Variation database (IGVdb): a project overview. *Human Genetics.* (Impact factor: 4.52)
- Uma Mittal, Achal K. Srivastava, Satish Jain, Sanjeev Jain, Mitali Mukerji. (2005) Founder haplotype for Machado-Joseph disease in the Indian

population: novel insights from history and polymorphism studies. *Archives of Neurology* (Impact factor: 7.348)

- Samira Bahl, Komal Viridi, Uma Mittal, M. P. Sachdeva, A. K. Kalla, S. E. Holmes, E. O'Hearn, R. L. Margolis, Satish Jain, Achal K. Srivastava, Mitali Mukerji. (2005) Evidence of a common founder for SCA12 in the Indian population. *Annals of Human Genetics*. (Impact factor: 2.211)
- Uma Mittal, Sanghamitra Roy, Satish Jain, Achal K. Srivastava, Mitali Mukerji. (2005) Post-zygotic de novo trinucleotide repeat expansion at spinocerebellar ataxia type 7 locus: evidence from an Indian family. *Journal of Human Genetics*. (Impact factor: 2.462)
- Neeraj Pandey\*, Uma Mittal\*, Achal K. Srivastava, Mitali Mukerji. SMARCA2 and THAP11: potential candidates for polyglutamine disorders as evidenced from polymorphism and protein-folding simulation studies. *Journal of Human Genetics* (2004). (\*Equal authors Impact factor: 2.462)
- Mona Ragothaman, Nagaraja Sarangmath, Shashi Chaudhary, Vishwamohini Khare, Uma Mittal, Sangeeta Sharma, Sreelatha Komatireddy, Subhabrata Chakrabarti, Mitali Mukerji, Ramesh C. Juyal, B. K. Thelma, Uday B. Muthane. (2004) Complex phenotypes in an Indian family with homozygous SCA2 mutations. *Annals of Neurology*. (Impact factor: 11.91)
- Gagan Dhawan, Seema Gupta, Manisha Jain, Uma Dhawan, Deepika, Priya Dungriyal, Zainab Zaidi, Yashaswi Singh, Jyoti Thakur, Dharmendra, Aayush Chauhan and Keshav Sharma. (2015) *An Explorative Study on Knowledge and Awareness of Health Problems Related to Usage of Fabric Dyes by Road Side Dyers in Delhi, India*. DU Journal of Undergraduate Research and Innovation. *ISSN 2395-2334*.
- The Indian Genome Variation Consortium. (2008) Genetic landscape of the people of India: a canvas for disease gene exploration. *Journal of Genetics*. (Impact factor: 1.01)

**Chapter/s in Books by the Department Faculty:****Dr. Uma Chaudhry**

- Contributed a chapter in ‘Workshop Manual for Biology Laboratory Course LS-206, B. Sc. Programme II year

**Books Edited by the Department Faculty:****Dr. Uma Chaudhry**

- CBSE-I Class VI (Unit IV)
- CBSE-I Class X Political Science: Environment and Natural Resources (Unit IV)
- CBSE-I Class VI (Unit VI)

## DEPARTMENT OF CHEMISTRY

1. **Name of the department** : Chemistry
2. **Year of Establishment** : 1995
3. **Names of Programmes/Courses offered (UG, PG, M.Phil., Ph.D., Integrated Masters; Integrated Ph.D., etc.):** Allied Department supporting the main departments.
4. **Names of Inter disciplinary courses and the departments/units involved:**  
B.Sc. (H) Microbiology, Biomedical Sciences, Food-Technology, Instrumentation, Polymer Science and Physics. Under FYUP, all the students study Science & Life Foundation course which are of interdisciplinary nature. The department also offered DC-II course to all students of FYUP. The department also teaches EVS paper to FYUP and CBCS students. Apart from this, department also takes Generic Elective papers offered to other courses.
5. **Annual/semester/choice based credit system (programme wise):** All courses are in semester system and the CBCS courses also have choice based credits.
6. **Participation of the department in the courses offered by other departments:**  
The department offers credit courses to the students of B.Sc. (H) Microbiology, Biomedical Sciences, Food-Technology, Instrumentation, Polymer Science and Physics.
7. **Courses in collaboration with other universities, industries, foreign institutions, etc.:** The department used to offer B.Sc. (chemistry), Lab Technology course of IGNOU.
8. **Details of courses/programmes discontinued (if any) with reasons:** The department used to offer B.Sc. (chemistry), Lab Technology course of IGNOU, since the study center is closed.
9. **Number of Teaching posts:**

Posts	Sanctioned	Filled
Assistant Professors	05	02 (02 promoted to Associate Professor)

**10. Faculty profile with name, qualification, designation, specialization, (D.Sc./D.Litt. /Ph.D. / M. Phil. etc.),**

Name	Qualification	Designation	Specialization	No. of Years of Experience	No. of Ph.D. Students guided for the last 4 years
Lalit Kapur	M.Sc., Ph.D.	Associate Professor	Inorganic Chemistry	Over 20 years	Nil
Balaram Pani	M.Sc., Ph.D.	Associate Professor	Inorganic Chemistry	Over 18 years	2 (M.Phil.)

**11. Percentage of lectures delivered and practical classes handled (programme wise) by temporary faculty: Approx. 35 %.****12. Student-Teacher Ratio (programme wise): 12:1.****13. Number of academic support staff (technical) and administrative staff; sanctioned and filled:**

Post	Filled
Lab Assistant	02

**14. Qualifications of teaching faculty with DSc/ D.Litt/ Ph.D/ MPhil / PG:**

Name	Qualification	Designation
Dr. Lalit Kapur	Ph.D.	Associate Professor
Dr. Balaram Pani	Ph.D.	Associate Professor

**15. Number of faculty with ongoing projects from a) National b) International funding agencies and grants received:**

S. No.	Name of the Faculty	Number of National Projects	Funding Agency	Amount Sanctioned
1.	Balaram Pani	04	University of Delhi	05 Lakhs (Completed) 05 Lakhs (Completed) 06 Lakhs (Ongoing)
			BRNS	26,94,300 Lakhs (Ongoing)
2.	Lalit Kapur	01	University of Delhi	06 Lakhs (Ongoing)

**16. Publications: Annexure I**

c. **Chapter written in books:** 01

d. **Books edited:** 12

e. **Books written with ISBN/ISSN members (give details of the publisher):** 15

Name of the faculty	Publications in journal	Books authored	Chapters in books	Paper presented/accepted in Conference Proceeding
Lalit Kapur	03	-----	-----	-----
Balaram Pani	09	15	01	03

### 17. List of eminent academicians and scientists/visitors to the department

1. Prof. R. K. Khandal, President of World Association of Industrial and Technological Research Organization.
2. Prof. Peter Agre, Nobel Laureate in Chemistry, from John Hopkin's University, USA, interacted with the students with Prof. T. Ramasami, Secretary, DST (Govt. of India) in 3rd INSPIRE camp organized by the college.

### 18. Details of Infrastructural facilities

- a) **Library:** The Chemistry Department has a Book Bank facility for students. The department has its own collection of books which are available for the student reference.
- b) **Internet facilities for Staff & Students:** Wifi facility available for students and faculty members.
- c) **Class rooms with ICT facility:** The department has one dedicated room with projector facility.
- d) **Laboratories:** Well-equipped laboratories with facilities such as Vacuum Pump, Almirah, Lab. Stools, Fridge LG 452, Fridge, Single Pan Analytical Bal., Hot Oven, Weight Box, Water Bath, Electronics Balance, Deionizer, Heat Distortion Test App, Hot Plate, Geyser 25 L Usha make, Digital pH Meter, Vortex Shaker, Fume Hood, Electrodes, Side Shelf, Lab Table 5X2, Lab table 4X2, Computer chair, Reagent rack, Door Case, Chainomatic Balance, Digital Photo calorimeter, Digital Conductivity Meter, Microwave, Electronics Balance, Potentiometer, Ultra-Violet Lamp, Acer Computer with

Printer, Double Distillation Units Quartz, Magnetic Stirrer, Heating Mantle, Melting Point Apparatus, Platinum electrode, Calomel Electrode, Flame Photometer, Conductivity Cell, Digital UV/VIS Spectrophotometer, High Precision Electronics Balances, Centrifuge Machine.

**19. Teaching methods adopted to improve student learning:**

Lectures, power point presentations, seminars, virtual Labs, use of molecular models, regular short tests and interactive classes etc.

**20. Participation in Institutional Social Responsibility (ISR) and Extension activities:**

Well qualified and committed faculty actively involved in college activities along-with regular teaching.

**21. SWOC analysis of the department and Future plans**

**Strengths:**

Well qualified and committed faculty actively involved in college activities along-with regular teaching. The faculty is involved in projects, book writing and guiding students for research.

**Weakness:**

The department at present does not have Honours course and would be cherished to have honors course in Chemistry.

**Opportunity:**

In house research, exploration can be carried in the laboratories itself where simulation based experimentation and exploration can be performed before the actual experiments are carried out.

**Challenges:**

- a) To create Self-Learners.
- b) To make students realize their potential.
- c) Since Chemistry is not the main subject hence it is difficult to motivate them.
- d) Students from rural/semi-urban background coming from Hindi background.

**Faculty Publications****Dr. Lalit Kapur**

1. Garg B S and **Kapur L** (1990) Spectral Characterization of Bimetallic Complexes of Thio-semicarbazone of Monoacetylferrocene with Cu(II) halides. *Inorganica Chimica Acta*, 170, 177-180, 1990.
2. Garg B S and **Kapur L** (1990) Spectral, Characterization of Bimetallic Complexes of Monoacetylferrocene Thio-semicarbazone (MAFTSC) with Co(II) salts. *Inorganica Chimica Acta*, 173, 223-227, 1990.
3. Kumar P, Bali A K and **Kapur L** (2016) A Comparative Study of Heart Rate Variability (Time Domain) of Selected Variables of Male Science Students from Sports and Non-sports Background., *Online International Interdisciplinary Research Journal*. ISSN 2249-9598, 2016.

**Dr. Balaram Pani**

1. Kaur G, Bhatt G, Khanna M, **Pani B (2015)** "Heuristic Rule Based Fuzzy Inference System for Decision Support and Quality Assurance in Higher Education", *International Journal of Enhanced Research in Management & Computer Applications*, Vol 4, Issue 6, 20-30.
2. Kumar P., Bhatt G, **Pani B**, Dua S, Mittal A, Diwakar (2015) "Characterizing DNA Assisted Dispersion & DNA-SWNTS Hybrids Using Photoluminescence", *Bio Technology, Elixir Bio Tech*, 83C, 33188-33193.
3. Dua S, **Pani B**, Kumar P (2015) "Development of Forehead Probe for Brain Oximeter", *Biomedical Engineering, Elixir Biomedical Engg.*, 78A, 2015, 30097-30100.
4. **Pani B** (2015) "Correlation of Some Selected Heavy Metals in The Thermal Power Plant Ash Pond Leachates", *Journal of Engineering Computers & Applied Sciences (JECAS)*, Vol 4(1), 8-16.
5. Kumar P, **Pani B**, Batra H and Gupta N (2014) "The influence of different surfactants on the dispersion behaviour of single wall carbon nanotube (swnt)" *Int. J. of Engineering and Techno Sciences*, 5(2), 16-21.



6. **Pani B**, Sirohi S and Barwa M S (2013) "Effect of Seasonal Variation on Metal Speciation in Leachate from a Thermal Power Plant Ash Pond: Impact on Ground Waters", *International Journal of Engineering Sciences & Research Technology*, 2(10).
7. **Pani B**, Dixit S K and Singh J (2013) "Prohibition of toxic chemicals for sustainable environment", *J. Acad. Indus. Res.*, Vol. 1(9) pp 533.
8. **Pani B** and Muwal P K (2013) "Alternative Synthetic Approaches for the Industrial Pollution Control & Prevention", *J. Acad. Indus. Res.*, 1(18) pp 511.
9. **Pani B**, Sirohi S and Singh D (2013) "Studies on the Effects of Various Flame Retardants on Polypropylene", *American Journal of Polymer Science*, 3(4): 63-69.

**Papers presented in Conferences/Workshop/ Symposium:**

1. Awareness of Environmental Hazards among Mobile users in Delhi Region and the Potential Heavy Metal Concentration in them, National Conference on E-waste sustainability, March 2013, BCAS-GIZ-IGEP (Indo-German partnership), Delhi.
2. Effect of Seasonal Variation on Metal Speciation in Leachate from a Thermal Power Plant Ash Pond: Impact on Receiving Waters, Chemical Constellation Cheminar-2012 (CCC-2012) (An International Conference), September 2012, Dr. B. R. Ambedkar National Institute of Technology, Jalandhar, Punjab.
3. Impact of Industrial Pollution on Environment and its Remediation, National Seminar on Green Chemistry, October 2012, UGC Sponsored at PG Dept of Chemistry, Berhampur University, Odisha.

**Student supervised: (M.Phil.-02)**

1. Siddharth Sirohi (Flame Retardant Additive Systems and Their Effect on Polypropylene), 2007, Madurai Kamraj University, Tamil Nadu.
2. Pooja (Genome-wide Identification and Characterization of Component Involved in Gene Silencing Gene Family in *Oryza sativa* L. ssp. Japonica)

2006-2007, Chaudhary Devi Lal University.

**Research Projects:**

1. Study of Rise in Consumption of the Mobile Phone/ Electronic Gadgets in Delhi Region and Material Analysis Projecting Potential Electronic Waste & their Impact on Environment (2013-14). **Balaram Pani**, Manoj Kumar Khanna, Geeta Bhatt, Innovation Projects sponsored by DU.
2. Assessment of Brominated Flame Retardants in Mobile Phones/ Electronic Gadgets, their Consumption Pattern in North India Region and Carbon Foot Prints from Electronic Waste(2014-15). **Balaram Pani**, Manoj Kumar Khanna, Geeta Bhatt, Innovation Projects sponsored by DU.
3. Spatial Distribution of uranium and associated water quality parameters in groundwater/ surface water in six(06) districts of Uttar Pradesh (Agra, Mathura, Mahamaya Nagar, Kanshiram nagar, Etah and Badaun), **Balaram Pani**, Manjeet Singh Barwa, **BRNS, BARC**, Bombay, 2015.
4. To explore the potential of biosimilars as cost-effective therapeutic products (Appendix A305), (2015-16). **Balaram Pani**, Uma Chaudhary, Ranjeet Thakur, Innovation Projects sponsored by DU.
5. Development of norms of selected autonomic nervous system functions. Lipid profile, electrolyte and selected respiratory variables of college students with and without sports background. **Lalit Kapur**, Anil Bali, Pawan Dabas, Innovation Project BCAS-301.

**Books:**

1. D. Banerjee and **Balaram Pani**, "Metal Speciation in overflow and Leachate form a Thermal Power Plant ash pond, Impact on receiving waters", Chemistry for the protection of the environment, 3rd edited by Pawlowski et al. Plenum press, New York. pp. 23-34, 1998.
2. Chemistry for IGNOU, Sunita Malhotra, A P Gupta, **Balaram Pani**, 2004.
3. Chemistry Lab Manual for IGNOU, **Balaram Pani**, 2006.

4. A Text Book on Engineering Chemistry, **Balaram Pani**, Galgotia Publication, 1<sup>st</sup> ed 2001 & 2<sup>nd</sup> ed 2007.
5. Environmental Science and Engineering, **Balaram Pani**, Galgotia Publication, 1<sup>st</sup> ed 2007.
6. A Text Book on Environmental Chemistry, **Balaram Pani**, IK International Publication, 2007.
7. Text Book on Toxicology, **Balaram Pani**, IK International Publication, 2009.
8. Fundamental of Science & Technology, (VI), **Balaram Pani**, Jay Cee Publications, India, 2009.
9. Fundamental of Science & Technology, (VII), **Balaram Pani**, Jay Cee Publications, India, 2009.
10. Fundamental of Science & Technology, (VIII), **Balaram Pani**, Jay Cee Publications, India, 2009.
11. Fundamentals of Environmental Education, (VI), **Balaram Pani**, Jay Cee Publications, India, 2006.
12. Fundamentals of Environmental Education, (VII), **Balaram Pani**, Jay Cee Publications, India, 2006.
13. Fundamentals of Environmental Education, (VIII), **Balaram Pani**, Jay Cee Publications, India, 2006.
14. Fundamentals of Environmental Education, (IX), **Balaram Pani**, Jay Cee Publications, India, 2006.
15. Fundamentals of Environmental Education, (X), **Balaram Pani**, Jay Cee Publications, India, 2007.
16. Fundamentals of Environmental Education, (XI), **Balaram Pani**, Jay Cee Publications, 2007.

## DEPARTMENT OF COMPUTER SCIENCE

1. **Name of the department** : Computer Science
2. **Year of Establishment** : 1997
3. **Names of Programmes / Courses offered (UG, PG, M.Phil., Ph.D., Integrated Masters; Integrated Ph.D., etc.):**

(a) UG B.Sc. (H) Computer Science

(b) Four Year Undergraduate Programme/ B.Tech Computer Science

(c) B.Sc (H) Computer Science in CBCS mode

4. **Names of Interdisciplinary courses and the departments/units involved**

There are no interdisciplinary courses being run with the Computer Science Department. However, the courses from the departments of Electronics, Mathematics, Physics, and Human Communication are being taught to the Undergraduate students of Computer Science stated in 3 above.

B.Sc. (H) Computer Science also has some subjects which are taught by the faculties from English, Mathematics and Electronics.

Students who had taken admission under FYUP program of Computer Science studied various interdisciplinary courses as foundation courses and IMBH as per DU guidelines. Similarly, the Students of B.Sc. (H) CBCS are studying a General elective paper from departments other than Computer science in the college.

5. **Annual/ semester/choice based credit system (programme wise):**

Semester system: - from 1997 till date. The programmes are as follows: -

- a) B.Sc (H) Computer Science of 1997 later changed to BIS in 1999 and continued till 2000.
- b) B.Sc. (H) Computer Science from 2001 to 2012.
- c) B.Tech. (FYUP) Computer Science for Academic Session 2013-14.
- d) B.Sc. (H) Computer Science for Academic Session 2014-15.
- e) B.Sc. (H) Computer Science in CBCS mode from 2015 onwards.

**6. Participation of the department in the courses offered by other departments**

Computer Science department faculty teaches computer science subjects in other department of B.Sc. (H) Electronics and General Elective paper of Computer Science for students of other departments.

**7. Details of courses/programmes discontinued (if any) with reasons**

Due to the restructuring of various courses from time to time as per DU guidelines, the courses conducted by the Department are as follows:

- a) B.Sc. (H) of 1997 onwards converted to BIS from 1999 and continued as BIS till 2000 - As per University guidelines.
- b) B.Sc. (H) Computer Science from 2001 to 2012 - As per University guidelines.
- c) B.Tech. (FYUP) for Academic Session 2013-14 - As per University guidelines.
- d) B.Sc. (H) Computer Science for Academic Session 2014-15 - As per University guidelines.
- e) B.Sc. (H) Computer Science in CBCS mode from 2015 onwards - As per University guidelines.

**8. Number of Teaching posts:**

Posts	Sanctioned	Filled
Assistant Professors	09	05 Out of 05, 02 are promoted to Associate Professor under MPS.

**9. Faculty profile with name, qualification, designation, specialization, (D.Sc./D.Litt. /Ph.D. / M. Phil. Etc.,)**

Name	Qualification	Designation	Specialization	No. of Years of Experience	No. of Ph.D. Students guided for the last 4 years
Ms. Manu Kataria	MCA	Associate Professor	Computer Applications	17 Years and 9 Months	--
Dr Sangeeta Srivastava	Ph.D.	Associate Professor	Software Engineering and DBMS	16 Years 8 Months	01
Mr. Bhavya Deep	M.Sc.	Assistant Professor	Computer Science	16 Years	--
Ms. Amita Misra	MCA	Assistant Professor	Computer Applications	16 Years	--
Ms. Arti Dua	MCA	Assistant Professor	Computer Applications	4 Years 7 Months	--

**10. Percentage of lectures delivered and practical classes handled (programme wise) by temporary faculty:** 66.66% of the classes are being conducted by temporary faculty.

**11. Student -Teacher Ratio (program wise):**12:1

**12. Number of academic support staff (technical) and administrative staff; sanctioned and filled:**

Posts	Filled
Lab Assistant	03

**13. Qualifications of teaching faculty with DSc/ D.Litt/ Ph.D/ MPhil/PG.:**

Name	Qualification
Ms. Manu Kataria	MCA
Dr. Sangeeta Srivastava	Ph.D
Mr. Bhavya Deep	M.Sc.
Ms. Amita Mishra	MCA
Ms. Arti Dua	MCA

**14. Number of faculty with ongoing projects from (National / International) funding agencies and grants received**

S. No	Name of the Faculty	Number of National Projects	Funding Agency	Amount Sanctioned
1.	Mr. Bhavya Deep	1	University of Delhi	Rs 3.5 Lacs
2.	Ms. Arti Dua	1	University of Delhi	Rs 6.0 Lacs

**15. Publications:**

\* a) Publication per faculty

Name of the Faculty	Publications in Journal	Publication in Conference Proceeding	Paper presented in Conference
Dr Sangeeta Srivastava	9	4	NA
Mr Bhavya Deep	Nil	-	2

**NA-Not Available**

- **Number of papers published in peer reviewed journals (national / international) by faculty and students- 13**

**16. Faculty as members in**

**a) National committees b) International Committees c) Editorial Boards....**

Dr. Sangeeta Srivastava is a member of the Committee of Post-Graduate and Honors Courses of Computer Science Department, University of Delhi.

Mr Bhavya Deep is a member, Faculty of Mathematical Sciences, University of Delhi since April 2013 for a period of 3 years.

Dr. Sangeeta Srivastava, Ms. Manu Kataria, Mr. Bhavya Deep, and Ms. Amita Misra have been member of the committees for designing the syllabus and guidelines of BSc (H) CS of Computer Science Department, University of Delhi since 1999 onwards and Ms Arti Dua has been a member of the

committees for designing the syllabus and guidelines of BSc (H) CS of Computer Science Department, University of Delhi since 2013 onwards.

### **17. Student projects**

#### **Percentage of students who have done in-house projects including inter departmental/programme**

All students of Undergraduate Course in Computer Science have done in-house projects from 2004 to 2013 compulsorily.

### **18. Awards/ Recognitions received by faculty and students**

Awards/ Recognitions received by faculty

Mr. Bhavya Deep - Certificate of Appreciation from University of Delhi for BEST DISPLAY OF INNOVATION PROJECT BCAS – 209

#### **Awards/ Recognitions received by students:**

- 1) Kunal P Rai-B.Sc. (H) Computer Science Final year student has designed and developed Network based Quiz Management system in April 2015.
- 2) Kunal P Rai-Designed and developed the Web Site addressed at [www.ncsscaa2015.com](http://www.ncsscaa2015.com) of 9th National Conference on Solid State Chemistry and Allied Areas, May 8th - 10th 2015, held at Conference Hall, University of Delhi organized by Bhaskaracharya College of Applied Sciences in association with Indian Association of Solid State Chemists and Allied Scientists.
- 3) Sahil Kumar-B.Sc. (H) Computer Science Final year student has designed and developed Network based Quiz Management system in April 2015.

### **19. List of eminent academicians and scientists/ visitors to the department**

- a) Dr. N. S. Raghava, Dept. of Information Technology, DTU.
- b) Dr. Ajay Mian, GNCT, Delhi.



**20. Student profile programme/course wise:**

Name of the Course/ programme	Enrolled in Ist Year		Pass Percentage for three year
	*M	*F	
B.Sc.(H) Computer Science (2011-12)	32	21	I Year-92.31% II Year-100% III Year-96.97%
B.Sc.(H) Computer Science (2012-13)	43	24	I Year-95% II Year-100% III Year-97.92%
B. Tech Computer Science (2013-14)	39	13	I Year-92.16% II Year-92.86% III Year-94%
B.Sc.(H) Computer Science (2014-15)	36	03	I Year-90% II Year-100% III Year-68.52
B.Sc.(H) Computer Science (2015-16)	45	10	I Year- II Year- III Year-

\*M=Male, F=Female

\*\* Admission process of University of Delhi is centralized, data for application received is not available

**21. Diversity of Students**

Name of the Course	Total number of student admitted	% of students from the same state	% of students from other States	% of students from abroad
B.Sc.(H) Computer Science (2011-12)	53	92.45%	7.55%	Nil
B.Sc.(H) Computer Science (2012-13)	67	85.07%	14.92%	Nil
B. Tech Computer Science (2013-14)	52	73.07%	26.92%	Nil
B.Sc.(H) Computer Science (2014-15)	39	76.92%	23.07%	Nil
B.Sc.(H) Computer Science (2015-16)	55	65.45%	34.55%	Nil

**22. How many students have cleared national and state competitive examinations such as NET, SLET, GATE, Civil services, Defense services, etc.?**

Two students have cleared NET.

**23. Student progression**

Student progression	Against % enrolled
UG to PG	35.71
PG to Ph.D.	3.57
Employed <ul style="list-style-type: none"> <li>• Campus selection</li> <li>• Other than campus recruitment</li> </ul>	60.71

Against data collected so far.

**24. Details of Infrastructural facilities**

- a) **Library:** College has a common facility with adequate number of books for students studying Computer Science as a subject.
- b) **Internet facilities for Staff & Students:** The Department has been provided with internet Connectivity and also provided access to reputed journals like IEEE, ACM and NList etc.
- c) **Class rooms with ICT facility:** All lecture rooms have lectures-via-projection facility.
- d) **Laboratories-----**Yes, The Department of Computer Science has well equipped laboratories with LCD projector to deliver practical classes. It is well equipped with latest configurations of hardware, software and peripherals.

**25. Number of students receiving financial assistance from college, university, government or other agencies ---- 27 (Twenty-Seven)**

No of students got Financial Assistance from	FY 2015-16	FY 2014-15	FY 2013-14	FY 2012-13	FY 2011-12	Total
College	0	0	0	0	0	0
University	0	6	0	0	0	6
Government (Govt. of NCT, Delhi)	05	10	9	0	1	20
Other	00	1	0	0	0	1 (Govt of Rajasthan)
Total	05	12	9	0	1	27

**26. Details on student enrichment programmes (special lectures/workshops/seminar) with external experts *Guest Lectures delivered (Name of the Expert, Talk Title)***

S. No	Year	Name of the Speaker / Resource Person/ Organization	Topic of Presentation
1.	15 <sup>th</sup> October 2014	CETPA, Noida	Linux
2.	3 <sup>rd</sup> September 2014	DUCAT, Noida	Android Technology
3.	2013-14	NIIT, Dwarka	Cloud Campus
4.	2013-14	Dr. N. S. Raghava Delhi Technological University, Delhi	Cloud Computing
5.	10 <sup>th</sup> April 2013	Lucideous Technologies, Delhi	Ethical Hacking and Information Security

**27. Teaching methods adopted to improve student learning**

Lectures, Power Point Presentations, Seminars, Virtual Labs, Quizzes, Regular short Tests, Class tests and Assignments, Interactive classes, Case studies and access to online journals.

**28. Participation in Institutional Social Responsibility (ISR) and Extension activities**

Full cooperation, contribution and participation is extended by the faculty in taking up the cause, responsibility and concerns raised by Gender Sensitizing

Committee, Student Welfare Committee, Equal Opportunity Cell, NSS, Eco club and other forums of the college. The Institutional social responsibility is, thus, handled with total commitment.

## **29. SWOC analysis of the department and Future plans**

**Strengths:** Well qualified, experienced and hardworking faculty, meritorious students, latest infrastructure consisting of well- equipped laboratories and excellent Library facilities with latest text books and Reference books. Emphasis is also laid on Co-curricular activities, like development of computer based quizzes and other software projects. They also participate and have won many accolades in the technical festivals of other institutes and colleges.

**Weakness:** Extra motivation to students to do research in addition to course curriculum

**Opportunity:** Computer Science is a fast evolving area with permeates our everyday lives. A large number of opportunities in the fast emerging areas of research like computer programming, cloud computing, web applications and networking are available. Exposure of students to latest technologies from industry as well as research prospective for overall career growth as well as placement in the industry exists.

**Challenges:** Maintaining the quality and strength of students

To make the lectures more informative

To undertake regular on-line evaluations/tests

## **LIST OF PUBLICATIONS**

**Sangeeta Srivastava**

1. **Srivastava S, (2015) “UML Profile for the WebGRL Requirements Model and EAOOH Design Models”** published in the International Journal of Emerging Technology and Advanced Engineering-(ISSN 2250-2459, ISO 9001:2008 Certified Journal), Volume 5, Issue 8, August 2015, pp 313-322.

2. Chawla S, **Srivastava S**, Bedi P, (2015) **“Improving the quality of web applications with web specific goal driven requirements engineering”**, International Journal of System Assurance Engineering and Management, pp1-13, Springer.
3. Chawla S, **Srivastava S**, Bedi P, (2016) **“Goal and scenario based Web Requirements Engineering”** (Accepted in International Journal of Computer Systems Science & Engineering, CRL Publishing) **Vol 31 No 1**.
4. **Srivastava S**, (2014) **“Model transformation Approach for a Goal Oriented Requirements Engineering based WebGRL to Design Models”** published in International Journal of Soft Computing and Engineering (IJSCE) ISSN: 2231-2307, Volume-3, Issue-6, pp66-75, ISSN: 2231-2307.
5. **Srivastava S**, (2014) **“A Systematic Approach towards Transformation of Presentation Web Goal Oriented Requirements Language to Presentation Design Model”** published in the International Journal of Scientific and Engineering Research - (ISSN 2229-5518). Volume 5, Issue 9, pp 7-17.
6. Chawla S, **Srivastava S**, Bedi P, (2014) **“Evaluation of Web-specific Goal oriented Requirements Language models with Quantitative reasoning”**, Volume 39, Issue 2, ACM Sigsoft SEN notes, DOI: 10.1145/2579281.2579295. ISSN: 0163-5948
7. Chawla S, **Srivastava S**, & Malhotra D, (2014) **“Goal Based Requirements Analysis Using WebURN”**, International Journal of Computer Information Systems and Industrial Management Applications, ISSN 2150-7988 Volume 6 (2014) pp. 248 – 256.
8. **Srivastava S**, (2013) **“A Repository of Software Requirement Patterns for Online Examination System”** published in the International Journal of Computer Science Issues - Volume 10, Issue 3, No 2, May 2013 ISSN (Online): 1694-0784 ISSN (Print): 1694-0814, pp 247-255.

9. Chawla S, **Srivastava S**, (2012)"**Goal oriented Requirement Analysis for Web Applications**," International Journal of Modeling and Optimization vol. 2, no. 3, pp. 192-196.
10. **Srivastava S**, Chawla S, (2010), "**Goal Oriented Requirements Engineering for Web Applications: A Comparative Study**", Int. J. of Recent Trends in Engineering and Technology, Vol. 4, No. 2, 96-98.
19. **Srivastava S**, Naveen Prakash, Sabharwal S, (2008) "**A Generic Approach to Engineering Transformational Methods**", in the International Journal of Information and Management Sciences, Tamkang University Publication, Volume 19, Number 3, pp. 455-476.
20. Srivastava S, Naveen Prakash, Sabharwal S, (2006) "The Classification Framework for Model Transformation", in the Journal of Computer Science, Science Publications, Vol.2 (2), pp 166-170, New York, U.S.A. ISSN 1549-3636.
21. **Srivastava S**, Naveen Prakash, (2004) "**A Systematic Approach for Engineering Inter Model Transformations**", in the International Journal of Information and Management Sciences, Tamkang University Publication, Vol. 17 (4), pp 15-34, 2006, Republic of China, 2004.
22. Chawla S, **Srivastava S**, Bedi P, (2015) "**A Qualitative Forward Reasoning Approach for Evaluation of WebGRL Diagrams**", in the Journal of Information & Systems Management, Volume 5, Number 1, pp. 1-15.

**Mr. Bhavya Deep**

**Conference**

1. Bhavya Deep (2015) "Cloud Providers–An Overview" in 1<sup>st</sup> International Conference on Computing, Communication, Electrical, Electronics,

Devices & Signal Processing, Vijayawada, Andhra Pradesh on 28th - 30th March .

2. Bhavya (2008) “Total Quality Management in Education (TQME)” in IASE/CTE, Rajasthan on October 11 – 13.

## DEPARTMENT OF ELECTRONICS

1. **Name of the Department** : Electronics
2. **Year of Establishment** : 1995
3. **Names of Programmes / Courses offered (UG, PG, M.Phil., Ph.D., Integrated Masters; Integrated Ph.D., etc.)**

B.Sc. (Hons.) Electronics, **(CBCS System)** (2015 onwards)

B. Tech. Electronics ( four years) (2013 -2017) **FYUP**

B.Sc. (Hons.) Electronics (three years) Semester mode

B.Sc. (Hons.) Electronics (three years) Annual Mode

B.A. Sc. (Hons.) Electronics (three years) Annual Mode

Diploma Electronics (two years)

4. **Names of Interdisciplinary courses and the Departments/units involved**

Under CBCS system all students of B.Sc. (Hons) study 4 out of any 10 interdisciplinary papers offered from other Departments i.e. Department of Chemistry, Department of Polymer Science , Department of Physics, Department of Instrumentation, Department of Computer, Department of Human communication, Department of Microbiology, Department of Food technology, Department of Mathematics and Department of Biomedical science.

5. **Annual/ semester/choice based credit system (programme wise)**

Semester (B.Tech Electronics and B.Sc (Hons. Electronics) and Choice Based Credit System (**CBCS**).

6. **Participation of the department in the courses offered by other departments**

Under CBCS system , Department of Electronics caters to the courses of 12 Departments in the college:

(i) Department of Instrumentation, (ii) Department of Physics, (iii) Department



of Computer Science, (iv) Department of Biomedical Science, (v) Department of Microbiology, (vi) Department of Polymer Science, (vii) Department of Food Technology, (viii) Department of Human Communication, (ix) Department of Mathematics, (x) Department of Chemistry, (xi) Department of English and (xii) Department of Biology

## 7. Details of courses/ programmes discontinued (if any) with reasons

- B.A. Sc. Started from 1995-1996 and discontinued from the academic session 2007- onwards
- B.Sc (Hons) Electronics (Annual mode) started from 2007-2008 and discontinued from the academic session 2009-2010.
- FYUP started from 2013-14 is discontinued from academic session 2014-15 as per university directives

## 8. Number of Teaching posts

Posts	Sanctioned	Filled
Assistant Professors	8	8 (3 of which are promoted to Associate Professor)

## 9. Faculty profile with name, qualification, designation, specialization, (D.Sc./D.Litt. /Ph.D. / M. Phil. etc.,)

Name	Qualification	Designation	Specialization	No. of Years of Experience	No of PhD. Students Guided
Dr. Manoj Kumar Khanna	Ph. D.	Associate Professor	Microelectronics and VLSI designing	22	01
Dr. Geeta Mongia	Ph.D.	Associate Professor	Optical Data Storage & Photovoltaics	21	NIL
Dr. Inderbir Kaur	Ph. D.	Associate Professor	Amorphous Semiconductors	21	NIL
Dr. Avneesh Mittal	Ph.D.	Assistant Professor	Genetic Algorithm and Adaptive Controls	16	NIL

Name	Qualification	Designation	Specialization	No. of Years of Experience	No of PhD. Students Guided
Dr. Manoj K Tiwari	Ph. D.	Assistant Professor	Microwave Photonics	16	NIL
Ms. Shweta Gupta	M.Sc.	Assistant Professor	Electronics	07	NIL
Dr. Jitender Kumar	Ph. D.	Assistant Professor	Nano-Materials and devices (LED Solar Cell, Sensors)	06	NIL
Dr. Amit Kumar	Ph. D.	Assistant Professor	Electroluminescent Materials & Devices	12	NIL

**10. Student -Teacher Ratio (program wise): 12:1 (As per University norms)**

**11. Number of academic support staff (technical) and administrative staff; sanctioned and filled:**

Post	Filled
Lab Assistant	03

**12. Qualifications of teaching faculty with DSc/ D.Litt/ Ph.D/ MPhil/PG.:**

Mentioned in Pt No 09

**13. Number of faculty with ongoing projects from a) National b) International funding agencies and grants received:**

Four (4) faculty members are involve in three Innovation Projects (as follows) received from University of Delhi (2015-16 )

S.No	Name of the Faculty	Project Title	Funding Agency	Grant Received (Rs.)
1.	Dr. Inderbir Kaur	Clean Electricity Generation from waste water samples collected from Delhi-NCR using Microbial Fuel Cell Technology- A green Energy Initiative ( <b>Innovation Project 2015-16</b> )	Delhi University	Rs 5,00,000/-
2.	Dr. Avneesh Mittal	To understand the role of maternal factors in childhood obesity and promote metabolic fitness( <b>Innovation Project 2015-16</b> )	Delhi University	Rs 5,50,000/-
3.	Dr Jitender Kumar and Dr Amit Kumar	Development of wireless sensor for detection and real time monitoring of Microorganisms( <b>Innovation Project 2015-16</b> )	Delhi University	Rs 4,50,000/-
<b>Projects completed by the faculty before 2012</b>				
1.	Dr. Geeta Mongia and Dr. Inderbir Kaur	Low-cost electricity generation using, Bio-Photovoltaic Technology-a Green Energy Initiative ( <b>2013-14</b> )	Delhi University	55000
2.	Dr. Manoj Khanna	Assessment of Brominated Flame Retardants in Mobile phones, theirconsumption Pattern in North and Carbon Foot Prints from Electronic ( <b>2013-14</b> )	Delhi University	500000
3.	Dr. Amit Kumar	DBT project is in collaboration with Department of Electronic Science, University of Delhi) ( <b>2013-2014</b> )	Department of Biotechnology(DBT), Govt. of India	1090400
4.	Dr Manoj K Tiwari	Determine the Speciation of Some Selected Heavy Metals from E-waste and their Impact on Ground Water ( <b>2012-13</b> )	Delhi University	10 Lakhs
5.	Dr Manoj Khanna	Study of Rise in Consumption of the Mobile phones/Electronic Gadgets in Delhi Region and Material Analysis Projecting Potential Electronic Waste and their Impact on Environment ( <b>2012-13</b> )	Delhi University	10 Lakhs-

**14. Departmental projects funded by DST-FIST; UGC, DBT, ICSSR, etc. and total grants received:**

**DBT** project is in collaboration with Department of Electronic Science, University of Delhi). Total grant received: **Rs.14.3 lakhs, PI (Dr. Amit Kumar)**

**15. Publications:**

Number of Publications per faculty for the financial year 2012- 2016 and prior to 2012.

Name	Publications in journal		Books edited	Books authored
	2012-16	Prior to 2012		
Dr. Manoj K. Khanna	03	07	NIL	03
Dr. Geeta Mongia	01	06	NIL	02
Dr. Inderbir Kaur	01	05	NIL	01
Dr. Avneesh Mittal	05	-	NIL	NIL
Dr. Manoj K Tiwari	02	03	NIL	10
Ms. Shweta Gupta	NIL	NIL	NIL	01
Dr. Jitender Kumar	06	10	NA	NIL
Dr. Amit Kumar	03	07	NIL	NIL

**16. Faculty as member in a) National Committees b) International Committees c) Editorial Boards****Dr. Jitendra Kumar and Dr. Avneesh Mittal**

Member of the Curriculum Committee of the University of Delhi to design syllabus for 4 year UG programme in Electronics (FYUP).

**17. Student projects**

**a) Percentage of students who have done in-house projects including inter departmental/programme:** NIL

**b) Percentage of students placed for projects in organizations outside the institution i.e.in Research laboratories/Industry/other agencies**

There is no any provision in current course curriculum for project training except the students enrolled under FYUP scheme. But, most of the students go for training/ projects during summer vacations.

**18. Awards/ Recognitions received by faculty and students:**

**Dr. Geeta Mongia**, conferred with “*Best Teacher Award*” for the academic year 2012-13, by Govt. of NCT of Delhi.

**Prior to 2012**

**Dr. Geeta Mongia** awarded a certificate of excellence by “Lions Club” Delhi, for outstanding recognition in the field of education. This award was given in 2005, on Teacher’s Day.

**19. Student profile programme/course wise**

Name of the Course/programme	Enrolled in I year		Pass percentage for three years
	*M	*F	
B Sc (Hons ) Electronics (2011-12)	45	12	I Year 100% II Year 100% III Year 89.66%
B Sc (Hons ) Electronics (2012-13)	34	05	I Year 57.69 II Year 97.87 III Year 48.72
B Tech Electronics (2013-14)	29	10	I Year 94.59 II Year 80% III Year 50%
B Sc (Hons ) Electronics (2014-15)	65	02	I Year 79.25% II Year 97 % III Year 50%

**20. Diversity of Students**

Name of the Course	Total students enrolled	Students from same States	students from other states	% of students from the same state	% of students from other States
B Sc (Hons ) Electronics (2011-12)	57	47	10	82.45	17.54
B Sc (Hons ) Electronics (2012-13)	39	28	11	71.79	28.20
B Tech Electronics (2013-14)	39	36	03	92.30	7.69
B Sc (Hons ) Electronics (2014-15)	67	49	18	73.13	26.86

**21. Details of Infrastructural facilities****a) Library :**

All students are members of college's central library and also faculty provides access of personal book library placed in the department to student time to time.

**b) Internet facilities for Staff & Students :**

Staff and Students have access to Wi-Fi with their individual login IDs and also through LAN connections.

**c) Class rooms with ICT facility:**

Several class rooms & Labs are equipped with Internet and Over head projector facility.

**d) Laboratories:**

The Electronics Laboratory is well equipped with the latest state-of-the art instruments such as

- Cathode Ray Oscilloscopes & Digital Storage Oscilloscopes (100MHz),
- CRO demonstration kits, Pulse Generators,
- Function Generators,
- PowerMeter,
- Analog and Digital I.C. tester ,
- 8, LCR Q-tester
- 8085 and 8086 Microprocessor kits with assembler and dissembler,
- Microcontroller trainer,
- Interfacing modules and cards,
- Universal Programmer,
- various communication modules experimental kits,
- LASER kits,
- Antenna trainer kits,
- PCB design kits, etc.
- Arduino and AVR microcontroller Kits

## 22. Number of students receiving financial assistance from college, university, government or other agencies

Year	No. of Students
2014-15	08
2013-14	06
2012-13	05

## 23. Details on student enrichment programmes (special lectures / workshops /seminar) with external experts

- i. One day workshop on "AVR Microcontroller" in collaboration with Excel Technologies, Noida, was also organized on 01.02 .2016 in the College.
- ii. One day workshop on "**Emerging Technologies, Market Requirements & ITIL V3.0**" on **15 September 2015** collaboration with Milestone Achievers (September 2015).
- iii. National workshop on "Printed Circuit Board Designing" in collaboration with Tevatron Technology Pvt Ltd. ( March, 2015)
- iv. A lecture on "**A introduction to savings and Investements**" in collaboration with Securities and Exchange Board of India (7 Jan 2012)
- v. Workshop on "**ROBOTICS**" organized by CETPA Infotech Pvt. Ltd (Nov, 2014)
- vi. National Workshop on **VLSI DESIGNING USING VERILOG CODING** (July 2013) in collaboration with JB Tech India.
- vii. Workshop on **ROBOTICS** in collaboration with DUCAT (2013).
- viii. Enterprernursip awareness camp for three days ( Jan 2012)
- ix. Lecture on '**Eyes and Hands of Nanotechnology**' by Prof. B.R. Mehta, Department of Physics, IIT Delhi on February 18,2014.
- x. Lecture on '**Semiconductor Lasers**' by Prof. M.R. Shenoy, Department of Physics, IIT Delhi on February 19, 2014.

**24. Teaching methods adopted to improve student learning**

- Teaching through ICT tools and group projects to give hands on experiment of the subject
- Presentation by students on regular basis to develop their presentation skills, confidence in self study and building research capability.
- Arranged seminar / workshops on regular basis to keep students abreast of latest innovations in the industry and to provide an insight into industry's mindset.

**25. Participation in Institutional Social Responsibility (ISR) and Extension activities**

Full cooperation, contribution and participation is extended by the faculty in taking up the cause , responsibility and concerns raised by Gender Sensitizing Committee, Student Welfare Committee, Equal Opportunity Cell, NSS, Eco club and other forums of the college. The Institutional social responsibility is, thus, handled with total commitment.

**26. SWOC analysis of the department and Future plans****Strengths:**

- Well experienced and distinguished faculty of scholars actively involved in organizing various student enrichment programmes and research alongwith regular teaching.
- The laboratory is equipped with various latest state-of-the-art instruments.
- Various activities such as seminars, workshops, conferences, lectures and co-curricular activities are organized every year to promote the holistic development of the students.
- Students are involved in research through Innovation projects conducted by University of Delhi



**Weakness:**

- Less number of computers in the Computer Lab of the Department
- Non-AC Computer Lab requires high maintenance.

**Opportunity:**

After completion of the course in Electronics, the student can get lucrative pay packages in various esteemed organizations and industries. Besides this, the students can pursue higher studies also.

**Challenges:**

To motivate the students to pursue research and higher studies and to enhance their experimental skills.

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**Dr. Geeta Mongia**

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**and A proposed approach for generation of Electricity Using Waste water Treatment”**. IJSRD, Page ,9 ISSN : 2321-0613

**Dr. Inderbir Kaur**

- Verma G., Singh Y., Anjali, Sabharwal N., Aggrawal A., Mongia G., **Kaur I.**, Marwah R G (2015)“**A short review on Microbial Fuel Cell technology and A proposed approach for generation of Electricity Using Waste water Treatment”**. IJSRD, Page, 9, ISSN: 2321-0613

**Dr. Avneesh Mittal**

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**Dr Manoj K Tiwari**

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**Dr. Amit Kumar**

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**Dr. Geeta Mongia**

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**Dr. Manoj K. Tiwari**

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**Ms. Shweta Gupta**

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**Dr. Geeta Mongia**

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**Dr. Jitender Kumar**

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#### **Dr. Amit Kumar**

- Madhwal D., Rait S. S., A. Verma, **Kumar A.**, Bhatnagar P. K., Mathur P. C, Tada K and Onada M. “**Self-trapping mechanism in green phosphorescent**

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## DEPARTMENT OF FOOD TECHNOLOGY

1. **Name of the department** : Food Technology
2. **Year of Establishment** : 1995
3. **Names of Programmes/Courses:** UG namely B.Sc (H) Food Technology, B.Tech Food Technology (one batch only).
4. **Names of Interdisciplinary courses and the departments/units involved:** All students study various interdisciplinary courses including biochemistry, microbiology, statistics, mathematics, physics, chemistry, biology etc.
5. **Annual/ semester/choice based credit system (programme wise) :**
  - B.Tech Food Technology (FYUP)- One batch only (2013) – Semester system
  - B.Sc (H) Food Technology - One batch only (2014) – Semester system
  - B.Sc (H) Food Technology (CBCS)(2015) – Semester system
6. **Participation of the department in the courses offered by other departments**

Department of Food Technology offers GE Courses which was opted by students of Department of Computer Sciences, Department of Biomedical sciences and Department of Microbiology.
7. **Courses in collaboration with other universities, industries, foreign institutions, etc.**

Other courses offered by the department like Short-term course, Diploma, Certificate are listed below:

- i. “Better Process Control school for Low acid canned and acidified foods” held on 18-21<sup>st</sup> March 2016 in collaboration with (USFDA), India Office.
- ii. “Better Process Control School for Low acid foods” at Negumbo, Srilanka held on November 21-23, 2011 in collaboration with (USFDA), India Office.
- iii. “Better Process Control school for Low acid canned and acidified foods” held on 1-5 March 2011 in collaboration with (US FDA), India Office.
- iv. Short term course on Packaging Technology (2010-11).

**8. Details of courses/programmes discontinued (if any) with reasons :**

FYUP has been discontinued in academic session 2014-15 as per university directives.

**9. Number of Teaching posts:**

Posts	Sanctioned	Filled
Assistant Professors	08	05 (04 Assistant Professors were promoted to Associate Professor + 01 Assistant Professor)

**10. Faculty profile with name, qualification, designation, specialization, (D.Sc./D.Litt. /Ph.D. / M. Phil. etc.,)**

Name	Qualification	Designation	Specialization	No. of Years of Experience (years)	No. of Ph.D. Students guided for the last 4 years
Dr. Rizwana	Ph.D	Associate Professor	Food Technology	20	Ph.D Co-guide for 2 students
Dr. Vandita Gupta	Ph.D	Associate Professor	Food Science and Nutrition	20	Nil
Dr. Shalini Sehgal	Ph.D, PGHRM	Associate Professor	Food Microbiology and Food Safety	19	MSc. -2 PGDFSQM-2 Ph.D. Coguide-1
Dr. Eram S. Rao	Ph.D	Associate Professor	Food Science and Nutrition	20	Nil
Dr. Meenakshi Garg	Ph.D, Diploma in Packaging	Assistant Professor	Food Processing and Packaging	11	MSc.-1

**11. List of senior visiting faculty: Nil****12. Percentage of lectures delivered and practical classes handled (programme wise) by temporary faculty 35.61% (2015 odd semester) & 63.41% (2016 even semester)****13. Student -Teacher Ratio (program wise): 12:1****14. Number of academic support staff (technical) and administrative staff; sanctioned and filled :**

Post	Filled
Lab Assistant	03

**15. QualificationsofteachingfacultywithDSc/D.Litt/Ph.D/MPhil/PG.**

Name	Qualification
Dr.Rizwana	Ph.D
Dr.Vandita Gupta	Ph.D
Dr.Shalini Sehgal	Ph.D, PGHRM
Dr.Eram S Rao	Ph.D
Dr.Meenakshi Garg	Ph.D, Diploma in Packaging

**16. Number of faculty with ongoing projects from a) National b) International funding agencies and grants received**

Sl.no	Name of faculty	No. of Projects	Funding agency	Amount Sanctioned
1	Dr. Rizwana	03	University of Delhi	<ul style="list-style-type: none"> <li>10 Lakhs</li> <li>5.5 Lakhs</li> <li>5 Lakhs</li> </ul>
2	Dr. Shalini Sehgal	05	University of Delhi	<ul style="list-style-type: none"> <li>10 Lakhs</li> <li>5 Lakhs</li> <li>4.25 Lakhs</li> </ul>
			Ministry of Health and Family Welfare	<ul style="list-style-type: none"> <li>3.46 Lakhs</li> </ul>
			World Health Organization(WHO), India Office	<ul style="list-style-type: none"> <li>4.6 Lakhs</li> </ul>
3	Dr. Eram S Rao	02	University of Delhi	<ul style="list-style-type: none"> <li>3.5 Lakhs</li> <li>5.5 Lakhs</li> </ul>
4	Dr. Meenakshi Garg	04	University of Delhi	<ul style="list-style-type: none"> <li>5 Lakhs</li> <li>6 Lakhs</li> <li>10 Lakhs</li> </ul>
			UGC	<ul style="list-style-type: none"> <li>9 Lakhs</li> </ul>

**17. Departmental projects funded by DST-FIST; UGC, DBT, ICSSR, etc. and total grants received:**

- i. Creation of Infrastructural Facilities including Extension Services under Scheme for Human Resource Development” (2009-10) funded by MOFPI, GOI, Rs 68.78 lacs Faculty involved: Dr. Eram S. Rao, Dr. Rizwana, Dr. Shalini Sehgal and Dr. Meenakshi Garg
- ii. Ongiong “Star College Scheme for strengthening of life science and biotechnology education and training at undergraduate level”. It is a scheme for improving critical thinking and 'hands on' experimental work in the cutting edge-technologies needed for modern biological studies by Department of Biotechnology. The grant was released in December,2009 The four departments of college have received a grant of Rs. 56.61 lakhs under the coordinatorship of Dr. Shalini Sehgal , Associate Professor of Food Technology till date. The Food Technology Department has also attained a status of Star Department in 2014 and also an additional grant of 10.5 lakhs.

<b>Scheme Coordinator</b>	<b>Dr. Shalini Sehgal</b>	<b>2009 till September, 2014</b>
Department Coordinator	Dr. Shalini Sehgal Dr. Rizwana Dr. Meenakshi Garg	December 2009 to September 2014 October 2014 to September 2015 October 2015 till date

- iii. Innovation Projects funded by University of Delhi:

**Academic year: 2012-13**

S.No.	Project No.	Project Title	Faculty	Sanctioned Amount
1	BCAS – 102	Studies to assess the quality of fruits and vegetables with respect to microbial load and the remedial measures for their control	Dr. Shalini Sehgal	10 Lakhs
2	BCAS – 103	Development of Cost -Effective Nutritious Multi Cereal Bar and It's Sustainable Packaging Using Nano – Biopolymer	Dr. Meenakshi Garg	10 Lakhs
3	BCAS – 104	Development and study of alternate packaging materials from	Dr. Rizwana	10 Lakhs

		agro wastes and its application in food packaging		
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**Academic year: 2013-14**

S.No.	Project No.	Project Title	Faculty	Sanctioned Amount
4	BCAS- 202	Agro-waste material management: from waste to wealth	Dr. Rizwana	5.5 Lakhs
5	BCAS- 203	Public awareness and evaluation of probiotics sold in Delhi	Dr. Shalini Sehgal	5 lakhs
6	BCAS- 205	To prepare edible packaged, low cost health snack from fruit and vegetable waste and study its effect in healthy respondents	Dr. Meenakshi Garg	5 Lakhs
7	BCAS- 208	Lifestyle interventions in stress management: a study among Delhi youth	Dr. Eram Rao	3.5 Lakhs

**Academic year: 2015-16**

S.No.	Project No.	Project Title	Faculty	Sanctioned Amount
8	BCAS- 302	Development of an intelligent, eco-friendly multilayer package and nutritious snack from Fruits and Vegetable seeds and peels	Dr. Meenakshi Garg	6 Lakhs
9	BCAS- 307	Agro Waste based Green Nano-Composite: Development and Applications	Dr. Rizwana	5 Lakhs
10	BCAS- 312	Development of cookies with biodegradable packaging material for diabetics	Dr. Eram Rao	5.5 Lakhs
11.	BCAS-310	Development of wireless sensor for detection and real-time monitoring of Microorganisms.	Dr. Shalini Sehgal	4.25 Lakhs

**18. Research Centre/facility recognized by the University: NO**

The department has well equipped Food Technology laboratories which has sophisticated equipments such as Automatic Nitrogen analyser, Brookfield's viscometer, UV-vis spectrophotometer, Lovibond Tintometer, Rotary vacuum

evaporator Haugh unit tester, Water activity meter, Moisturemeter. Besides the department has a pilot plant which aims at providing practical experience to the students. It is well equipped with a canning unit, bakery unit and milk processing plant. The department also has research room which includes high end equipments like gas chromatography, Texture analyser etc.

## 19. a) Publications:

### a) Publication per faculty

S.No	Name of the Faculty	Publications in Journal	Books Authored	Chapters in Books	Publication in Conference Proceeding	Paper presented in conferences
1	Dr.Rizwana	3	Nil	1	1	1
2	Dr. Shalini Sehgal	6	3	13*	3	3
3	Dr. Eram S Rao	Nil	7	2	7**	1
4	Dr. Meenakshi Garg	13	Nil	Nil	Nil	1

\*(including two e-units), \*\*(Lecture series)

## 20. Areas of consultancy and income generated:

- “Better Process Control school for Low acid canned and acidified foods” in collaboration with (USFDA), India Office. Co-coordinator- Dr. Shalini Sehgal, Co-coordinator – Dr. Rizwana. Left over money is Rs.12, 00, 91. 50 as on 01.04.2014.
- “Better Process Control School conducted from 18<sup>th</sup> to 21<sup>st</sup> March. 2016 for Low acid canned and acidified foods” in collaboration with (US FDA), India Office. Co-coordinator- Dr. Shalini Sehgal, Co-coordinator – Dr. Rizwana- left over amount under process.

## 21. Faculty as members in –

	No.	Name of Faculty	Name of the committee
a) National Committees	6	Dr. Shalini Sehgal	Expert member on committee for Certificate Program in Food Safety (IGNOU)
			Member in designing PG Diploma Food Safety and Quality Management course (IGNOU)



	No.	Name of Faculty	Name of the committee
			Subject expert in Board of Studies for M.Sc. Food Processing and Food Technology for establishment of Innovation Centre in Food Processing and Food Technology under (RUSA) at University of Lucknow.
			Expert Member in Diploma Programme in value added products from Fruits and Vegetables (DVAPFV), IGNOU.
			Member, National Advisory Committee, National Conference on Advances in Food Science and Technology (NCAFST-2016) organized by Shaheed Rajguru College of Applied sciences for women
			Member of National Organising Committee of Eighteenth International Symposium on Problems of Listeriosis (ISOPOL XVIII)
	3	Dr. Eram Rao	NIFTEM course curriculum development committee
			Subject expert in Board of Studies for M.Sc. Food Processing and Food Technology for establishment of Innovation Centre in Food Processing and Food Technology under (RUSA) at University of Lucknow.
			Subject expert in Board of Studies NIFTEM for B Tech and M Tech in Food Science and Technology-7-8th May, 2015.
b) University Committees	2	Dr. Rizwana	Expert Member in Diploma Programme in value added products from Fruits and Vegetables (DVAPFV), IGNOU.
			Member, National Advisory Committee, National Conference on Advances in Food Science and Technology (NCAFST-2016) organized by Shaheed Rajguru College of Applied sciences for women
	2	Dr. Shalini Sehgal-	Committee of courses in Dept. of home science (DU)
			Committee of courses in BSc. / B. Tech Food Technology (DU) 2016
			Inspection Committee for starting B.Sc. Food Technology at <b>IHE</b> and <b>LIC</b>
c) Editor	1	Dr. Eram Rao	Subject expert in Board of studies for Amity Institute of Food Technology, AmityUniversity, UP 18.6.15.
			Associate Editor, Probiotic Association of India, Newsletter

**22. Student projects:****a) Percentage of students who have done in house projects including inter departmental / programme**

Most of the students undergo training/Projects as per the curriculum.

**1. Work done after 2011**

<b>Academic year</b>	<b>No. of students in Projects undertaken in Star college scheme</b>
2011-12	44 students with Dr. Shalini Sehgal in the area of New Product Development
2012-13	15 students with Dr. Shalini Sehgal on Impact of Functional Foods on Consumer Perceptions
2013-15	55 (Star College report 2013-15)

- Students have done 13 in house projects under star college scheme of DBT in the academic year 2014-15. The following number of students were involved.
- B.Sc. 3<sup>rd</sup> year (2014-2015)- 34/63=54%
- B. Tech 2<sup>nd</sup> Year (2014-2015)- 11/40=28%

Projects done during academic year 2014-15

<b>S. No.</b>	<b>Project</b>	<b>Investigator</b>
1	Quality Assessment of Market Milk.	Dr. Eram S. Rao
3	Processing of Amla (Indian gooseberry).	Dr. Vandita Gupta
4	Utilization of milling by products for developing new health snacks.	Dr. Vandita Gupta
5	Effect of frying on physicochemical properties of sesame and soyabean blend oil.	Dr. Meenakshi Garg
6	Developing value added low cost food product from edible waste.	Dr. Meenakshi Garg
7	Organoleptic studies on Biscuits/ Cookies	Dr. Eram Rao
10	Study of functional properties of egg albumin	Dr. Rizwana
11	Preparation of biofuel from waste or edible oil	Dr. Meenakshi Garg

Students were also involved in DU Innovation projects:

S. No.	Project No.	Project Title	Faculty	Inter disciplinary Students Involved
1	BCAS– 102	Studies to assess the quality of fruits and vegetables with respect to microbial load and the remedial measures for their control	Dr. Shalini Sehgal	10
2	BCAS– 103	Development of Cost –Effective Nutritious Multi Cereal Bar and It's Sustainable Packaging Using Nano – Biopolymer	Dr. Meenakshi Garg	10
3	BCAS– 104	Development and study of alternate packaging materials from agro wastes and its application in food packaging	Dr. Rizwana	10
4	BCAS- 202	Agro-waste material management: from waste to wealth	Dr. Rizwana	10
5	BCAS- 203	Public awareness and evaluation of probiotics sold in Delhi	Dr. Shalini Sehgal	10
6	BCAS- 205	To prepare edible packaged, low cost health snack from fruit and vegetable waste and study its effect in healthy respondents	Dr. Meenakshi Garg	10
7	BCAS- 208	Lifestyle interventions in stress management: a study among Delhi youth	Dr. Eram Rao	10

**c) Percentage of students placed for projects in organizations outside the institution i.e. in Research laboratories/Industry/ other agencies**

S. No.	Project No.	Project Title	Faculty	Inter disciplinary Students Involved
1	BCAS-302	Development of an intelligent, eco-friendly multilayer package and nutritious snack from Fruits and Vegetable seeds and peels	Dr. Meenakshi Garg	10
2	BCAS-307	Agro Waste based Green Nano-Composite: Development and Applications	Dr. Rizwana	10
3	BCAS-312	Development of cookies with biodegradable packaging material for diabetics	Dr. Eram Rao	10
4.	BCAS-310	Development of wireless sensor for detection and real-time monitoring of Microorganisms.	Dr. Shalini Sehgal	10

- Students undergo summer training in various organizations.

Batch	No. of students	No. of students who did training	%
B.Sc. Food Technology (2011-12)	27	27	100
B.Sc. Food Technology (2013-14)	41	41	100
B.Sc. Food Technology (2014-15)	61	55	90
B.Tech. Food Technology (2014-15)	40	16	40
B.Sc. Food Technology (2014-15)	42	2	4.76

### 23. Awards/ Recognitions received by faculty and students-

- Dr. Rizwana got “Teaching excellence award for innovation” during the academic session 2014-15 by University of Delhi.
- Dr. Rizwana recipient of “Best Innovative Idea Award” for the innovation project BCAS-202 (2013-2015) as one of the team members, by the University of Delhi at the Innovation Plaza during Antardhwani.
- Dr. Shalini Sehgal first recipient of the “Best Teacher Award” in the college by Directorate of Higher Education, Govt. of Delhi for the year 2011-12 which included a citation and a cash prize of Rs. 75000/-
- Dr. Shalini Sehgal recipient of “Best Display Award” for the innovation project BCAS-203 (2013-2015) by the University of Delhi at the Innovation Plaza during Antardhwani.
- Second prize in oral presentation in International Conference on Food Technology: Impact on Nutrition and Health organized by International Institute of Food and Nutritional Sciences at JNU Convention Centre, Delhi from Dec 23-24, 2013.
- Dr. Eram S. Rao received “excellent” grading in the lecture series delivered at the UGC sponsored refresher course for teachers in the year 2010 by University of Allahabad.
- Dr. Meenakshi Garg recipient of “Best Business Idea Award” for the innovation project BCAS-205 (2013-2015) by the University of Delhi at the

## Innovation Plaza during Antardhwani

- Two patents were filled by Dr. Meenakshi Garg

INDIA-Patent Application No. 471/DEL/2013, Dated- February 19, 2013, entitled “Nutritional Composition and Methods for Manufacturing the Same”.

INDIA-Patent Application No. 473/DEL/2013, Dated- February 19, 2013, entitled “Coating Composition and Methods for preparation thereof”.

**Students Awards/ Recognitions**

- Tushar Bhardwaj of 2<sup>nd</sup> year B.Sc. (Food Technology) won 2<sup>nd</sup> prize in Inter-collegiate Power Point Presentation making competition.
- Diksha, B.Tech. (Food Technology) 3<sup>rd</sup> year, received the AIFPA Silver Medal (instituted by Italian Technical Services) for academic excellence.
- Megha Negi, a student of Department of Food Technology 3<sup>rd</sup> year, was awarded the Italian Technical Services-Scholarship in food safety by the All India Food Processors Association for her academic performance.

**24. List of eminent academicians and scientists/ visitors to the department**

<b>Expert</b>	<b>Date Visited</b>
Mr. Daneil Geffin, Assistant Country Director, US FDA Office	01.03.11
Mr. Tushar Kanti Dutta, Ex Joint Director, IIP	01.03.11
Dr. Hirotooshi Tamura, Professor of Food Chemistry, Kagawa University.	17.08.11
Mr. Jules Jalenques, International Sales, Interscience, France	23.01.12
Dr. Neerja Hajela, Head Science, Yakult – Danone	13.02.13
Dr. R. K. Khandal, Vice Chancellor, UP. Tech. University, Lucknow.	05.07.13
Ms. P. Alli Rani, CEO, FHEL, Concor, India.	05.07.13
Mr. Rakesh Mehra, Head, IQF, Operations, SAFAL.	05.07.13

<b>Expert</b>	<b>Date Visited</b>
Dr. Nagendra.P.Shah,University of Hongkong	06.09.13
Prof. Rama Rao, from Cornell University	10.12.13
Dr. N.C. Saha, Director, IIP	03.11.14
Dr. Tanveer Alam, Joint Director, IIP	03.11.14
Mr. Radhakrishnan, Chief Editor, Indian Food Packer	03.11.14
Dr. Kumud Khanna, Former Director, Institute of Home Economics	03.11.14
Prof. Antal Veba and Professor Emo Gyimes from Faculty of Engineering, University of Szeged, Szeged, Hungary	04.03.14
A.K. Ghosh (IIT Delhi)	03.11.14
Dr. Rajesh Singh, Deputy Librarian, University of Delhi	19.01.15
Dr. TSR Murali, Chief Research and Development Officer at Innovation Center, Mother Dairy Fruit and Vegetable Unit	06.02.15
Dr. Renu Kohli, Vice President, Nutrition and Health Policy, Pepsico	06.02.15
Mr. Rohit Kulkarni, Sports Dietician and Scientist, Venky's Nutrition Foods	06.02.15
Ms. Anuradha Prasad, Joint Secretary, MOFPI, GOI.	17.10.15
Mr. Dean Rugnetta, Asistant Country Director,US FDA India Office Dr. John Mathews, Country Director, USFDA, India Office	18.03.16 21.03.16
Dr. Raghu H.V. , Scientist ,NDRI, Karnal	21.03.16
Ms. Priti Khastagir, CEO, TechnoLegal Corp.	21.03.16

## 25. Seminars/ Conferences/Workshops organized & the source of funding

### National

- “Better Process Control school for Low acid canned and acidified foods” held on 18-21<sup>st</sup> March 2016 in collaboration with (USFDA), India Office. (Self Financed).

- Workshop on Demonstration of Rapid Detection Methods of Adulterants present in Milk and Milk Products and Intellectual Property Rights on 21.03.2016 (Self financed).
- “Better Process Control school for Low acid canned and acidified foods” held on 1-5 March 2011 in collaboration with (USFDA), India Office. (Self Financed).
- National Seminar on advancements in packaging, food and social impact, 3 November 2014. (Funded by DST and ICMR).

### **International**

- “Better Process Control school for Low acid foods” at Negumbo, Srilanka held on November 21-23, 2011 in collaboration with (USFDA), India Office. (Self Financed).
- Indo–US Webinar of Industry Professionals with Mr. Daniel Geffin, CFSAN, Washington DC on 20.04.2016 during the third Better Process Control School at BCAS

### **Following Seminars/Conferences/Workshops were organized under the Star College Scheme.**

- Career in Food Safety- An international perspective on 17<sup>th</sup> August, 2011 by Dr. Hirotoishi Tamura, Professor of Food Chemistry, Kagawa University under the star college scheme.
- Winter School –Training on comprehensive understanding about food quality & safety testing from 10<sup>th</sup> December, 2012 to 2<sup>nd</sup> January, 2013 at Intertek, India for 17 students under the star college scheme.
- Basic Microbiological Techniques A and B, A: 14<sup>th</sup> and 15<sup>th</sup> June, 2012 B: 27<sup>th</sup> and 28<sup>th</sup> June 2012 by Dr. Shalini Sehgal and Dr. Purnima Anand. 15 students attended the workshop.
- Sampling and enumeration of microorganisms from 25<sup>th</sup> July, 2012 and 8<sup>th</sup> August, 2012 by Dr. Shalini Sehgal, 15 students attended the workshop.

- Advances in Microbiological Analysis on 23<sup>rd</sup> January, 2012 by Mr. Jules Jalenques, International Sales, Interscience, France in the college 30 final year students in the college under the star college scheme.
- A workshop was organized on “Role of probiotics in health and disease” on 13<sup>th</sup> February 2013 by Dr. Neerja Hajela, Head Science, Yakult – Danone India by Dr. Shalini Sehgal.
- A training workshop on “Texture Analyser and its Applications in the Food Industry” was organized by Dr. Eram S Rao on 05.11.14 for the staff and students of Food Technology. Mr. Devesh Sharma, Engineer. SDS, Delhi office was the resource person for the event.
- A workshop on Polymerase Chain Reaction (PCR) on Probiotic Research was conducted on 14.01.15 by Dr. Pawas Goswami, Assistant Professor of Microbiology, BCAS and organized by Dr. Shalini. Sehgal.
- A workshop on Edible Packaging was organized on 28.01.15, conducted by Dr. Sushmita Dey, Assistant Professor of Polymer Science, BCAS and Dr. Meenakshi Garg for the students of Food Technology.
- A lecture on Thermobacteriology was organized and conducted by Dr. Shalini Sehgal for the students of Food Technology after completing her training from IIT Kharagpur on 11.02.15.
- One day Workshop on Shaping, Teaching and Learning with VLE on September 6, 2014 in collaboration with Institute of Informatics and Communications at University of Delhi, South Campus organized by Dr. Shalini Sehgal under Star College Scheme.
- Ist Laboratory Staff Skill Development Program December 15-18, 2015- Modules on Media Preparation, Microscopy and Food Safety & Hygiene at Bhaskaracharya College of Applied Sciences, University of Delhi by Dr. Shalini Sehgal; Cut-out analysis of a can and measurement of degree brix by hand refractometer by Dr. Rizwana; Body composition analysis and handling of glassware by Dr. Meenakshi Garg.



- A training programme on “Scientific Writing and E-Resources in Food Technology” was organized on 19.1.15 by Dr. Rizwana and Dr. Ranjeet Thakur (Librarian).
- A student cum faculty interaction was conducted on Dec, 10<sup>th</sup> 2013 with the President of Institute of Food Technologists John Ruff and Prof. Rama Rao, from Cornell University (expert with USFDA).

## 26. Student profile programme/course wise :

Name of the Course/Programme	Academic Year	Total Students Enrolled	Enrolled *M	Enrolled *F	Pass percentage for three years
B.Sc (H) Food Technology	2011-12	54	22	32	I <sup>st</sup> Year : 94.34 II <sup>nd</sup> Year : 100 III <sup>rd</sup> Year: 100
B.Sc (H) Food Technology	2012-13	71	36	35	I <sup>st</sup> Year : 95.52 II <sup>nd</sup> Year : 100 III <sup>rd</sup> Year: 100
B.Sc (H) Food Technology	2013-14	46	29	17	I <sup>st</sup> Year : 95.24 II <sup>nd</sup> Year: 96.70 III <sup>rd</sup> Year: 91.30
B.Sc (H) Food Technology	2014-15	46	25	21	I <sup>st</sup> Year : 92.86 II <sup>nd</sup> Year: 92.50 III <sup>rd</sup> Year: 81.24
B.Sc (H) Food Technology	2015-16	50	25	25	

\*M=Male \*F=Female

## 27. Diversity of Students

### Diversity of Students:

Name of the Course	% of students from the same state	% of students from other States	% of students from abroad
2011-2012	87.03	12.96	Nil
2012-2013	81.69	18.31	Nil
2013-2014	86.96	13.04	Nil

2014-2015	80.43	19.56	Nil
2015-2016	56	44	Nil

\*M=Male F=Female

**28. How many students have cleared national and state competitive examinations such as NET, SLET, GATE, Civil services, Defense services, etc.?**

Our students are not eligible to appear for NET, GATE, and SLET directly after graduation.

**29. Student progression**

Student progression	Against % enrolled
UG to PG	~93% of students have opted for higher studies in 2012-13.
PG to M.Phil.	Our college offers UG courses.
PG to Ph.D.	
Ph.D. to Post-Doctoral	
Employed <ul style="list-style-type: none"> <li>• Campus selection</li> <li>• Other than campus recruitment</li> </ul>	
Entrepreneurship/Self-employment	2/63= 0.03%

- [http://gavirofoodtours.com/who\\_are\\_we.php](http://gavirofoodtours.com/who_are_we.php) started by Ojaswi and Aman jain (2015 Pass out students)

**30. Details of Infrastructural facilities**

- Library:** No separate departmental library is available. Students get required books from college central library.
- Internet facilities for Staff & Students:** Computer facility available in department room and Food Technology Lab-1 (with internet). Students also have access to free internet through wi-fi and in library.
- Class rooms with ICT facility:** Class room's and Pilot plant are equipped

with overhead projector.

- d) Laboratories:** Two Food Technology labs, One Instrument room, One Research & Development room, Pilot plant are available. The labs are equipped with equipments and instruments required for conducting practicals.

\* List of equipment's laboratory wise is attached as annexure II.

**31. Number of students receiving financial assistance from college, university, government or other agencies : 01**

**32. Details on student enrichment programmes**

**I. Industrial visits are organized for students**

S.No.	Year	Name of institute/ Organization	Duration	No. of students
1	2011-12	Skygourmet Catering Services Pvt. Ltd., Delhi.	1 day	FT 2nd year
2	2012-13	Parle Biscuit Factory located at Bahadurgarh, Haryana A trip to the Yakult Plant located at Sonapat	1 day 1 day	B.Sc. (H) Food Technology semester II and IV students

**II. Special lectures / workshops / seminar with external experts:**

Special Lecture/Workshop	Date	Eminent Speaker
Career in Food Safety- An international perspective	17.8.2011	Dr. Hirotoshi Tamura
Advances in microbiological analysis	23.01.2012	Mr. Jules Jalenques
Emergence of probiotics	6.9.2013	Dr. Nagendra P. Shah
Food Safety- An Indian perspective	5.7.2013	Dr. R. K. Khandal
Cold Chain Management	5.7.2013	Ms. P.Alli Rani
Workshop on demonstration of Rapid Detection Methods of Adulterants Present in Milk and Milk Products and Intellectual Property Rights	21.3.2016	Dr. Raghu H.V. and Ms. Priti Khastagir

FDA introduction under Better Process Control School	18.03.2016	Mr. Dean Rugnetta
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**33. Teaching methods adopted to improve student learning-** Use of ICT- Power Point presentations, Assignments, Projects etc. for better understanding of concepts.

**34. Participation in Institutional Social Responsibility (ISR) and Extension activities-**

- i. College students participate in NSS and ECO Club activities.
- ii. Workshop was conducted on Role of probiotics in health and disease on 13.02.2013 by Dr. Shalini Sehgal
- iii. **FOOD SAFETY EDUCATION INITIATIVE**-A complete training kit comprising of 14 posters (seven in Hindi and seven in English), leaflets, booklets were designed to help food handlers understand that the basic techniques of hand washing, hygiene, temperature control, proper storage play an important role in maintaining the supply of safe food by Dr. Shalini Sehgal.
- iv. **AWARENESS CAMPAIGN ON PROBIOTICS** -Lack of information about probiotics was found to be the major outcome of the consumer survey. The team BCAS-203 with Dr. Shalini Sehgal, Principal Investigator designed a series of handmade posters, brochures in both Hindi and English, cartoon booklets especially for school students, as educational material. The team then interacted with 500 school students, 100 elderly people in the senior citizen homes and 300 college students in Delhi during the awareness campaign.
- v. Development of **WEBSITE: [www.probioticgyan.in](http://www.probioticgyan.in)** designed by Team-BCAS 203 which is the only Indian portal providing extensive information about the probiotics and Indian probiotics products.
  - a. Students are participating in the National mission of **Surakshit Khaya Abhiyan** by Confederation of the Indian Industry and have undergone level I and II of trainings for Street Food Vendors.

**35. SWOC analysis of the department and Future plans**

**Strengths:** Dedicated Faculty, Good Infrastructure with respect to labs, Pilot plant and equipments

**Weakness:** Lack of higher education in the discipline in the University of Delhi

**Opportunity:** Food Processing is a priority sector for GOI, and the course offers ample opportunity for students in various segments of this vast subject and sector.

**Challenges:** To move to the next level and to offer Post-Graduate Programs

### Annexure 1

**Dr. Rizwana**

#### List of Publications:

- Shukla.S. K, Nidhi, Sudha, Pooja, Namrata, Charu, Akshay, Silvi, Manisha, **Rizwana**, Bharadvaja A, Dubey G.C and Tiwary A Preparation and Characterization of Cellulose Derived from Rice Husk for Drug Delivery. Advanced Materials Letters, (2013). DOI: 10.5185/amlett.2013. page 714-719,. SJR-0571, SNIP-1.02, Journal h-index-15 (IF: 1.93).
- Shukla.S. K, Nidhi, Sudha, Pooja, Namrata, Charu, Akshay, Silvi, Manisha, **Rizwana**, Bharadvaja A. and Dubey G.C Metal decontamination from Chemically Modified Rice Husk Film, Advanced Material Letters Adv. Mat. Lett. 2014, 5(6), 352-355, DOI-10.5185/amlett.2014.1018,. SJR-0571, SNIP-1.02, Journal h-index-15 (IF: 1.93).
- Shukla S. K, Sagar, Naman, Deepika, Sundaram, Prateeksha, Ankur, Arun, Srishti, Vaishali, Rakesh, **Rizwana**, Bharadvaja A. and G. C. Dubey, Extraction of Cellulose Micro Sheets from Rice Husk: A Scalable Chemical Approach, DU Journal of Undergraduate Research and Innovation, 1(3)(2015)187- 194.

#### Chapter in Book

- Chapter in MFN-008, Principles of Food Science unit published by IGNOU (ISBN-81-266-1937-6).

#### Publication in Conference Proceeding

- **Rizwana**, S.K.Shukla and A. Bharadvaj “Importance of Surface Engineering between Poly vinyl alcohol and rice husk derived cellulose for active

packaging film in research conclave packaging strategies for global competitiveness” Proceedings of the Research Conclave on Packaging Strategies for Global Competitiveness, World Packaging Congress, 9-10 October, 2015, Mumbai, Page 83-86.

### **Paper Presented in Conference**

- Presented a paper on Importance of Surface Engineering between Poly vinyl alcohol and rice husk derived cellulose for active packaging film in research conclave packaging strategies for global competitiveness on 9th and 10<sup>th</sup> October, 2015 during World Packaging Congress, Mumbai.

### **Dr. Shalini Sehgal**

#### **List of Publications:**

- **Sehgal, S.**, Dhewa, T., Bansal, N., Shashank, A., Sharma, N., Thakur, M., Himanshi, Anand, S., Mehta, S., Anil, Pal, R., Jha, A., Chandel, G. and Sarna, P. (2015) Evaluation of Labeling Practices of Probiotic Products commercially available in Delhi Market, DU Journal of Undergraduate Research and Innovation (online), Volume 1, Issue No. 1. 215-223 (1), S.No.19. ISSN 2395-2334.
- **Sehgal, S.** and Mehta, S. (2014) Identification of Microbial Hazards Associated with the Fresh Produce sold in South Delhi Markets and their Minimization, International Journal of Food and Nutritional Sciences Volume 3, Issue 1, 26-32. e-ISSN 2320-7876, IF-1.021
- Sharma, P. **Sehgal, S.** and Raizada, P. (2014) Assessment of Hygiene and Sanitation at various Pre-schools of Delhi- a Food Safety Study, International Journal of Food and Nutritional Sciences Volume 3, Issue 1, 91-98. e-ISSN 2320-7876, IF-1.021
- **Sehgal, S.** and Negi, A. (2014): Nanotechnology: Recent and Emerging Applications in Food Industry, International Journal of Science and Research (IJSR), Volume 3 Issue 5, 995-1000. ISSN (ONLINE)-2319-7064 SJ IF (2015)-6.39

- **Sehgal, S.** and Mehta, S. (2014) Use of Antimicrobial Dips for the reduction of surface microbial load of fresh fruits sold in South Delhi Markets, India .International Journal of Current Microbiology and Applied Sciences Volume3, Issue 6 ,128-138 (ISSN:2319-7706) IF-2.937.
- Sharma, P. **Sehgal, S.** and Raizada, P.(2014) Microbiological Quality of Water Served at Various Pre-School of Delhi , Research and Reviews : Journal of Food Science and Technology, Vol 3, No. 3 (2014) 31-36, (ISSN 2278 – 2249).

### **Books Authored**

- **Sehgal, S.**(2016) “**A Laboratory Manual of Food analysis**” ISBN 978-93-84588-84-7, IK International, India.
- **Sehgal , S.** (2013).**Microbial Safety of Fresh Fruits and Vegetables**, LAP LAMPERT Academic Publishing , ISBN: 978-3-659-45563-6.
- **Sehgal, S.** (2008). **Practical Manual for the Food Microbiology for PG Diploma in Food Safety and Quality Management** , IGNOU. ISBN:978-81-266-3519-1.

### **Chapters in Books**

- ❖ Seven units for Online Certificate Programme in Food Safetyby IGNOU.BFN-001 INTRODUCTION TO FOOD SAFETY,ISBN-978-81-266-2974-9
  - Unit 1 : Introduction to Food Safety and Quality Management.
  - Unit II : Factors Affecting Food Safety.
  - Unit III : Recent concerns related to Food Safety.
  - Unit IV : Food Spoilage
  - Unit V : Food Processing and Preservation
  - Unit VI : Food Storage and
  - Unit VII Temperature Control.

- ❖ COURSE-MVP001 FUNDAMENTALS OF FOOD MICROBIOLOGY, ISBN-978-81-266-3518-4, PGDFSQM, IGNOU 2008 ,Block1 comprising of four units
  - Unit I: Introduction to Food microbiology
  - Unit II: Food Contamination and Spoilage
  - Unit III: Food Borne Illnesses
  - Unit IV: Beneficial Roles of Microbes
- ❖ Two modules for UGC e-pathasala on 'Food and Dairy Microbiology' titled for master students in Microbiology
  - Module 29: Significance of food and dairy products borne diseases
  - Module 34: Microbiological criteria and significance of safe foods

#### **Paper Published in Conference**

- **Sehgal, S.** (2009) ISO 22000:2005 -Food Safety Management Systems” in Compendium of Summer School on Recent advances in analytical techniques and innovative approaches for quality assurance and safety of dairy foods from 7.07.2009 - 27.07.2009 at NDRI, Karnal , Page 111-117.
- **Sehgal,S.**(2008) “Food Safety –Key Issues and Need for a Strategic Approach “ in proceedings of National Seminar on “Food Safety and Quality ” organized by GJUST, Hissar in October,2008. Pages 44-47.
- **Sehgal, S.** (2014). Consumer Acceptance Of Probiotic Foods: An Indian Perspective. Status paper on Probiotic Research and Product Development carried out in India from National Perspective released in 2nd Annual PAI Conference and International Symposium on "Probiotics and Microbiome : Gut & Beyond" 3<sup>rd</sup> -4<sup>th</sup> Nov., 2014 at New Delhi. Pg-88 -90

#### **Paper Presented in Conference**

- Paper presented at the International Conference and Exhibition on Food Technology and Processing titled” Evaluation of Food Safety Practices in the Retail Outlets of West Delhi (India)” at Hyderabad , 20-22 November,2012.



- Invited Speaker for presentation titled “Consumer perception and attitudes about the Probiotic foods in Indian market “at 7<sup>th</sup> Indo-Global Summit and Expo on Food & Beverages (Food India-2015) on 8-9<sup>th</sup> October, 2015 at New Delhi.
- Invited Speaker for presentation on “ Microbial hazards associated with the fresh produce sold in retail outlets of West Delhi and remedies for their control “at the National Conference on Food Safety and Consumer Safety held at University of Lucknow on 21- 22<sup>nd</sup> Feb. 2016.
- Invited Speaker for presentation on “ Microbial hazards associated with the fresh produce sold in retail outlets of West Delhi and remedies for their control “at the National Conference on Food Safety and Consumer Safety held at University of Lucknow on 21- 22<sup>nd</sup> Feb. 2016.

#### **Chapters Edited/ Reviewed**

- **Sehgal, S.(2013)** reviewed and edited Chapter –Food borne diseases, Block 1- Food Safety and Standards, Course 4a Food Safety and Standards for Diploma in Public Health Nutrition under Institutional and Technical Support Project of National Institute of Health & Family Welfare.

#### **Dr. Eram S. Rao**

#### **Books Authored**

- **Food Science: Experiments and Applications I edition -2001, ISBN 81-239-0747-8, II edition -2011, CBS Publisher, ISBN: 978-81-239-1693-4 .**
- **Food Quality Evaluation-2013, ISBN: 9789381156186, Variety Publishers.**
- **Principles of Food Science: An Experimental Manual. 2013, ISBN: 978-93-81156-22-3 Variety Books Publishers.**
- **Bajpai, M., Rao, E., Jindal, R. (2015). Stress work book for Youth. ISBN 978-81-930724-2-4, Yashasvi Enterprises Publishers, Delhi.**

- **Rao. E. S. (2014). Food Quality Testing and Evaluation: Sensory Tests and Instrumental Techniques. ISBN 978-93-81156-30-10. Variety Publishers, Delhi.**
- **Rao, E., Bajpai, M, Jindal, R. (2015). Desi Delights-A *Traditional Treatise*. ISBN 978-81-930724-3-1 Yashasvi Enterprises Publishers, Delhi.**
- **Rao. E. S, (2015). Food Quality Analysis. ISBN 978-93-81156-37-7. Variety Publishers. Delhi.**

### Chapter in Books

- IGNOU Study material for PG program in Food Service Management , chapter 6" Salt, Gel and Emulsions" and chapter 7"Quality factors of food" 2008, ISBN: 81-366-1937-6

### Lecture Series

- “Food Processing Sector in India: Current Scenario and Future Prospects” National seminar on “Food and Textile Industry-Emerging Trends and Perspectives” ISBN 978-81-7844-331- Lakshmibai College, Delhi University February 10’2015, pg-41-45.
- “Nutraceuticals and Functional Foods- Emerging Trends and Perspectives” at Warner School of Food & Dairy Technology, Sam Higginbottom Institute of Agriculture, Technology & Sciences. Deemed to be Univ. Allahabad UP, February 25’ 2015, pg 11-15.
- “Chemical Contaminants in Food Chain”, Proceedings of UGC sponsored refresher course on “Food Safety and Public Health” ISBN 978-81-83492-62-6, Centre of Food Technology, University of Allahabad, from 29.March-18. April, 2015, pg 47-53.
- “Food Toxicology and Food Safety”, Proceedings of UGC sponsored refresher course on “Food Safety and Public Health” ISBN 978-81-83492-62-6, Centre of Food Technology, University of Allahabad, from 29.March-18. April, 2015, pg 69-75.
- “Food Allergies”, Proceedings of UGC sponsored refresher course on “Food Safety and Public Health” ISBN 978-81-83492-62-6, Centre of Food

Technology, University of Allahabad, from 29.March-18. April, 2015, pg 76-81.

- “Food Safety”, Proceedings of UGC sponsored refresher course on “Food Safety and Public Health” ISBN 978-81-83492-62-6, Centre of Food Technology, University of Allahabad, from 29.March-18. April, 2015, pg 1-7.
- “Food Safety Management Systems-22000:2005”, Proceedings of UGC sponsored refresher course on “Food Safety and Public Health” ISBN 978-81-83492-62-6, Centre of Food Technology, University of Allahabad, from 29.March-18. April, 2015, pg 14-25.

### **Paper Presented in Conference**

- Presented a paper. “Achievements in the Food Processing Sector vis-a- vis the Vision-2015 & Future plans for the sector” in Indian Food Packer, Vol.69 No.6, pg 96-105 Nov-Dec, 2015.

### **Chapters Edited/ Reviewed**

- National Health Programmes of India (2008) edited, chapter on Nutritional Programmes of India, ISBN: 978-81-88132-20-1 Century Publications authored by Jugal Kishore.

### **Dr. Meenakshi Garg**

#### **List of Publications:**

- **Garg M.**, Wason, S. & Varmani, S. G.(2015). To Study Physical Activity Levels, Body Composition and Association of Body Mass Index with Anthropometric Measurements in Young Indian Adults. Intl. J. of Pharm. and Integ. Life Sci, Vol. 3(8), Pages 36-50. (I.F 1.047).
- **Garg M.**, Sabharwal, P. K., Sharma, S. Varmani, S. G. and Sadhu, S. D. (2015). Evaluation of Mathematical Models to Describe Thin-Layer Drying and To Determine Drying Rate of Potato Peels Using Tray Drying”; Intl. J. of Sci. Eng. and Appl. Sci., Vol. 1(7), Pages 1-15(I.F 1.9).

- **Garg M.**, Wason, S. & Varmani, S. G. (2015). Understanding Physical Activity and Quality of Life among Young Indian Adults”; Intl. J. of Pharm. and Integ. Life Sci., Vol. 4(1), Pages 16-32. (I.F1.047).
- Sadhu, S. D. and **Garg M.** (2015). Preparation and Thermal and Morphological Characterization of Nanocomposite Based on Phenol Formaldehyde – Nylon Thermoset IPN, Volume 3, Issue 10, 505 - 510.
- **Garg M** and Varmani S. (2014). Nutritional health status of North Indian adults. International Journal of Food and Nutrition Sciences. Apr-Jun. Vol 3 (3): p 118-121.(IF=1.021).
- **Garg M**, Sharma S, Varmani S, Sadhu S. (2014). Drying kinetics of thin layer pea pods using tray drying. International Journal of Food and Nutrition Sciences. Apr-Jun. Vol 3 (3): p 61-66.. (IF=1.021).
- **Garg M.**, Varmani S, Panda H, Sadhu S, (2014). Beta Thalassemia Major and osteoporosis: etiology, pathogenesis, diagnosis and management. International Journal of Pharmacy and Integrated life Sciences. Jun. Vol 2(7): p 64-78. (IF=1.047).
- **Garg M**, Sabharwal P, Dahiya S. (2014). Effect of processing on Amylase rich field pea porridge. International Journal of Food and Nutrition Sciences. Jan- Mar. Vol 3 (1): p 38-42. (IF=1.021).
- Sadhu S, Chakraborty S, **Garg M**, Varmani S. (2014). Polymers in Energy harvesting. International Journal of Engineering Science Invention. Apr. Vol 3 (4): p1-5. (IF=1.786).
- Sadhu S, Soni A, Varmani S, **Garg**. (2014). Preparation of starch polyvinyl alcohol (PVA) blend using potato and study of its mechanical properties. International Journal of Pharmaceutical Science Invention. Mar. Vol 3 (3): p 33-37. (IF= 1.695).
- Varmani S and **Garg M.** (2014). Health benefits of Moringa Oleifera: A miracle tree. International Journal of Food and Nutrition Sciences. Apr-Jun. Vol 3 (3): p 111-117) (IF=1.021).

- Varmani S, Arora H, **Garg M.** (2014). Sadhu S. Iron overload and chelation therapy in beta thalassemia major. International Journal of Pharmacy and Integrated Life Sciences. Jun. Vol 2(7): p 47-63. (IF=1.047).
- Varmani S, Mehta K, **Garg M,** Sadhu S. (2014). Diabetes mellitus in beta thalassemia major- pathogenesis and management strategies. International Journal of Food and Nutrition Sciences. Apr-Jun. Vol 3 (3): p 127-131. (IF=1.021).

#### **Paper Presented in Conference**

- Presented a paper entitled "Nutritional Status of North Indian Obese Young Adults" at the 4th International Conference on" Obesity and Weight Management" in Atlanta, U.S.A. December 7-9, 2015.

## DEPARTMENT OF HUMAN COMMUNICATION

1. **Name of the Department** : Human Communication
2. **Year of Establishment** : 1995
3. **Names of Programmes / Courses offered (UG, PG, M.Phil., Ph.D., Integrated Masters; Integrated Ph.D., etc.):**

Allied department to support main departments.

4. **Annual/ semester/choice based credit system (programme wise) :**

Annual system: 1995-2010

Semester system: 2010-2013 & 2014: To be continued

FYUP: 2013-14

**CBCS: 2015 onwards**

5. **Participation of the department in the courses offered by other departments**

B.A.Sc. (H) Electronics: 1995-2007

B.A.Sc. (H) Instrumentation: 1995-2010

B.A.Sc. (H) Food Technology: 1995-2010

B.Sc. (H) Computer Science: 1995-2012

B.Sc. (H) Polymer Science: 2004-till date

Since 2014, the department is also sharing and teaching a paper on "Environmental Studies" to all the courses of the college.

**From the session, 2015-16, the department also offers General Elective paper in Psychology each semester.**

6. **Details of courses/programs discontinued (if any) with reasons**

After the restructuring and introduction of semester system, the papers were discontinued from the following departments:

B.Sc. (H) Instrumentation

B. Sc. (H) Electronics

B. Sc. (H) Food Technology

B. Sc. (H) Computer Science

### 7. Number of Teaching posts:

Department of Human Communication	Sanctioned	Filled
Assistant Professors	One	One (Promoted to Associate Professor)

### 8. Faculty profile with name, qualification, designation and specialization.

Name	Qualification	Designation	Specialization	No. of Years of Experience	No. of Ph.D. / M. Phil / M. Tech / M. Sc. Students supervised
Dr. Madhulika Bajpai	M.Phil, Ph.D	Associate Professor	Psychology	17 years	Advisor for one Ph.D. student

### 9. Publications:

Name of the faculty	Publications in journal	Books authored	Books edited	Chapters in books
Dr. Madhulika Bajpai	03	03	02	3

### c. Faculty as members in

#### National committees and Editorial Boards

- Associate Editor and the Joint Secretary for the 9<sup>th</sup> National Conference on “Solid State Chemistry and its Allied Areas (ISCAS-2015), May 8-10, 2015.
- Conference Convener of a National Conference organized by India Career Development Association (ICDA) and Indian Association of Positive Psychology (IAPP) on “Career Development” Preparing for the Road Ahead” held from 26-27<sup>th</sup> May, 2012, Delhi University, Delhi.
- Organizing Secretary of a National Conference organized by Aastha-Foundation for Development and Welfare on “Life Span Development: A Multi-dimensional perspective”, held from 5-6 November, 2005, Delhi University, Delhi.

### 10. Students projects :

- a) **Percentage of students who have done in-house projects including inter departmental/ programme.** Besides the curriculum-based projects designed for internal assessment, no separate projects have been undertaken.

#### **11. Details of Infrastructural facilities**

- a) Library
- b) Internet facilities for Staff & Students
- c) Class rooms with ICT facility
- d) Several Psychological tests available in the Department for psychological assessment of students.

#### **12. Teaching methods adopted to improve student learning**

Various methods have been adopted to make subject teaching interesting for students and get them involved actively rather than just being passive listeners. The focus is on active learning by the students. Some of the methods used are: lectures, power point presentations, case studies, psychological tests, surveys, quizzes, experiential and ideation exercises.

#### **13. Participation in Institutional Social Responsibility (ISR) and Extension activities**

In the capacity of a single teacher department, active participation and contribution is made for the corporate life of the college on various platforms.

#### **14. SWOC analysis of the department and Future plans**

##### **Strengths:**

The department has been enabling the students to be ready for the vocational world along with special emphasis on personality development. The formal education and training in Psychology of the faculty member helps students at both personal and professional levels. Also, a social science perspective helps students widen up their horizons. The department actively strives for the holistic growth of the students.



**Weakness:**

The absence of the main department in the college is quite crippling not only for the professional growth of the faculty but also the students are bereft of learning all that the discipline has to offer.

**Opportunity:**

Teaching sub-disciplines of Psychology to science students is a challenging yet at the same time gratifying exercise. Creating awareness about issues beyond curriculum to our students is believed to be a step forward in nation building. The college is also committed to bring in Psychology as the discipline course, which will be extremely beneficial for the growth of the department and faculty.

**Challenges:**

Psychology being interdisciplinary in nature has lots to offer to the pupil of college who could benefit immensely from the knowledge offered by the discipline. But, in the absence of a major in Psychology and limiting presence of the department in the gone years in other departments has made the existence more difficult.

**ANNEXURE I****List of Publications:**

- **Bajpai M., Rao E.S. and Jindal R. (2015), Yashasvi Enterprises, “Stress Workbook for Youth: Your personal Guide to Understanding and Managing Stress. ISBN: 978-81-930724-2-4.**
- **Rao E.S., Bajpai M. and Jindal R. (2015), “Desi Delights”. (Yashasvi Enterprises, 2015). ISBN: 978-81-930724-3-1.**
- **Bajpai M. (2014), "Stress, Coping and Lifestyle Interventions" in, The Psychological Realm”: An Introduction, ed. Dr. N. K. Chadha & Dr. Salma Seth. (Pinnacle Publishers, India) 615-672. ISBN: 978-81-9222-84-4-0.**
- **Bajpai M. (2012), "Communication", in Social Psychology, ed. N. K. Chadha. (McMillan Publishers, India) 235-268.**

- **Bajpai M. (2012), "Close Relationships: Interdependent, Romantic and Marital Relationships", in Social Psychology, ed. N. K. Chadha. (McMillan Publishers, India, 2012) 366-408.**
- **Bajpai, M. and Chadha, N. K. (2012), "Psycho-social Determinants of Marital Discord and Satisfaction in Changing Times: Hope Floats", Journal of Positive Psychology. 1: 47-65.**
- **Bajpai, M., "PERMA: A New Insight to Well-Being" (2013). Journal of Positive Psychology. 2(1), 5-15.**
- **Bajpai, M. and Sen, A.K. (1999). Mental Handicap: The Changing Perspective, Social Science International, 15(1), 52-66.**
- **Bajpai M. (2014-15), UGC e-pathshala project for Post graduate in Psychology.**
- **Co-Editor, Encyclopedia of Psychology (2005). Vol. I & II. Shri Sai Printographers. ISBN: 8187798-55-6.**

## DEPARTMENT OF INSTRUMENTATION

1. **Name of the Department** : Instrumentation

2. **Year of Establishment** : 1995

3. **Names of Programmes/ Courses offered:**

**B.A.Sc. (H)** Instrumentation (1995-2010)

**B.Sc. (H)** Instrumentation (2011 onwards)

**Four Year Undergraduate Programme/B. Tech.** (Instrumentation) (One Batch only from 2013)

4. **Names of Interdisciplinary courses and the departments/units involved:**

All students of the department study various interdisciplinary papers.

5. **Annual/semester/choice based credit system (programme wise):**

Annual system: 2004-2010

Semester system: 2010 onwards till date

Choice based credit system (CBCS): July 2015 onwards

6. **Participation of the department in the courses offered by other departments:**

Took theory and practical classes in course offered by the Department of Electronics.

7. **Details of courses / programmes discontinued (if any) with reasons:**

FYUP started from 2013-14 and has been discontinued in academic session 2014-15 as per University of Delhi directives.

8. **Number of teaching posts:**

Posts	Sanctioned	Filled
Assistant Professors	09	01 (Permanent, Promoted to Associate Professor)

**9. Faculty profile with name, qualification, designation, specialization:**

Name	Qualification	Designation	Specialization	No. of years of experience	No. of Ph.D./ M. Phil./M.Sc./M. Tech. students supervised
Dr. Geeta Bhatt	M.Sc., M. Phil, Ph.D. (University of Mumbai)	Associate Professor	Electronics, Electronic waste, Gas Sensors, Material Science (Semiconductor thin films)	19 Years	NIL

**10. List of senior visiting faculty:** Dr. H. M. Lumb, Associate Professor (Retired), Dept. of Physics and Electronics, Rajdhani College, University of Delhi.

**11. Percentage of lectures delivered and practical classes handled (programme wise) by temporary faculty:** 89 %

**12. Student-Teacher Ratio:** 12:1 (As per University norms)

**13. Number of academic support staff (technical) and administrative staff; sanctioned and filled:**

Post	Filled
Lab Assistant	02

**14. Qualifications of teaching faculty with DSc/D.Litt/Ph.D/M.Phil/PG.**

Name	Qualification
<b>Dr. Geeta Bhatt</b>	M.Sc., M.Phil., Ph.D. (University of Mumbai)

**15. Number of faculty with ongoing projects from a) National b) International funding agencies and grants received:**

NIL (Previous Projects have been completed)

**16. Departmental projects funded by DST-FIST, UGC, DBT, ICSSR, etc. and total grants received:**

**After 2012:**

S. No.	Name of the Faculty (Investigator)	Number of National Projects	Funding Agency	Amount Sanctioned
1	Dr. Geeta Bhatt	02 Project Code: BCAS101, BCAS206 (both completed)	University of Delhi	Rs 10 Lakhs and Rs 5 Lakhs resp.

**17. Publications:**

a) Publication per faculty:

**Before 2012:**

Name of the faculty	Publications in journal	Books Authored	Books edited	Chapters in books	Publication in Conference Proceeding
Dr. Geeta Bhatt	03	Nil	Nil	Nil	04

**After 2012:**

Name of the faculty	Publications in journal	Books Authored	Books edited	Chapters in books	Publication in Conference Proceeding
Dr. Geeta Bhatt	04	02	Nil	Nil	03

(Refer Annexure- 1 of ERD of Instrumentation department)

**18. Faculty as members in a) National committees b) International Committees****c) Editorial Boards****Dr. Geeta Bhatt**

**a.) Editorial Boards:** Reviewed e-content of four chapters in discipline Instrumentation for the Institute of Life Long Learning, University of Delhi, ISSN No. 2349-154X uploaded on the website: [www.vle.du.ac.in](http://www.vle.du.ac.in)

**b.) University Committees**

S. No.	Name of Committee
1.	Committee of Courses, Department of Electronic Science, University of Delhi.
2.	Member of the Faculty of Inter- Disciplinary and Applied Sciences, University of Delhi since April 2013.

3.	Participated in the interaction with Peer Team from National Assessment and Accreditation Council (NAAC) for quality assurance from the Academic Staff College of University of Delhi May 2012.
4.	Academic Council Member in University of Delhi (2015-17)
5.	Science Courses Admission Committee, University of Delhi (2015)
6.	Member of Central Admission Grievance Committee for South Campus, University of Delhi (2015 - 16)

## 19. Student projects

### a) Percentage of students placed for projects in organizations outside the institution i.e. in Research laboratories/Industry/ other agencies

- All students have undertaken projects as part of their curriculum.
- Students of B.Sc.(H) Instrumentation, 3<sup>rd</sup> Year, 2013-14, have their names as **inventors** in a patent (filed).

**Patent Application Number:** 1666/DEL/2014

**Title of Invention:** Method and apparatus for detection of moisture in wound bed using near field communication.

**Inventor(s):** Prachi Chhatwal, Aakash Sharma

## 20. Awards/Recognitions received by faculty and students:

**Dr. Geeta Bhatt :** Honoured with Meritorious Teacher Award for the year 2014-15.

**Mr. Abhinav Abhishek (student):** Awarded with POSCO Asia Fellowship under MOU signed with University of Delhi.

## 21. List of eminent academicians and scientists/visitors to the department:

- Dr. Prof. V. R. Singh, Director, PDM Educational Institutions
- Dr. S. R. N. Reddy, HOD, CSE, IGDTUW, Delhi
- Sh. Gauhar Raza, NISCAIR
- Ms. Lakshmi Raghupathy, Advisor MAIT, Former Director, Ministry of Environment & Forests

- Dr. Dieter Mutz, Director, German International Cooperation (GIZ )-Advisory Service for Environmental Management (ASEM)
- Dr. Sandip Chatterjee, Additional Director, Department of Electronics and Information Technology, Govt. of India
- Mr. J. S. Kamyotra, Member Secretary, Central Pollution Control Board
- Dr. Ashish Chaturvedi, Senior Technical Advisor, Indo German Environment Partnership
- Mr. Pranshu Singhal, Head, Sustainability, Nokia India Pvt. Ltd
- Prof. Sachin Maheshwari, Head, Department of Manufacturing Processes & Automation Engineering, Netaji Subhash Institute of Technology, Delhi
- Mr. Vinay Thapliyal, Technical Lead, ST Microelectronics India Pvt Ltd
- Prof. Avinashi Kapoor, Dept. Of Electronic Science, South Campus, University of Delhi.
- Mr. Sushil Chandra, Scientist 'F' & Head, Biomedical Engineering Department, INMAS, DRDO, New Delhi
- Mr. Saleem Javed, Associate Professor and Principal Co-ordinator, M.Sc Bioelectronics and Instrumentation, Jamia Hamdard University, Delhi
- Mr. Promit Biswas, Senior Project Officer in the Department of Gastro Intestinal Surgery, All India Institute of Medical Sciences, Delhi
- Mr. Sanjeev Kumar, Secretary, Department of Environment & Forest, Govt. of N.C.T. of Delhi
- Mr. Satish Sinha, Associate Director, Toxic Link
- Mr. Anwar Shirpurwala, Executive Director, Manufacturers Association of Information Technology
- Ms. Shilpi Kapur, Fellow, The Energy Research Institute (TERI)
- Mr. B. Vinod Babu, Scientist D, Hazardous Waste Management Division Central Pollution Control Board

- Dr. Sandip Chatterjee, Scientist E, Department of Electronics and Information Technology, Govt. of India
- Prof. R. S Gupta, (Retd.) Department of Electronic Science, UDSC, University of Delhi
- Dr. K. N Chaturvedi, Ex Secretary, Ministry of Law, Govt. of India
- Dr. Bibek Bandyopadhyay, Scientist, Advisor, Solar Energy Centre, Govt. of India
- Mr. Praveen Bhargava, Director, R&D Attero Recycling Pvt. Ltd.
- Dr. M. Dwarkanath, Department of Environment, Govt. of NCT Delhi
- Mr. Ravinder Gupta, General Manager, CRIS, Indian Railways
- Mr. Amit Jain, Managing Director, (India Operations), IRG Systems South Asia Pvt. Ltd.
- Mr. Pankaj Sahni, Chief Technology Officer, India Today Group
- Prof. Karmeshu, Department of Computer & System Sciences, JNU, Delhi
- Dr. Krishna Kumar, Senior Director, DIT, Govt. of India
- Prof Vijaya Verma, Advisor, Ambedkar University, Delhi
- Mr. Dharmendra, Secretary, Ministry of Environment, Wildlife and Forest, Govt. of NCT of Delhi
- Ms. Saroj, Director, Ministry of Environment & Forest, Govt. of India
- Mr. P. Subhash, SIMS Recycling Solutions
- Mr. Avinash Dixit, Member, Governing Body, Bhaskaracharya College of Applied Sciences, University of Delhi
- Mr. Prem Prakash, Eco Safe Manager, HCL

## **22. Seminars/Conferences/Workshops organized & the source of funding**

### **a) National (Before 2012)**



S. No.	Name of the Workshop/Conference/Seminar	Date / Duration	Source of Funding
1.	National Conference on Sustainable Management of E-Waste	DEC 14-15, 2010	Dept. of Environment Forest and wildlife, Govt. of NCT of Delhi, UGC, CSIR, MOEF.
2.	National Seminar on Management of waste from Electronics and Renewable Energies	29-30, Jan 2010	DIT, MOEF, UGC, Epson, Silicon Electronics, Osaw India, Tata AIG Life, Narsingh Dass and company limited.

**(After 2012)**

S. No.	Name of the Workshop/Conference/Seminar	Date / Duration	Source of Funding
1.	Two day workshop on “Wireless Robotics”	11-12 March 2015	Registration fee
2.	Line Follower Robotics	11-12 March, 2014	Registration fee
3.	National Conference on E-Waste Sustainability Needs and Solutions for Its Management in Joint Collaboration with GIZ-IGEP (Indo-German Environment Partnership)	7-8 March, 2013	GIZ- IGEP (Indo German Environment Partnership), Department of Environment and Forest Govt. of NCT of Delhi, UGC

**23. Student profile programme/course wise:**

Name of the Course/Programme	Academic Year	Total Students Enrolled	Enrolled *M	Enrolled *F	Pass percentage for three years
B.Sc (H) Instrumentation	2011-12	53	43	10	I <sup>st</sup> Year : 91.49 II <sup>nd</sup> Year: 93.55 III <sup>rd</sup> Year: 100
B.Sc (H) Instrumentation	2012-13	62	55	07	I <sup>st</sup> Year : 93.62 II <sup>nd</sup> Year: 100 III <sup>rd</sup> Year: 85.71
B.Tech.-Instrumentation	2013-14	108	101	07	I <sup>st</sup> Year : 91.38 II <sup>nd</sup> Year: 86.36 III <sup>rd</sup> Year: 56.86

Name of the Course/Programme	Academic Year	Total Students Enrolled	Enrolled *M	Enrolled *F	Pass percentage for three years
B.Sc (H) Instrumentation	2014-15	41	37	04	I <sup>st</sup> Year : 67.65 II <sup>nd</sup> Year: 83.33 III <sup>rd</sup> Year: 100
B. Sc (H) Instrumentation	2015-16	69	60	09	

\*M=Male \*F=Female

**24. Diversity of Students:**

Name of the Course	Academic Year	Total Number of Students Admitted	% of students from the same state	% of students from other state
B.Sc (H) Instrumentation	2011-12	53	83.01	16.98
B.Sc (H) Instrumentation	2012-13	62	90.32	9.67
B.Tech.-Instrumentation	2013-14	108	75	25
B.Sc (H) Instrumentation	2014-15	41	70.73	29.26
B. Sc (H) Instrumentation	2015-16	69	73.91	26.08

**25. Student progression:**

Student progression	Against % enrolled
UG to PG	70 % (approx.)
<b>Employed</b> <ul style="list-style-type: none"> <li>Campus selection</li> <li>Other than campus recruitment</li> </ul>	20-30 % (approx.)
Entrepreneurship/Self-employment	2-5 % (approx.)

**26. Details of Infrastructural facilities**

- a) **Library:** Collection of books available for the reference.
- b) **Internet facilities for Staff & Students:** LAN Internet and Wi-Fi facilities for Staff & Students.

c) **Class rooms with ICT facility:** All class rooms have ICT facility.

d) **Laboratories:** ( Refer Annexure- 2 of ERD of Instrumentation department)

**27. Number of students receiving financial assistance from college, university, Government or other agencies:**

Financial Year	No. of Students
2011-12	01 (from college)
2012-13	01 ( <b>POSCO Asia fellowship</b> )
2013-14	06 (from college) + 01 ( <b>POSCO Asia fellowship</b> ) + 02 (financial assistance from VC's student fund)
2014-15	13 (from college)
2015-16	10 (from college)

**28. Details on student enrichment programs (special lectures/workshops/seminar) with external experts:**

*Industrial visits/exposure by the students/summer training, winter training*

**(After 2012)**

S. No.	Year	Name of the Institute	Duration (days)	Number of Students
1	2016	University Science Instrumentation Centre ( <b>USIC</b> ), University of Delhi	02	84
2	2015	Shriram Institute for Industrial Research	01	40
3	2015	Shimadzu Analytical (India) Pvt. Ltd.	01	35
4	2014	AIMIL Instrumentation Ltd.	01	40
5	2014	University Science Instrumentation Centre ( <b>USIC</b> ), University of Delhi	01	25
6	2013	HEICO Hydraulic & Engineering Instruments, Naraina Industrial Area, New Delhi	01	30

***Workshops and other student activities: (After 2012)***

<b>S. No.</b>	<b>Activity</b>	<b>During</b>
1.	Two day workshop on “Wireless Robotics”	March 2015
2.	Two day workshop on “Line Follower Robotics” in collaboration with EFY Group (publishers of Electronics for You magazine).	March 2014
3.	Technical Festival “AAGAAZ” to unravel the underlying creativity of the students.	January 2013
4.	Two day workshop on “Experiments and Research Applications with National Instruments Lab VIEW”.	February 2012
5.	Student-Alumni Interaction presided over by Deputy Dean, Student’s Welfare, University of Delhi.	October 2012

***Guest Lectures delivered (Name of the Expert, Talk Title)*****(Before 2012)**

<b>S. No.</b>	<b>Year</b>	<b>Name of the Speaker /Resource Person</b>	<b>Topic of Presentation</b>
1.	2011	Mr. Sushil Chandra, Scientist ‘F’ & Head, Biomedical Engineering Department, INMAS, DRDO, New Delhi	Biomedical Instrumentation

**(After 2012)**

S. No	Year	Name of the Speaker /Resource Person	Topic of Presentation
1.	2015	Dr. S. R. Reddy Associate Prof. IGDTU	Build your own smart device using Raspberry Pi
2.	2015	Prof. V. R. Singh, Director, PDM Edu. Institutions	Sensor Technologies for Health Care
3.	2014	Dr. Amita Gupta, Scientist 'G', SSPL	MEMS Technology
4.	2014	Prof. S. Maheshwari Head, Dept. of Manufacturing Processes & Automation Engineering, NSIT	Robotics
5.	2013	Mr. Vinay Thapliyal Technical Lead, ST Microelectronics India Pvt. Ltd.	MEMS (Motion Sensor)
6.	2013	Dr. Dieter Mutz Director, German International Cooperation (GIZ )- Advisory Service for Environmental Management(ASEM)	E-Waste Management
7.	2012	Mr. Promit Biswas Senior Project Officer, Dept. of Gastro Intestinal Surgery, AIIMS	Biomedical Instrumentation and its Indigenization
8.	2012	Prof. Avinashi Kapoor Jt. Dean Student Welfare, Dept. of Electronic Science, University of Delhi	Student Orientation
9.	2012	Dr. Saleem Javed Associate Professor, Jamia Hamdard University, New Delhi	As part of Career Counselling Lecture Series

**29. Teaching methods adopted to improve student learning:**

- Power Point Presentations, Lab Manuals prepared for various subjects.
- Getting students to work in groups.
- Individual attention to student while teaching.

- Presentations are taken from individual as well as groups of students for confidence boosting.
- Projects related with the subject are given to the students to enhance their learning capabilities.
- Use of visual aids such as pictures, diagrams, flowcharts and films to complement lectures.
- Simulations are carried out along with the experiment to understand the theoretical and practical aspect of the subject.

### **30. Participation in Institutional Social Responsibility (ISR) and Extension activities.**

Faculties as well as students fully cooperate, contribute and participate extensively by taking up the cause, responsibility and concern by NSS, Eco-Club, Women development cell etc. of the college towards Institutional Social Responsibility.

### **31. SWOC analysis of the department and Future plans:**

#### **Strengths:**

- Well qualified and committed faculty actively involved in research activities along with regular teaching.
- Exposure of students and faculty of college to industry benchmark, cutting edge technology, latest trends and areas of interest in research, opportunities, challenges etc. through workshop, guest lectures by stalwarts of the relevant fields.
- Laboratory equipped with DSO, function generators, multimeters, advanced microprocessor and microcontroller kits, electrical, industrial, biomedical and analytical machines available to the students.
- Dedicated and experienced supporting staff.

#### **Weakness:**

- Lack of Post Graduate degree in Instrumentation in University of Delhi.

**Opportunity:**

- In house research, exploration can be carried in the laboratories itself where simulation based experimentation and exploration can be performed before the actual experiments are carried out.

**Challenges:**

- Development of skills & knowledge desired by the industries to help students in achieving their professional goals by providing necessary resources.
- To help students in each step of the way by providing the resources to build a successful future in the field of research, industries etc.
- Designing and improvisation of the present curriculum such that it bridges the gap between academia and industry by incorporating inputs from the industry experts also.

**Annexure-I****Dr. Geeta Bhatt****Publications in National/International Journals (Before 2012):**

- Chauhan A. R., **Bhatt G. (2003)**, Yadav A. D., Dubey S. K., Gundu Rao T. K. **“Synthesis of Silicon Oxynitride layers by dual ion-implantation and their annealing behavior”**, Nuclear Instruments and Methods in Physics Research B (NIMB) 212 (2003) 451-457. Proceedings of International Conference on Atomic collisions in solids (ICACS 20), Puri, India, ISSN No. : 0168-583X
- **Bhatt G. (2003)**, Yadav A. D., Dubey S. K., Gundu Rao T. K. **“Investigation of Defects in reactive ion-implanted silicon”**, Nuclear Instruments and Methods in Physics Research B(NIMB) 222 (2004) 75-80, ISSN No. : 0168-583X
- Yadav A.D., **Bhatt G. (2007)**, Dubey S. K. **“Study of structure and electrical characteristics of silicon oxynitride layers synthesized by dual ion implantation in silicon and their annealing behaviour; ECS Transactions, 8(1)117-123, The Electrochemical Society. Presented in International Conference on Semiconductor Technology for Ultra Large**

Integrated Circuits and Thin Film Transistors, July 29 - August 3, 2007, Italy,  
ISSN No. : 1938-5862

**Publications in National/International Journals (After 2012):**

- Kumar A., Rakesh, Kumar M., **Bhatt G. (2015)**, Kapoor A. **“Analysis of chromium clad optical waveguide for TE pass polarizer using polymer buffer layer”** International Journal of Engineering and Applied Sciences. (Vol. 7) No. 02. ISSN No. : 2305-8269
- Kumar P., **Bhatt G. (2015)**, Pani B., Dua S., Mittal A., Diwakar **“Characterizing DNA Assisted Dispersion and DNA-SWNTs Hybrids using Photoluminescence; Bio Technology (Elixir International Journal),** Pages 33188-33193. ISSN No. : 2229-712X
- Sharma S., Parthasarathy H., Tayal A., **Bhatt G. (2015)**, Khanna M., Sharma U. **“An approach towards approximation of the Design of Quantum Gate, International Journal of Advanced Technology and Engineering Exploration, Volume-2, Issue-8 Page 117-121, ISSN No. : 2394-7454**
- Kaur G., **Bhatt G. (2015)**, Kumar M., Pani B. **“Heuristic rule based fuzzy inference system for decision support and quality assurance in higher education”** International Journal of Advanced Research in Management and Computer Application, Vol.4, Issue 6, pages 20-30, ISSN No. : 2319-7471

**Publications in National/International Conference Proc. (Before 2012):**

- **Bhatt G. (2002)**, Chauhan A. R., Yadav A. D., Dubey S. K. **“FTIR studies on dual ion implantation synthesis of silicon oxynitride layers”**, DAE SSP Symposium, Punjab University, Chandigarh, India, Dec 26-30, 2002.
- **‘Electrical Conduction in thin insulating films synthesized by oxygen-nitrogen reactive ion-implantation in silicon’**, 2<sup>nd</sup> National Conference Mathematical Techniques: Emerging Paradigms for Electronics and IT Industries (MATEIT), September 26-28, 2008 -321-324 -2008.
- **Indian women at the helm of changing world economy**, International Conference on **Knowledge Management for Sustainable Development** jointly organized by Asian Institute of Technology Alumni Association Nepal



(AITAAN) and Asian Institute of Technology (AIT), Bangkok, Thailand; from 10-12 December 2009 in Kathmandu, Nepal.

- **Mobile phones: An analysis of the potential e-waste**, National Conference on 'Sustainable Management of E-Waste' held on 14-15 December 2010 at Bhaskaracharya College of Applied Sciences.

#### **Publications in National/International Conference Proc. (After 2012)**

- **Awareness of Environmental Hazards among Mobile users in Delhi region and the potential heavy metal concentration**, National Conference on E-WASTE SUSTAINABILITY: NEEDS AND SOLUTIONS FOR ITS MANAGEMENT, March 7-8, 2013, joint collaboration of Indo-German Environment Partnership (IGEP) and Bhaskaracharya College of Applied Sciences, University of Delhi.
- **Awareness and sensitivity of mobile phone consumers on electronic waste in Delhi-NCR region** presented at National Conference on "Smart Cities: Challenges and Vision Ahead" on 6th April, 2015, at India International Center, New Delhi organized by Shaheed Bhagat Singh College, University of Delhi.
- **Mobile Ecosystem in Delhi NCR: A perspective of Consumer Awareness towards E-Waste**; 5th International symposium on Fusion of Science and Technology held at New Delhi during 18th Jan 2016 -22nd Jan 2016.

#### **Books Authored: (After 2012)**

- **Experiments based on Analog and Digital Electronics**, ISBN10, ISBN13: 938114172X, 9789381141724, I.K. International Publishing House Pvt. Ltd.
- **MATLAB ESSENTIALS for problem solving**, ISBN-978-81-203-5175-2, PHI Learning private limited, 2016.

**Annexure 2.**

## Laboratories in Department of Instrumentation

1. Bio medical Instrumentation Lab.	a. Ultrasound trainer
	b. ECG Trainer
	c. Heart Rate Monitor
	d. Pacemaker
	e. Spirometer
	f. Blood Pressure Measurement
	g. Respiration Rate Monitor
2. Electronics & Electrical Instrumentation Lab.	a. DC Regulated Power Supply
	b. Cathode Ray Oscilloscope (CRO)
	c. Function Generator
	d. Analog Meters
	e. Digital Multimeters
	f. Digital Storage Oscilloscope (DSO)
	g. Transformers
	h. Different Values of Resistances/Capacitors/Inductors
	i. Stepper Motor
	j. DC Motor
	k. Speed Control of DC Motor
	l. AC Servo Motor
3. Industrial Instrumentation Lab.	a. Resistance Temperature Detector (RTD)
	b. Circular Chart Recorder
	c. Differential Pressure Measurement Trainer (DPT)
	d. Dead Weight Tester
	e. Orifice trainer
	f. Ultrasonic Flow Meter
	g. Electromagnetic Flow Meter
	h. Ratio Controller
4. Microprocessor Laboratory	a. 8085 Microprocessor Kits

	b. 8086 Microprocessor Kits
	c. 8051 Microcontroller Kits
	d. Interfacing ICs 8255, 8253, 8251
	e. Modules: Traffic light, Temperature Controller, Elevator Simulator, Stepper Motor, Matrix Keyboard
	f. A/D, D/A Converters
5. Analytical Instrumentation Lab.	a. Spectrophotometer
	b. Analytical Weighing Balance
	c. pH Meter
	d. Colorimeter
	e. Flame Photometer
	f. Karl Fisher Titrator
	g. Magnetic Stirrer with Hot Plate

## DEPARTMENTS OF LIBRARY

1. **Name of the Department** : Library

2. **Year of Establishment** : 1995

3. **Names of Interdisciplinary courses and the departments/units involved**

- A part of the “Information Technology” foundation course was being taught by the Librarian during 2013-14 to all the first year students of all the departments.
- The Librarian has been allotted (2015-16) two classes (on e Resources) of the first year students of all the departments. These classes are to explain and discuss the following -

N-List (National Library and Information Services infrastructure for Scholarly Content)

Library OPAC

e\_Resources online

e\_Resources of DULS

4. **Number of Posts**

	Sanctioned	Filled
Librarian	01	01

5. **Faculty profile with name, qualification, designation, specialization, (D.Sc./D.Litt./Ph.D./M.Phil.etc.,)**

Name	Qualification	Designation	Specialization	No. of Years of Experience
Dr. Ranjeet Singh Thakur	Ph.D University of Delhi	Librarian	Academic and Media Libraries	17+ Years

**6. Number of academic support staff (technical) and administrative staff; sanctioned and filled :**

Post	Filled
Administrative	04

**7. Qualifications of teaching faculty with DSc/D.Litt/Ph.D/MPhil/PG.**

**Name :** Ranjeet Singh Thakur  
**Qualification :** Ph.D. (University of Delhi)  
**Designation :** Librarian  
**Specialization :** Academic and Media Libraries  
**Experience (Years):** 17+ (in the College) 13 (in Private Sector)

**8. Publications:**

**Publication:** 05

**Chapter in Books:** 01

**9. Faculty as members in**

National committees: Managing Editor, ILA Bulletin (2002-04)

**10. Student projects**

**Percentage of students who have done in house projects including interdepartmental/programme :**

17 in-house projects under FYUP (2013-14) for the paper Information Technology have been done by 98 students of first year.

**11. Awards/Recognitions received by faculty and students**

Distinguished Faculty Award on the occasion of Diamond Jubilee celebrations of Delhi Library Association (DLA).

**12. Seminars/Conferences/Workshops organized & the source of funding**

**a) National**

- Coordinated training course on Scientific writing and e-resource in Food Technology “on 15 Jan 2015 at Bhaskaracharya College of Applied Sciences, University of Delhi.

- Organized (as Secretary) one day national seminar on “New Education Policy with reference to higher education” on 24 November 2015 in Faculty of Arts, University of Delhi jointly organized by Dept. of Sanskrit, University of Delhi and Siksha Sanskriti Utthan Nyas, Delhi.
- Organized “Hands-on-Training in Biotechnology Tools” at Bhaskaracharya college of Applied Sciences on 18<sup>th</sup> – 28<sup>th</sup> Dec. 2015.

### **13. Details of Infrastructural facilities**

The library is housed in a spacious and well-lit three-storied building called Library Block. The lower ground floor houses the book stacks and circulation counter. The upper ground floor has reading room facility for the teachers and staff members. Periodical Section, Reading Room for students and fully air-conditioned Internet Facility are on the floor. The Library is equipped with CCTV surveillance system with recording facility.

Area of the Library:	1148.69 Sq Mts
Stacking Length:	3396 feet
Reading Room Capacity for:	177 students/ teachers
Internet Room Capacity for:	20

### **14. Teaching methods adopted to improve student learning**

Class lecture, PPT, Seminars, Assignments and use of ICT and Internet.

### **15. Participation in Institutional Social Responsibility (ISR) and Extension activities**

Acted as a Programme Officer of NSS (National Service Scheme) for two years 2009-2010 and 2010-2011. Also acted as member of NSS Committee during 2012-13.

### **16. SWOC analysis of the department and Future plans**

#### **Strengths:**

Good Barcoded collection, Automated Systems of Acquisition, Circulation, Cataloguing, and OPAC

#### **Weakness:**

Inadequate Furniture, Non air-conditioned library, inadequate internet connectivity.

**Opportunity:**

Involve students to make them more oriented towards library.

**Challenges:**

Switch to an Open-Source Library Management Software – KOHA, Introduce RFID technology in the library

**List of Publications**

- Thakur, Ranjeet S. "Citation Analysis: A Tool for Periodical Selection." Indian Textile Journal 99.7 (1989): 78-80.
- Thakur, Ranjeet S. "Use of 'PMEST' in an Electronic Media Library." Journal of Library and Information Science 22.1-2 (1997): 102-06.
- Thakur, Ranjeet S. "Transmission Log and CDS/ISIS." Journal of Library and Information Science 23.2 (1998): 174-78.
- Thakur, Ranjeet S. "A Study of Telecast Media Libraries in India." Library Herald 43.2 (2005): 152-59.
- Thakur, Ranjeet S. "Fund Allocation Formula: A Case for a College Library." Papers and Proceedings of the National Conference on Financial Management of Library and Information Centres in E-Environment Organised by Delhi Library Association and Indian Agricultural Research Institute Library on 31st May 2009. Financial Management of Library and Information Centres in e-Environment. New Delhi: Delhi Library Association, 2009. 45-55.

**Chapter written in books**

- Thakur, Ranjeet S. "Consumption of Information in a Textile Manufacturing Unit." Advances in Library and Information Science. Vol. 3. Jodhpur: Scientific, 1992. 93-104.

**Presented papers in Workshops/Seminars/Conferences**

- Presented a paper on "A Study of the Recommendations of NKC Working Group on Libraries" in the National Seminar on National Knowledge

Commission's Recommendations jointly organized by the Department of Higher Education, Government of Karnataka, Bangalore University and Centre for Educational and Social Studies held in Bangalore on 19th and 20th September 2007.

- Presented a paper on "Fund Allocation Formula: A Case for a College Library" in the "First National Conference on Financial Management of LICs in e-Environment" jointly organized by Delhi Library Association and Indian Agricultural Research Institute Library, New Delhi on 31st May 2009.
- Presented a poster in the National Symposium on Lifestyle Disorders: Understanding the Molecular Mechanisms held on January 28-29, 2016 organised by Department of Biochemistry, Shivaji College, University of Delhi.



## DEPARTMENT OF MATHEMATICS

1. **Name of the Department** : Mathematics
2. **Year of Establishment** : 1995
3. **Annual/ semester/choice based credit system (programme wise) :**

***Courses other than B.Sc. (H) Computer Science:***

Annual system	:	1995-2010
Semester system	:	2010 onwards
FYUP	:	One batch only (2013)
CBCS	:	2015 onwards.

***B.Sc. (H) Computer Science***

Semester system	:	1997 onwards
FYUP	:	One batch only (2013)
CBCS	:	2015 onwards

**4. Participation of the department in the courses offered by other departments**

Under CBCS system, the department offers the Generic Elective papers in mathematics to the students of all courses being offered by the college.

In the semester mode, the department takes mathematics papers of various courses of the college.

The department took Foundation Course – ‘Building Mathematical Ability’ of B.Tech. and B.Sc. (H) courses which were being offered by the college under FYUP. The department also taught Mathematics papers to B.Tech. (Food Technology) and B.Tech. (Polymer Sciences) students.

**5. Details of courses/programs discontinued (if any) with reasons**

FYUP was started from 2013-14 and has been discontinued in academic session 2014-15 as per University of Delhi directive.

**6. Number of Teaching posts:**

	Sanctioned	Filled
Assistant Professors	02	02 (both promoted to Associate Professor)

**7. Faculty profile with name, qualification, designation and specialization.**

Name	Qualification	Designation	Specialization	No.of Years of Experience (as on 01.06.16)
Dr. Ragini Jindal	Ph.D.	Associate Professor	Applied Mechanics	17 years
Dr. Neeru Sharma	Ph.D.	Associate Professor	Functional Analysis	16 years

**8. Percentage of lectures delivered and practical classes handled (programme wise) by temporary faculty:**

**Lectures delivered by temporary faculty:** approx. 33% (Academic session 2015-16)

**Practical classes handled by temporary faculty:** 0% (Academic session 2015-16)

**9. Student -Teacher Ratio (program wise): 12:1 (As per University norms)****10. Qualifications of teaching faculty with DSc/ DLitt/ PhD/ MPhil /PG:**

Name	Qualification
Dr. Ragini Jindal	Ph.D.
Dr. Neeru Sharma	Ph.D.

**11. Number of faculty with ongoing projects from**

S. No.	Name of the Faculty	Number of Projects	Funding Agency	Amount Sanctioned
1.	Dr. Neeru Sharma	01	University of Delhi	06 lakh (ongoing)
2.	Dr. Ragini Jindal	01	University of Delhi	3.5 lakh (completed)

**Dr. Neeru Sharma**

- Principal Investigator for the DU Innovation Project (2015-16) BCAS 309 titled “Identification of Genetic Factors for Coronary Artery Disease and Its Association with other Atherogenic Risk Factors in Young Indians”.

**Dr. Ragini Jindal**

- Principal Investigator for the DU Innovation Project (2013-15) BCAS 208 titled “Lifestyle Interventions in Stress Management: a study among Delhi youth”.

**12. Publications:****Publications per faculty**

Name of the faculty	Publications in journal		Books Authored
	Before 2012	2012 onwards	2012 onwards
Dr. Ragini Jindal	03	-	02
Dr. Neeru Sharma	04	03	nil

**(b) Number of papers published in peer reviewed journals (National/ International) by faculty and students**

**In National Journals** : TOTAL PUBLICATIONS:

**Before 2012** : 02

**2012 Onwards** : nil

**In International Journals** : TOTAL PUBLICATIONS:

**Before 2012** : 05

**2012 onwards** : 03

**(Details of Publications as per Annexure – 1 of ERD of department of Mathematics)**

**Books written with ISBN/ISSN members (give details of the publisher):**

As part of Delhi University funded Innovation Project “Lifestyle Interventions in Stress Management: a study among Delhi youth”.

- Dr. Madhulika Bajpai, Dr. Eram S. Rao, Dr. Ragini Jindal, ‘Stress Workbook for Youth’, Yashasvi Enterprises, Delhi, ISBN: 978-81-930724-2-4.
- Dr Eram S. Rao, Dr. Madhulika Bajpai, Dr. Ragini Jindal ‘Desi Delights’, Yashasvi Enterprises, Delhi, ISBN: 978-81-930724-3-1.

### 13. Students projects : Data available with Main Departments

- **Percentage of students who have done in-house projects including inter departmental/ programme.**

Students of all courses of the college did projects as part of their paper ‘Building Mathematical Ability’ under FYUP.

Further, as part of Innovation Projects funded by University of Delhi, 20 students from various main departments of the college were involved in the projects.

### 14. Details of Infrastructural facilities

**ICT facility:** All lecture rooms have lectures-via-projection facility and students have internet access.

**Laboratories:** The Department of Mathematics conducts its practicals in Department of Computer Science laboratories. These are well equipped laboratories with latest configurations of hardware, mathematical softwares and LCD projectors.

**Library:** The Department has a good stock of subject related books for students for reference.

**Department:** The Department of Mathematics is equipped with computer, printer and scanner.

### 15. Teaching methods adopted to improve student learning

Various methods such as lectures, power point presentations, projects, tests and assignments are undertaken to make student learning more interesting and effective.

**16. Participation in Institutional Social Responsibility (ISR) and Extension activities**

The faculty has been actively involved and extends full cooperation and participation in the causes raised by various social responsibility forums of the college such as NSS, Eco Club, Women Development Cell etc. As past Convener of Women Development Cell, faculty member has organized various activities such as Signature campaign, Silent March and Street play against female foeticide, Self Defense Workshop by Delhi Police, skits and presentation on Violence against Women etc.

**17. SWOC analysis of the department and Future plans****Strength:**

Dedicated and Committed Faculty

Well - equipped laboratory (computer science)

Well-equipped Department

Excellent Library facilities with latest text books and Reference books

**Weakness:**

The absence of main department in the college deprives interested students the opportunity of learning mathematics in greater details.

**Opportunity:**

The college is committed to having Mathematics Honours course in the college which will further benefit more students and the faculty.

**Challenges:**

To impart mathematics education and inculcate interest in students not having mathematics in class XI and XII.

**ANNEXURE-1****List of Research Publications in Journals:****Before 2012****Dr. Ragini Jindal**

- Chakraverty S., Jindal R. and Agarwal, V.K. (2007), "Vibration of Non homogeneous Orthotropic Elliptic and Circular Plates with Variable

Thickness”, ASME Journal of Vibration and Acoustics, 129 (2). (ISSN: 1048-9002, IF: 1.13).

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### **Dr. Neeru Sharma**

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- Gupta A., Kashyap N. (2011), “Weyl type theorems for class A (k) operators”, International Journal of Mathematical Archive, 2(7), 1099-1104. (ISSN 2229-5046).

### **2012 Onwards**

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- Gupta A., Kashyap N., (2013), “Variations on Weyl type theorems”, International Journal of Contemporary Mathematical Sciences, 8(4), 189-198. (ISSN: 1312-7586).
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## DEPARTMENT OF MICROBIOLOGY

1. **Name of the Department** : Microbiology
2. **Year of Establishment** : 2007
3. **Names of Programmes / Courses offered (UG, PG, M.Phil., Ph.D., Integrated Masters; Integrated Ph.D., etc.):** UG, B.Sc. (H) Microbiology Semester Scheme, FYUP (One batch only), B. Sc. (H) Microbiology CBCS Scheme (2015 onwards)

4. **Names of Interdisciplinary courses and the departments/units involved:**

Biochemistry, Biology, Chemistry, English, Maths, Computers. All the students study various Interdisciplinary courses. Students who had taken admission under FYUP program studied various Interdisciplinary courses as Foundation courses and IMBH as per DU guidelines. Students who have joined under CBCS have the choice of taking up subjects other than Microbiology, which are referred as General Elective courses.

5. **Annual/ semester/choice based credit system (programme wise) :**

Annual system: 2007-2010

Semester system: 2010 continued

FYUP: One batch only (2013)

CBCS: 2015 onwards

6. **Participation of the department in the courses offered by other departments:**

Under the Choice Based Credit System, the Department offers General Elective courses to the students of other Departments.

7. **Details of courses/programs discontinued (if any) with reasons**

The FYUP started from 2013-14 is discontinued from 2014-15 as per the University directions.

**8. Number of Teaching posts:**

Department of Microbiology	Sanctioned	Filled
Assistant Professor	6	4

**9. Faculty profile with name, qualification, designation and specialization.**

Name	Qualification	Designation	Specialization	No. of Years of Experience	No. of Ph.D. / M. Phil / M. Tech / M. Sc. Students supervised
Dr. Vijaya Kumar Nalla	M.Sc, M.Phil, Ph.D (J.N.U)	Assistant Professor	Molecular Microbiology	8 year & 9 months	1 (M.Sc.)
Dr. Purnima Anand	M.Sc, Ph.D (D.U.)	Assistant Professor	Environmental Microbiology	12 years & 7 months	Nil
Dr. Ruchi Gulati Marwah	M.Sc, Ph.D (D.U.)	Assistant Professor	Industrial Microbiology	8 years and 6 months	Nil
Dr. Pawas Goswami	M.Sc, Ph.D (NDRI, Karnal)	Assistant Professor	Dairy Microbiology	10 years 5 months	Nil

**10. Percentage of lectures delivered and practical classes handled (programme wise) by temporary faculty (for the even semester 2015-16):**

Programme	Percentage of theory classes being taken by Adhoc /guest faculty	Percentage of practical classes being taken by Adhoc /guest faculty
CBCS	Adhoc-57%	Adhoc-60%
Semester	Adhoc -5% Guest faculty 15%	Adhoc-14%
FYUP	Adhoc-55% Guest faculty-35%	Adhoc-62.5%

**11. Student -Teacher Ratio (program wise): 12:1****12. Number of academic support staff (technical) and administrative staff; sanctioned and filled**



Post	Filled
Lab Assistant	03

**13. Qualifications of teaching faculty with DSc/ DLitt/ PhD/ MPhil /PG:**

Name	Qualification
Dr. Vijay Kumar Nalla	M.Sc, M.Phil, Ph.D (J.N.U)
Dr. Purnima Anand	M.Sc, Ph.D (D.U.)
Dr. Ruchi Gulati Marwah	M.Sc, Ph.D (D.U.)
Dr. Pawas Goswami	M.Sc, Ph.D (NDRI, Karnal)

**14. Number of faculty with ongoing projects from****a) National :****Ongoing projects**

S. No	Name of the Faculty	Number of Ongoing Projects	Funding Agency	Amount Sanctioned
1	Dr. Purnima Anand	1	University of Delhi	5.5 Lakhs
2	Dr. Ruchi Gulati Marwah	1	University of Delhi	5.0 Lakhs
3	Dr. Pawas Goswami	1	University of Delhi	6. 0 Lakhs

**Grants received****2011-12**

S. No	Name of the Faculty	Number of Projects	Funding Agency	Amount Sanctioned
1	Dr. Purnima Anand	1	University of Delhi	10 lakhs

**2013-2015**

S. No	Name of the Faculty	Number of Projects	Funding Agency	Amount Sanctioned
1	Dr. Purnima Anand	1	University of Delhi	7.5 Lakhs
2.	Dr. Ruchi Gulati Marwah	1	University of Delhi	5.5 Lakhs
3.	Dr. Vijay Kumar Nalla	1	University of Delhi	05 Lakhs
4.	Dr. Pawas Goswami	1	University of Delhi	5.5 Lakhs

**15. Departmental projects funded by DST-FIST; UGC, DBT, ICSSR, etc. and total grants received**

Star College Grant funded from DBT (December 2010 till date): The Department has received Rs 5 lakhs non-recurring and Rs 6.5 lakhs recurring grant from Department of Biotechnology for support of undergraduate teaching and research.

**16. Publications:****Publication per faculty**

Faculty	Publications in Journals	Chapter in Books	Books Edited	Books with ISBN/ISSN Numbers	Total Publications
Dr. Vijaya Kumar Nalla	01	01	---	---	02
Dr. Purnima Anand	01	01	---	---	02
Dr. Ruchi Gulati Marwah	25	01	---	---	26
Dr. Pawas Goswami	06	03	---	02	11

**17. Students projects :****a) Percentage of students who have done in-house projects including inter departmental/ programme.**

Although B.Sc (Hons) Microbiology do not have project work as part of the

curriculum, many students undertake projects as per their interest. Following is the result of in house projects conducted under the aegis of Star College Scheme in which the students participated.

### **IN HOUSE PROJECTS (2012-2013)**

<b>Name of the student (s)</b>	<b>Name of the faculty</b>	<b>Project Title</b>
Mr. Surender Mr. Irshad	Dr. Pawas Goswami	Incidence of coliforms and pathogenic bacteria on the currency notes in NCT
Mr. Anay Mr. Amit	Dr. Purnima Anand	Role of <i>Trichoderma</i> as biocontrol agent

### **2013-15**

<b>Name of the student(s)</b>	<b>Name of the faculty</b>	<b>Project title</b>
Sujata, Radhika	Dr. Pawas Goswami	Isolation of <i>Staphylococcus</i> from the Currency notes in NCR – 2 students
Sushant	Dr. Tejpal Dhawa	Microbiological Quality of air – 1 student
Meenakshi, Harsha, Shadab, Amit, Nanu	Dr. Purnima Anand	Survey based analysis of fermented foods
Students of B. Sc. (Hons) Microbiology II year – 30 students in 4 batches	Dr. Purnima Anand	Microbial load determination of different foods and beverages
Students of B. Sc. (Hons) Microbiology III year – 30 students in 4 batches	Dr. Ruchi G. Marwah	Evaluation of distribution of different strains of <i>S. aureus</i> in acnes affected individuals and their antimicrobial susceptibility
Students of B.Sc. (Hons) Microbiology II year -30 students in 4 batches	Dr. Ruchi G. Marwah	Isolation of antibiotic resistant bacteria from drinking water samples by replica plating

**b) Percentage of students placed for projects in organizations outside the institution i.e. in Research laboratories/Industry/other agencies.**

Batch/Year	Percentage of students that opted for projects/training
2010-2011	12%
2011-2012	22%
2013-2014	23%

**18. Awards / Recognitions received by faculty and students**

- Pooja Gupta, I year student, Department of Microbiology got the Best Poster Award (Second Prize) for the poster “Exploring the potential of Biosimilars as Cost-Effective Biotherapeutics” presented in the 10<sup>th</sup> Symposium on Frontiers in Biomedical Research organized by Dr. B. R. Ambedkar Center for Biomedical Research (ACBR), University of Delhi held during October 29<sup>th</sup> to 31<sup>st</sup>, 2015.
- Pooja Gupta, I year student, Department of Microbiology selected for Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR) summer internship program for Project oriented Biological Education (POBE) 2016

**19. List of eminent academicians and scientists/ visitors to the department:**

- Prof. J.S. Viridi, Head, Department of Microbiology, University of Delhi
- Dr. A.K. Puniya, Principal Scientist, National Dairy Research Institute, Karnal
- Prof. R. K. Saxena, Department of Microbiology, University of Delhi, South Campus
- Dr. Neerja, Yakult Pvt Ltd.
- Prof. Deepak Pental, former Vice-Chancellor, University of Delhi
- Prof. A.K.Prasad, Former Head, Department of Virology, V.P.Chest Institute
- Prof. Madhu Khanna, Department of Virology, V.P.Chest Institute

- Dr. Ashish Bhatnagar, MDS University, Ajmer
- Dr. Saurabh Saran, TBI, University of Delhi (South Campus)
- Prof. K. Natrajan, Dr. B.R. Ambedkar Centre for Biomedical Research
- Dr. Pushkar Sharma, NII
- Dr. S. Ramachandran, IGIB
- Dr. Pawan Malhotra, ICGEB
- Dr. Deepak Saini, IISc., Bangalore
- Prof. Daman Saluja, Dr. B.R. Ambedkar Centre for Biomedical Research
- Dr. Bishwajit Kundu, IIT Delhi
- Dr. Vinod Scaria, CSIR-IGIB
- Dr. Snehlata Panwar, School of Life Sciences, Jawahar Lal Nehru University
- Dr. Manish Kumar, Department of Biophysics, University of Delhi

## **20. Seminars/ Conferences/Workshops organized & the source of funding:**

### **a) National**

Department of Microbiology organized various Seminars/Conferences/Workshops from various funding agencies as mentioned here under:

- Organized a two day symposium on “Infectious Diseases: Advancements in Diagnostics, Therapeutics and Vaccines” at Bhaskaracharya College of Applied Sciences on 20<sup>th</sup> and 21<sup>st</sup> March, 2014 (Funded by DST).
- Organized a one day workshop on “Mushroom Cultivation” on 12<sup>th</sup> August, 2014 under the Star College Scheme, Department of Biotechnology, Government of India.
- Organized 3 INSPIRE CAMPS (under the DST initiative) for the school students. The faculty members were resource persons and /or part of organizing team. (Funded by DST).

- Organized a workshop on Viral Cultivation Strategies on 8<sup>th</sup> September'2014 under the Star College Scheme, Department of Biotechnology, Government of India.
- Organized one day workshop on “Shaping, teaching and learning with VLE” at University of Delhi, on 6-9-2014, under the Star College Scheme, Department of Biotechnology, Government of India.
- Organized Annual Microbiology festival “Microquest” and One day symposium on Biofuels: An alternative and Non-conventional Energy source for future”, sponsored by Star college scheme, DBT, Govt. of India, on 2<sup>nd</sup> February, 2015.
- Organized a one day symposium on “Antibiotic Resistance: A major global threat”& the Annual Microbiology Festival “Microquest 2016” on 16<sup>th</sup> March, 2016.

## 21. Student profile programme/course wise:

Name of the Course/programme (refer question no. 4)	Enrolled		Pass percentage
	*M	*F	
2011-2012	10	25	I 96.55 II 93.33 III 100
2012-2013	11	25	I 63.33 II 100 III 75
2013-2014	19	16	I 96.77 II 80 III 84.85
2014-2015	18	22	I 89.47 II 100 III 73.33
2015-2016	17	25	

\*M=Male \*F=Female

**22. Diversity of Students:**

Name of the Course	% of students from the same state	% of students from other States
2011-2012	74.28	25.72
2012-2013	72.22	27.78
2013-2014	74.28	25.72
2014-2015	52.5	47.5
2015-2016	59.52	40.48

**23. Details of Infrastructural facilities:**

**Library:** No departmental library is available. Students get required books from College's central library (data is submitted separately by our librarian)

**Internet facilities for Staff & Students:** Available through Wi-Fi and Cable

**Class rooms with ICT facility:** Several class rooms & Labs are equipped with Internet and projector facility.

**Laboratories** well equipped labs with advanced research instruments such as:

- Autoclaving machines
- Laminar Air flows-vertical and horizontal
- Binocular and Trinocular Microscopes
- Microscope Image Projection System
- PCR machine/Thermal cycler
- Gel documentation System (Gel-doc)
- U.V. Visible spectrophotometer
- Reverse Osmosis based Water Purification system
- Ice-making machine
- Gel electrophoresis-vertical/horizontal Apparatus
- Blotting Apparatus.

- High speed cooling centrifuges
- Microbiological Incubators
- Incubator cum Shakers
- Water baths
- Cooling cabinets
- Deep Freezers
- Ultra-Sonicator
- Magnetic stirrer, Vortexer
- Hot Air Oven
- Labs are equipped with LCD Projectors for audio-visual demonstrations

**24. Number of students receiving financial assistance from college, university, government or other agencies:**

2015-16: Nil

2014-15: 1 Student

2013-14: 2 Students

2012-13: Nil

2011-12: Nil

**25. Details on student enrichment programmes (special lectures /workshops / seminar) with external experts:**

**a) Industrial visits/exposure by the students/summer training, winter training**

S. No.	Year	Name of the institute	Duration (days)	Number of students (approximate)
1.	2012	University of Delhi (for Academic Congress)	02	50
2.	2012	TBI, University of Delhi (South Campus)	01	30
3.	2012	Industrial Visit to “Yakult”, Sonapat	01	30



4.	2013	Mother Dairy, Patparganj	01	30
5.	2014	Industrial Visit to “Yakult”, Sonapat	01	54
6.	2014	HAIC Agro research and development centre, Sonapat for a workshop on Mushroom cultivation	01	54
7.	2014	A workshop on “Viral Cultivation Strategies”	01	60
8.	2014	Industrial visit to Superior industries, Faridabad	01	30
9.	2015	TBI, University of Delhi (South Campus)	01	30

**b) Guest Lectures delivered (Name of the Expert, Talk Title)**

S. No	Year	Name of the Speaker/ Resource person	Topic of Presentation
1.	2011-12	Prof. J. S. Viridi, Head, Department of Microbiology, University of Delhi	Emerging water-borne pathogens – The Indian Experience with <i>Yersinia enterocolitica</i> .
2.	2011-12	Dr. A. K. Puniya, Principal Scientist, National Dairy Research Institute, Karnal	Functional foods for improved human health.
3.	2012-13	Prof. R. K. Saxena, Department of Microbiology, University South Campus	Biocatalysis: A promising tool for environmentally benign industrial growth.
4.	2013-14	Prof. J. S. Viridi, D.U	Microbiology- an exciting career ahead”
5.	2013-14	Prof. Deepak Pental, former Vice-Chancellor, University of Delhi	From plant pathogen Interaction to GE crops: How science is converted to technologies.
6.	2014-15	Prof. A. K. Prasad, Former Head, Department of Virology, V.P. Chest Institute	A lecture on “Influenza and its Vaccination”
7.	2014-15	Prof. Madhu Khanna, Department of Virology, V.P. Chest Institute	“Influenza and its pathogenesis”
8.	2014-15	Dr. Saurabh Saran, TBI, University of Delhi (South Campus)	Oleaginous yeasts for biodiesel production
9.	2014-15	Dr. Ashish Bhatnagar, MDS University of Ajmer	“Fuel from Filth”
10.	2014-15	Prof. R. K. Saxena, Department of Microbiology, University of Delhi (South Campus)	“Butanol: A burning issue for second generation biofuels”
11.	2014-15	Prof. K. Natrajan, ACBR	<i>Mycobacterium tuberculosis</i> : Dealing with

S. No	Year	Name of the Speaker/ Resource person	Topic of Presentation
			theimmortals of the lung
12.	2014-15	Dr. Pushkar Sharma, NII	Signalling, trafficking and malarial parasite
13.	2014-15	Dr. S. Ramachandran, IGIB	Integration of gene expression and metabolic reactions models provides insights into robustness and drug target points in <i>M. Tuberculosis</i>
14.	2014-15	Dr. Pawan Malhotra, ICGEB	Novel drug targets from asexual stages of <i>Plasmodium falciparum</i>
15.	2014-15	Dr. Deepak Saini, IISc., Bangalore	Anti-microbial therapeutics: Old dog....but new tricks!!
16.	2014-15	Prof. Daman Saluja, ACBR, University of Delhi	Developing point for care diagnostic for infectious diseases: challenges and opportunities
17.	2015-16	Dr. Vinod Scaria, CSIR-IGIB	Personal Genomics for Precision Medicine
18.	2015-16	Dr. Bishwajit Kundu, IIT-Delhi	Expansion of protein function through engineering of specialized enzyme
19.	2015-16	Prof. J. S. Virdi, Head, Department of Microbiology, University of Delhi	Antimicrobial Resistance (AMR) in India: Practices, Perils and Remedies
20.	2015-16	Dr. Snehlata Panwar, School of Life Sciences, JNU	Mitochondria as a Potential Drug Target in <i>Candida albicans</i>
21.	2015-16	Dr. Manish Kumar, Department of Biophysics, University of Delhi	Bioinformatics databases for the analysis and study of antimicrobial resistance

## 26. Teaching methods adopted to improve student learning

A variety of teaching methods have been innovatively developed and adopted by our faculty. Apart from regular class room lectures they include innovative methods such as power point presentations, seminars delivered by skilled professionals/eminant scientists, virtual labs using multimedia based animations, conducting quizzes among students, short tests, interactive class room discussions, visit to scientific institutes/industries, audiovisual demonstrations, use of models to explain concepts, video recording of a practical etc. A novel method of teaching also involved teaching and assessment using a specially developed soft-ware named “Virtual Learning Environment” which was developed by Institute of Informatics & Computers (ICC), University of Delhi.

## 27. Participation in Institutional Social Responsibility (ISR) and Extension activities

The faculty and students of the Department actively participate in NSS activities.

Dr. Vijay Kumar Nalla has been the convener of NSS club.

## **28. SWOC analysis of the department and Future plans**

### **Strengths:**

- All faculty members are Ph.D. holders with specialization in Microbiology
- Availability of advanced instrumentation facilities
- Funding from Star College Scheme of Department of Biotechnology, Government of India.
- Availability of vast number of books and video-audio tutorials
- Good tie-ups with both academia and industry for student training purposes
- Laboratory staff is well trained.

### **Weakness**

Limitation of space.

### **Opportunity:**

- Having connections with several industries, Research laboratories & Universities gives us ample research opportunities
- Increasing scope of microbiology field
- Potential of making break-through discoveries in the field
- Ample scope of commercialization with the innovative findings
- Having tie-ups with universities increases research out-put.
- Self-employability of microbiology field like setting up of clinical laboratory and entrepreneurship opportunities.

### **Challenges:**

- To keep up with the ever increasing demand of Microbiology

### **List of Research Publications:**

**Dr Vijaya Kumar Nalla**

**List of Publications in journals**

- **Nalla V. K.**, Kamthan M., Ruhela D, Kamthan A, Maiti P, et al. (2014) Characterization of a Putative Spindle Assembly Checkpoint Kinase Mps1, Suggests Its Involvement in Cell Division, Morphogenesis and Oxidative Stress Tolerance in *Candida albicans*. PLoS ONE 9(7): e101517. doi:10.1371/journal.pone.0101517. **I.F.-3.730; ISSN no. 19326203**

**Book Chapters**

- **Nalla V. K.**, Khanduri, D., Chehar, S., Gupta, A.S.K. (2014) Preparation of a microbial consortium for efficient disposal of human waste and improving its fertilizer value. Environmental sustainability: Concepts, Principles, Evidences and Innovations-ISBN:978-93-83083-75-6

**Dr. Purnima Anand****List of Publications in journals**

- **Anand P.**, Isar J., Saran S. and Saxena R. K. (2006) Bioaccumulation of copper by *Trichoderma viride*. Bio resource Technology 97(8): 1018-1025.

**Book chapters**

- Saxena R. K., **Anand P.**, Saran S. and Isar J. (2006) Fungal biosorbents: a benign alternative for removal and recovery of heavy metals from waste water. In: Biotechnological Applications of Microorganisms. A technocommercial approach. Eds. D. K. Maheshwari, R. C. Dubey and S. C. Kang. Pp. 359-379.

**Dr. Ruchi Gulati Marwah****List of Publications in journals**

- Verma G., Singh Y., Anjali, Sabharwal N., Aggarwal A., Mongia G., Kaur I., **Marwah, R. G.** October 2015. A short review on Microbial Fuel Cell Technology and a proposed approach for generation of electricity using waste water treatment. Indian Journal of Sciences Research Development
- Anand P., Saxena R. K., and **Marwah, R.** (2011). A novel downstream process for 1,3-propanediol from glycerol-based fermentation. **Applied Microbiology and Biotechnology**, 90 (4) : 1267-1276. **(IF 3.689)**

- Kaushik, R. **Marwah R. G.**, Gupta P., Saran, S. Saso, L. Parmar, V. S. and Saxena R. K. (2010). Optimization of Lipase Production from *Aspergillus terreus* response Surface Methodology and Its Potential for Synthesis of Partial Glycerides Under Solvent Free Conditions. *Indian Journal of Microbiology*. 50(4) : 456-462. (IF 0.46)
- Srinivasan S., Gupta S., **Marwah R.**, Manisankar P., Kumar R. (2010). Synthesis, characterization and in vitro biological studies of novel N-aryl piperazinyl fluoroquinolones. **Research Journal of pharmaceutical, Biological and Chemical Sciences**. 1(3): 727-737. (IF 0.35).
- Fatope, M. O., Varma G. B., Al-Azri N. M., **Marwah R. G.** and Nair R. S. (2010). Kaurine diterpenoids from *Blepharispermum hirtum*. **Chemistry and Biodiversity** 7 : 1862-1870. (IF 1.8).
- Fatope, M. O., **Marwah, R. G.**, Al Hadhrami, NM, Onifade, AK and Williams, JR. (2009). Identification of the Chemotypes of *Ocimum forskolei* and *Ocimum basilicum* by NMR Spectroscopy. *Chemistry and Biodiversity* 6(6) : 961. (IF 1.8)
- **Marwah, R. G.**, Fatope M. O., Deadman, M. L., Al-Maqbali, Y. M. and Husband, J. (2007). Musanahol: a new aureonitol-related metabolite from a *Chaetomium* sp. **Tetrahedron** 63 : 8174-8180. (IF 2.899)
- **Marwah, R. G.**, Fatope M. O., Deadman, M. L., Ochei, J. E. and Al-Saidi, S. H. (2007) Antimicrobial activity and the major components of the essential oil of *Plectranthus cylindraceus*. **Journal of Applied Microbiology** 103 (4) : 1220-1226 (IF 2.59).
- **Marwah, R. G.**, Fatope M. O., Al-Mahrooqi R., Varma G. B., Al-Abadi, H. and Al-Burtamani S.K.S. (2007) Antioxidant capacity of some edible and wound healing plants in Oman. **Food Chemistry** 101: 465-470. (IF 3.052)
- Varma G. B., Fatope M. O., **Marwah, R. G.**, Deadman M. E. and Al-Rawahi F. K. (2006) Production of phenylacetic acid derivatives and 4-epiradicinol in culture by *Curvularia lunata*, **Phytochemistry** 67 : 1925-1930. (IF 2.780)
- Suliman, F. O., Fatope M. O., Al-Saidi, S. H., Al-Kindy, S. and **Marwah. R. G.**

- (2006) Composition and antimicrobial activity of essential oil of *Pluchea arabica* from Oman. **Flavour and Fragrance Journal** 21: 469-471. (IF 0.718)
- Fatope, M. O., **Marwah, R. G.**, Onifade, A. K., Ochei, J. and Al Mahrooqi, Y. (2006) <sup>13</sup>C NMR analysis and antifungal and insecticidal activities of Oman Dill Herb Oil. **Pharmaceutical Biology** 44 : 44-49.
  - **Gulati, R.** Isar, J, Kumar, V., Prasad, A.K., Parmar, V.S. and Saxena, R. K. (2005) Production of a novel alkaline lipase from *Fusarium globulosum* (FGL) produced using neem oil and its applications. **Pure and Applied Chemistry** 77 : 251-262 (IF 1.495).
  - Al-Burtamani, S. K. S., Fatope, M. O., **Marwah, R. G.**, Onifade, A. K. and Al-Saidi, S. H. (2005) Chemical composition, antibacterial and antifungal activities of the essential oil of *Haplophyllum tuberculatum* from Oman. **Journal of Ethnopharmacology** 96 : 107-112. (IF 2.049)
  - Fatope, M. O., Nair, R. S., **Marwah, R. G.** and Al-Nadhiri, H. H. S. (2004) New sesquiterpenes from *Pluchea arabica*. **Journal of Natural Products** 67 (11) : 1925-1928. (IF 2.3)
  - **Gulati, R.**, Arya, P., Malhotra, B., Prasad, A. K., **Saxena, R. K.**, Kumar, J., Watterson, A. C., Parmar, V. S. Novel biocatalytic esterification reactions on fatty acids: Synthesis of sorbitol 1/6-monostearate. (2003). **ARKIVOC** (iii) 159-170.(IF 1.05)
  - Kidwai, M., Dave, B., Bhushan, K. R., Misra, P., Saxena, R. K., Gupta, R., **Gulati, R.** and Singh, M. (2002) Deacetylation of cephalosporins by lipase catalysis and microwave assisted transformation on a solid support. **Biocatalysis and Biotransformation**. 20(5): 377-379. (IF 1.0)
  - **Gulati, R.**, Saxena, R. K. and Gupta, R. (2002) Fermentation waste of *Aspergillus terreus* : a potential copper biosorbent. **World Journal of Microbiology and Biotechnology** 18(5) : 397-401.(IF 1.262)
  - **Gulati R.**, Bhattacharya A., Prasad, A.K., Gupta R, Parmar, V.S., and Saxena, R.K. (2001) Biocatalytic potential of *Fusarium globulosum* lipase in selective

acetylation / deacetylation reactions and in ester synthesis. **Journal of Applied Microbiology** 90:1-5. (IF 2.5)

- Saxena, R. K., Sangeetha, L., Vohra, A., Gupta, R. and **Gulati, R.** (2001) Induction and mass sporulation in lignin degrading fungus *Cereporiopsis subvermispora* for its potential usage in pulp and paper industry. **Current Science** 81(5): 591-594. (IF 0.6)
- **Gulati, R.**, Saxena, R. K. and Gupta, R. (2000) Fermentation and downstream processing of lipase from *Aspergillus terreus*. **Process Biochemistry** 36: 149-155. (IF 2.336)
- **Gulati, R.**, Saxena, R. K., Gupta, R., Yadav, R. P. and Davidson, W. S. (1999). Parametric optimisation for *Aspergillus terreus* lipase production and its potential in ester synthesis. **Process Biochemistry** 35(5) : 459-464. (IF 2.336)
- Saxena, R. K., Ghosh, P. K., Gupta, R., Davidson, W. S., Bradoo, S. and **Gulati, R.** (1999) Microbial lipases; potential biocatalysts for the future industry. *Current. Science* 77(10) : 101-115. (IF 0.6)
- **Gulati, R.**, Saxena, R. K. and Gupta, R. (1997). A rapid plate assay for screening L-asparaginase producing microorganisms. **Letters in Applied Microbiology** 24: 23-26. (IF 1.440)
- **Gulati, R.** Saxena, R. K. and Gupta, R. (1997) Fermentation waste of *Aspergillus terreus*: a promising copper bio-indicator. *Current Science* 77(10) 1359-1360. (IF 0.6)

### Chapters in Books

- Saxena, R. K., Gupta, R., Saxena, S. and **Gulati, R.** (2001). Role of fungal enzymes in food processing. *Applied Mycology and Biotechnology*. Vol. 1 Elsevier Science

**Dr. Pawas Goswami****List of Publications in journals**

- Sharma, P. Tomar, S. K., Sangwan, V., **Goswami, P.** and Singh, R. (2015). Antibiotic resistance of *Lactobacillus* sp. Isolated from commercial probiotic preparations. *Journal of Food Safety*.36 (1): 38-51.(ISSN No. **1745-4565**) (**Impact factor 0.86**)
- Sharma, P, Tomar, SK, **Goswami, P**, Sangwan, V and Singh, R. Antibiotic resistance among commercially available probiotics. *Food Research International* (2014), 57: 176-195(**Impact factor 2.818**)
- Kulkarni, A. and **Goswami, P.** (2012).Avian Fauna of Summer Hill, Shimla-Himachal Pradesh.*The Bioscan* 7(1): 61-64.(ISSN **0973-7049**)
- **Goswami, P.**, Grover, S. and Batish, V. K. (2009). Molecular Characterization of Bifidobacteria of Human Origin.*International Journal of Probiotics and Prebiotics*.4(1):7-14. (ISSN **1555-1431**)
- Singh, S., **Goswami, P.**, Singh, R. and Heller, K. J. (2009). Application of molecular identification tools for *Lactobacillus*, with a focus on discrimination between closely related species. *LWT- Food Science and Technology*.42:448-457. (ISSN **0023-6438**) (**Impact factor 2.545**)
- Mishra, V., **Goswami, P.**, Dabur, R. and Prasad, D. N. (2008). Antibiotic susceptibility and in vivo study of selected probiotic strains of *Lactobacillus casei*. *International Journal of Probiotics and Prebiotics*.3(1):15-20. (ISSN **1555-1431**)

**Books**

- Tomar, S. K. and **Goswami, P.** (2008).Analytical Techniques in Food Microbiology.IGNOU-APEDA One Year Post Graduate Diploma Course in Food Safety and Quality Management.
- **Goswami, P.** (2010). Bifidobacteria, Molecular Characetrization, Bile Salt Hydrolase Gene as Probiotic Marker. VDM Publishing House Ltd.17, Meldrum Str. | Beau-Bassin | Mauritius Tel / Fax: +230 467-5601.



**Book Chapters**

- Singh, S., **Goswami, P.**, Sharma, K. P. and Gaur, R. K. (2010). Microarrays: Concepts and Applications. In *Recent Trends in Biotechnology and Microbiology*.eds R.K.Gaur, Pradeep Sharma, K.P.Sharma, R.P.Narayan. Manshi Sharma and Rajiv Diwvedi, Nova Science Publishers, Inc. 400 Oser Avenue, Suite 1600, Hauppauge, NY 11788. **(ISBN: 978-1-60876-666-6).**
- Goyal, A., Singh, S. and **Goswami, P.** (2010).Bistability- A Mechanism to Adapt to the Changing Environment. In *Advancement of Biotechnology*eds R. K. Gaur, Mangal Singh Rathore, Richa Gaur. Lambert Academic Publication, Dudweiler Landstr.99, 66123 Saarbrücken, Germany. **(ISBN: 978-3-8433-7145-2).**
- **Goswami, P.** (2011). Popularization of Biotechnology.: Indian Scenario. In *Sharing Science.India Brazil Dialogue on Public Communication of Science, Technology, Culture and Soceity*.Eds Manoj Pateriya and Maria. I. Noguiera. National Council for Science and Technology, DST, India.

## DEPARTMENT OF PHYSICS

1. **Name of the Department** : Department of Physics
2. **Year of Establishment** : 1995
3. **Names of Programmes/Courses offered (UG, PG, M.Phil., Ph.D., Integrated Masters; Integrated Ph.D., etc.)**

(a) B.Sc. (H) Physics (2007-2012) under Annual System

(b) B.Sc. (H) Physics (2010-2015) under Semester System

(c) B.Sc. (H) Physics (2015 onwards) under Choice Based Credit System

4. **Names of Inter disciplinary courses and the departments/units involved**

Under CBCS system all students of B.Sc. (Hons) study 4 out of any 10 interdisciplinary papers offered from other Departments i.e. Department of Chemistry, Department of Polymer Science, Department of Electornics, Department of Instrumentaion, Department of Computer, Department of Human communication, Department of Microbiology, Department of Food technology, Department of Mathematics and Department of Biomedical science.

5. **Annual/semester/choice based credit system (programme wise)**

Annual system: 2007-2010 : B.Sc. (H) Physics

Semester system: 2010-2015 : B.Sc. (H) Physics

CBCS system: 2015 onwards : B.Sc. (H) Physics

6. **Participation of the department in the courses offered by other departments**

The department had taught following subjects in the courses offered by other departments:

Sr. No.	Course	Paper
1	B.Sc. (H) Polymer Science 3rd Semester	Physics Lab-304
2	B.Sc. (H) Computer Science 5th Semester	Mathematical Physics II
3	B.Sc. (H) Food Technology 5th Semester	Thermal Physics
4	B.Sc. (H) Food Technology 5th Semester	Thermal Physics Lab

**8. Details of courses/programmes discontinued (if any) with reasons**

The Annual system was discontinued in 2010 and was replaced by semester system. The FYUP started from 2013-14 is discontinued from 2014-15 as per the University directions.

**9. Number of teaching posts**

	Sanctioned	Filled
Asst.Professors	8	7

**10. Faculty profile with name, qualification, designation, specialization, (D.Sc./D.Litt./Ph.D./M.Phil. Etc.,)**

Name	Qualification	Designation	Specialization	No. of Years of Experience (years)
Dr. Anand Bharadvaja	Ph.D.	Associate Professor	Atomic and Molecular Physics	20
Dr. Vandana Batra	Ph.D.	Associate Professor	Cosmic Rays and Space Physics	18
Dr. Meetu Luthra	Ph.D	Associate Professor	Cosmology	17.5
Dr. Partha S. Pal	Ph.D	Assistant Professor	Astrophysics	8
Mr. Vikas Tyagi	M.Sc.	Assistant Professor	G.T. R. and QFT	10.5
Mr. Sandeep Kumar	M.Tech.	Assistant Professor	Solid state electronic materials	6
Mr. Ramesh Kumar	M.Tech.	Assistant Professor	Applied Optics	6

**11. List of senior visiting faculty**

- Prof. Anurag Sharma (IIT D) (Optical system design)
- Prof. M. R. Shenoy (IIT D) (Semiconductor laser and its application)
- Prof. Patric Das Gupta (DU) (Astronomy)
- Prof. B. P. Paul (IIT D) (Optical wave Guide)
- Prof. Deepak Kumar (JNU) (Transition states in thermodynamics)
- Dr. D.S. Rawal (SSPL, DRDO)

- Prof. R. Ravi Shankar (IIT Kanpur) (General Theory of Relativity)
- Dr. Amartya Sen Gupta (IIT D)

**12. Percentage of lectures delivered and practical classes handled (programme wise) by temporary faculty:** 55% (Approx) of the classes are being conducted by Ad-Hoc and Guest faculty in 2015 - 2016.

**13. Student-Teacher Ratio (programme wise):** 12:1 (As per the University norms)

**14. Number of academic support staff (technical) and administrative staff; sanctioned and filled**

Post	Filled
Lab Assistant	02

**15. Publications:**

- **Publication per faculty**

Name	Publications in journal	
	Before 2012	After 2012
Dr. Anand Bharadvaja	2	6
Dr. Vandana Batra	3	-
Dr. Meetu Luthra	7	-
Dr. Partha S. Pal	2	-
Sh. Sandeep Kumar	-	2
Sh. Vikas Tyagi	-	-
Sh Ramesh Kumar	-	-

- **Number of papers published in peer reviewed journals (national/international by faculty and students:** 22
- **Papers presented in conferences:** 2

**16. Faculty as members in National committees**

N. A.

**17. Student projects****a) Percentage of students placed for projects in organizations outside the institution i.e. in Research laboratories/Industry/other agencies:**

All the students enrolled during annual system upto 2010 had undergone projects as per curriculum

**18. Awards/Recognitions received by faculty and students Faculty:**

Faculty	Patents/Awards/ Recognitions	Details
	2011 onwards	
Dr. Anand Bharadvaja	02	“Best Poster Presentation Award” in APM 2013 International Conference. “Best Teacher award” of Bhaskaracharya College of Applied Sciences 2015

**Students:**

Student	Batch	Award/Recognition	Details
Mr. Deepak Sharma	2011-2014	Best student award	“Best student award” of Bhaskaracharya College of Applied Sciences
Mr. Akash Dhama	2013-2016	Volleyball team of University of Delhi	Selected for the Volleyball team of University of Delhi in 2015.

**19. Student profile program/course wise:**

Name of the Course/programme (refer question no. 4)	Selected	Enrolled		Pass percentage
		*M	*F	
B.Sc (H) Phy.(2012-13)	53	39	13	85.42%
B.Sc (H) Phy. (2013-14)	24	23	01	95.65%
B.Sc (H) Phy. (2014-15)	30	24	06	82.14%

\*M=Male \*F=Female

**20. Diversity of Students:**

Name of the Course	% of students from the same states	% of students from other states
B.Sc (H) Phy.(2011-12)	44.73	55.27
B.Sc (H) Phy.(2012-13)	71.69	28.31
B.Sc (H) Phy. (2013-14)	70.83	29.17
B.Sc (H) Phy. (2014-15)	53.33	46.67

**21. How many students have cleared national and state competitive examination such as NET, SLET, GATE, Civil services, Defense services, etc.?**

Ms. Charu Garg; Ph.D student, IISER, Pune

Sh Ankit Gaur; persuing Ph.D from University of Delhi

**22. Student progression:**

Student progression		Against % enrolled
UG to PG		Approximately 85%
Employed through Campus Selection		1
Employed Other than Campus Selection		11
Entrepreneurship/Self-employment		4

**23. Details of Infrastructural facilities**

(a) Library: No Departmental Library

(b) Internet facility

(c) Class rooms with ICT facility: Projectors are available

(d) Laboratories: well equipped

**24. Number of students receiving financial assistance from college, university, government or other agencies:**

**N.A.**

**25. Details on student enrichment programmes (special lectures/workshops/seminar) with external experts:** Same as mentioned in point no. 11.

**26. Teaching methods adopted to improve student learning** Lectures, power point presentations, seminars, virtual Labs, quizzes, regular short tests, interactive classes, visit to scientific institutes such as Nuclear Science Centre etc.

**27. Participation in Institutional Social Responsibility (ISR) and Extension activities**

NSS unit of college participates in various social activities throughout the year.

Eco club of the college performs events for awareness about environment.

The department is active participant in these events.

**28. SWOC analysis of the department and Future plans**

**a. Strengths**

- Well qualified committed faculty actively involved in research activities along with regular teaching.
- The course offers students to peruse higher education in pure physics, interdisciplinary and professional courses.
- This course is of industrial importance and has bright job prospects.

**b. Weaknesses**

- Limited space, infrastructure constraints.
- No project or field work for students.
- Less wightage on research activities

**c. Opportunities**

- Provides a suitable platform for students to perform research and other activities.

**d. Challenges**

- To adapt to the challenges and changing scenario in higher education.

- To motivate them towards core research and studies.
- Timely upgradation of syllabus
- Timely receipt of financial assistance from funding agencies
- **Faculty with successfully completed / ongoing projects from a) University  
b) National**

S. No	Name of the Faculty	Number of National Projects	Funding Agency	Amount Sanctioned (in lakhs)
1	Dr. Anand Bharadvaja 2012-13- Completed 2013-14- Completed 2015-16- Ongoing	3	University of Delhi	10 5.5 5
2	Dr. Vandana Batra 2015-16-Ongoing	1	University of Delhi	6
3	Mr. Vikas Tyagi 2015-16-Ongoing	1	University of Delhi	5
4	Dr. Parthasarthy Pal 2012-13-Completed	1	University of Delhi	10

### List of Research Publications

#### Publications in International Journals (After 2012):

- **Bharadvaja A.**, Kaur S. and Baluja K. L. (2015), “*Electron-impact cross sections of SiH<sub>2</sub> using the R-matrix method at low energy*”, Physical Review A **91**, 032701, DOI: 10.1103/PhysRevA.91.032701, SJR-1828, SNIP-1.04, Journal h-index-190, (IF: 2.991).
- Shukla S.K, Sagar, Naman, Deepika, Sundaram, Prateeksha, Ankur, Arun, Srishti, Vaishali, Rakesh, Rizwana, **A. Bharadvaja** and Dubey G.C., (2015) “**Extraction of Cellulose Micro Sheet from Rice Husk: A Scalable Chemical Approach**”; DU Journal of Undergraduate Research and Innovation, 1(3) 187-194.
- Shukla S. K., Nidhi, Sudha, Pooja, Namrata, Charu, Akshay, Silvi, Manisha, Rizwana, **A. Bharadvaja** and Dubey G.C (2014), “**Metal Decontamination from Chemically Modified Rice Husk Film**”, Adv. Mat. Lett. 5(6), 352-355,



DOI-10.5185/amlett. 2014.1018,. SJR-0571, SNIP-1.02, Journal h-index-15 (IF:1.93).

- Yadav P., Kumar S, **Kumar S**, “**Characterization of Dielectric Silicon Nitride Thin films deposited by radio frequency plasma enhanced and electron cyclotron resonance chemical vapor deposition**” (2014) Global Journal for Research Analysis, **3**, Issue 3, 5, (I.F. - 3.1218).
- Yadav P., Kumar S, **Kumar S** “**Study of Suppression Transition Temperature of  $Y_{1-x}Pr_xBa_2Cu_3O_{7-\delta}$  System**” (2014). Indian Journal of Applied research, **4**, issue 3, 62. (I.F.- 3.6241).
- **Bharadvaja A**, Kaur S. and Baluja K. L., “**Electron-impact study of  $PO_2$  using the R-matrix method**”, (2013) Physical Review A, **87**, 062703, DOI: 10.1103/PhysRevA.87.062703 062703-1-9. SJR-1828, SNIP-1.04, Journal h-index-190, (IF: 2.991).
- Shukla S. K., Nidhi, Sudha, Pooja, Namrata, Charu, Akshay, Silvi, Manisha, Rizwana, **Bharadvaja A**, Dubey G. C., and Tiwari A “**Preparation and Characterization of Cellulose Derived from Rice Husk for Drug Delivery**”. (2013) Advanced Materials Letters, (2013). DOI: 10.5185/amlett. page 714-719,. SJR-0571, SNIP-1.02, Journal h-index-15 (IF:1.93).
- Shukla S. K., **Bharadvaja A**, Parashar G. K., Mishra A. P., Dubey G. C. and Tiwari A, “**Fabrication of ultra-sensitive optical fiber based humidity sensor using  $TiO_2$  thin film**”. (2012) Advanced Materials Letters, **3** (5), 365-370, DOI:10.5185/amlett.2012.5350, SJR-0571, SNIP-1.02, Journal h-index-15 (IF:1.93).

#### **Publications in International Journals (Before 2012):**

- Kaur S, **Bharadvaja A**. and Baluja K. L., “**Electron-impact study of  $S_3$  using the R-matrix method**”, (2011), Physical Review A, **83**, 062707, DOI: 10.1103/PhysRevA.83.062707 062707-1-10. SJR-1828, SNIP-1.04, Journal h-index-190, (IF:2.991).
- Shukla S. K., **Bharadvaja A.**, Tiwari A, Parashar G. K. and Dubey G. C., “**Synthesis and characterization of highly crystalline polyaniline film promising for Humid sensor**”. (2010) Advanced Materials Letters, **1**(2), 129-134, (IF:1.93).

- Ramanan S., Mishra T., **Luthra M.**, Pai R. and Das B. P., “**Signatures of Superfluid-to-Mott Insulator transition in cold bosonic atoms in a one dimensional optical lattice**” (2009), Phys. Rev. A, **79**, 013625. (I.F. 2.878).
- Mishra T., Pai R. V., Ramanan S., **Luthra M** and Das B. P. (2009) “**Supersolid and solitonic phases in the one-dimensional extended Bose-Hubbard Model**” Phys. Rev. A, **80**, 043614 (I.F. 2.878).
- **Pal P. S.**, Harinder, Singh P., Kwing L. Chan and Srivastava M. P. (2008) “**Turbulent compressible convection with rotation- penetration above a convection zone**”, (2008) Astrophysics and Space Science, **314**, Issue 1-3, pp. 231-239.
- **Luthra M.**, Mishra T., Pai R.V. and Das B.P., (2008) “**Phase Diagram of a bosonic ladder with two coupled chains**”, Phys. Rev. B, 78, 165104 (I.F. 3.691)
- **Pal P S**, Harinder, Singh P., Kwing L. Chan and Srivastava M. P (2007), “**Turbulent compressible convection with rotation penetration below a convection zone**”, Astrophysics and Space Science, **307**, Issue 4, pp. 399-407.
- **Batra V**, Dutta A. and Biswas S., “**The charge spectrum of ultra heavy cosmic ray ions(Z=68-96) measured onboard LDEF**” (2004) , Indian Journal of Pure and Applied Physics, **42**, 484, (IF:0.854)
- Dutta A, **Batra V**, and Biswas S., (2003) “**Abundance of actinides in cosmic radiation**”, Radiation Measurements, **36**, 287, (IF: 0.861)
- Dutta A, **Batra V**, Biswas S. and Brandt R., (2003), “**Charge fragmentation in cosmic radiation and the question of physical anomalous**”, Kerntechnik, **68**, 219, 2003 (IF:0.238)
- Dev A., **Sethi M** and Lohiya D., (2001) “**Linear Coasting in Cosmology and SNe Ia**”, Phys. Letters B, **504**, 207, (I.F. 3.955)
- Lohiya D and **Sethi M**, (2000) “**A Strategy for a realization of a problem free Einstein Hilbert Action along with a problem free Toy Cosmology**”: Gravitation and Cosmology. **6**:185-193, (I.F. 0.46)

- Lohiya D and **Sethi M**, (1999) **“A Program for a problem free Cosmology within a Framework of a Rich Class of Scalar Tensor Theories”**, Classical and Quantum, Gravity.**16**:1545-1563, (I.F 3.32)
- **Sethi M**, Batra A and Lohiya D. (1999), **“On Observational Constraints on Power-Law Cosmologies”** Phys. Rev. D. **D60**:10301, (I.F. 4.558)

#### List of paper presented in Conferences

- Singh R.K., **Batra V**, Arora A and Gaur N. K., (1991), **“High pressure phase transitions in diluted magnetic semiconductors”** , Proc. Solid State Physics Symposium, BARC, Bombay.
- **Batra V**, (2010), **“The abundance spectrum of cosmic ray ultra heavy ions in near earth space”** , National Conference on “Recent Advances in Science and Technology (NCRAS-2010)”, March 27-28,, Aggarwal College Ballabgarh, Faridabad, Haryana.
- **Batra V**, Dutta A. and Biswas S., (2003) **“Flux of ultra heavy cosmic ray’s ions onboard LDEF and Halo Diffusion Model”**, Proc. 13<sup>th</sup> National Symposium on Solid State Nuclear Tracks Detectors and their applications, Hyderabad, October 16-18.
- **Batra V**, Dutta A and Biswas S (2001), **“Relative abundance of ultra heavy ions in space, Proc. 12<sup>th</sup> National Symposium on Solid State Nuclear Tracks Detectors and their applications”**, Jalandher, October 29-31.
- Dutta A, **Batra V** and Biswas S. (2002) , **“Flux of ultra heavy cosmic ray ions (Z=68-97) measured onboard LDEF”**, Proc. 21<sup>st</sup> International Conference on Nuclear Tracks in solids, India, 21-25 .

## DEPARTMENT OF POLYMER SCIENCE

1. **Name of the Department** : Polymer Science
2. **Year of Establishment** : 2004
3. **Names of Programs / Courses offered (UG, PG, M.Phil., Ph.D., Integrated Masters; Integrated Ph.D., etc.):**
  - (a) **B.Sc. (H) (Annual Mode) - (2004-2010)**
  - (b) **B.Sc. (H) (Semester Mode) - (2011-12)**
  - (c) **B. Tech\_\_\_\_\_ (2013-2014)**
  - (d) **B.Sc. (H) \_\_\_\_\_ (2014-15)**
  - (e) **B.Sc. (H) polymer science in CBCS mode**
4. **Names of Interdisciplinary courses and the departments/units involved:**

Chemistry, Math, Physics, Computer, Students who had taken admission under FYUP program of Polymer Science studied various Interdisciplinary courses as Foundation courses and IMBH as per DU guidelines.
5. **Annual/ semester/choice based credit system (program wise) :**

Annual system	:	2004-2010
Semester system	:	2010
B. Tech	:	2013 only
Semester system	:	2014
Choice based credit system	:	2015
6. **Participation of the department in the courses offered by other departments:**

Computer Sciences, Chemistry, Food Technology, Instrumentation, Electronics (prior to 2007)
7. **Courses in collaboration with other universities, Industries, foreign institutions etc. NIL**
  - **Other Courses offered by the Department.** Certificate course on packaging.

**8. Details of courses/programs discontinued (if any) with reasons**

NIL although restructuring of various courses is being done from time to time as per DU guidelines.

**9. Number of Teaching posts**

Post	Sanctioned	Filled
Asst. Professors	8	3

**10. Faculty profile with name, qualification, designation, specialization, (D.Sc./D.Litt./Ph.D./M.Phil. etc.)**

Name	Qualification	Designation	Specialization	No. of Years of Experience	No. of Ph.D. Students Guided for the Last 4 years
Dr. S. K. Shukla	Ph. D.	Assistant Professor	Polymer Characterizations	14	1 Student working
Dr. Sidhharth Sirohi	M.Tech.Ph.D.	Assistant Professor	Polymer Technology	14	Nil
Dr. Susmita Dey Sadhu	Ph. D.	Assistant Professor	Rubber Technology	11	Nil

**11. List of senior visiting faculty (2012-16):**

Dr. Chandrashekhar Verma from AICTE (2015-16)

**12. Percentage of lectures delivered and practical classes handled (programme wise) by temporary faculty:**

61.59% (Approx) of the classes are being conducted by Ad-hoc faculty in 2013-2014

**13. Student -Teacher Ratio (program wise):**

12:1

**14. Number of academic support staff (technical) and administrative staff; sanctioned and filled :**

Post	Filled
Lab. Assistant	03

**15. Qualifications of teaching faculty with DSc/D.Litt/Ph.D/MPhil/PG.**

Name	Qualification	Designation
Dr. S. K. Shukla	Ph. D.	Assistant Professor
Dr. Sidhharth Sirohi	M.Tech, Ph.D.	Assistant Professor
Dr. Susmita Dey Sadhu	Ph. D.	Assistant Professor

**16. Faculty with successfully completed / ongoing projects from a) University  
b) National c) International funding agencies and grants received:**

S. No	Name of the Faculty	Number of National Projects	Funding Agency	Amount Sanctioned
1	Dr. S. K. Shukla 2012-13 & 2013-14- Completed and 2015-16- ongoing	4 (UGC-1, Innovation Projects; 2012-13, 2013-14; 2015-16)	UGC & Delhi University	2 Lac  10 Lac 5.5 Lac 5 Lac  Total = 22.5 Lac
2	Dr. S. Dey Sadhu 2012-13 & 2013-14- Completed and 2015-16- ongoing	3 Innovation Projects; 2012-13, 2013-14; 2015-16)	Delhi University	10 Lac 5 Lac 6 Lac  Total = 21 Lac
3	Dr. Sidhharth Sirohi 2013-14- Completed and 2015-16- ongoing	2 Innovation Projects; 2013-14; 2015-16)	Delhi University	5 Lac 5 Lac  Total = 10 Lac

**17. Departmental projects funded by DST-FIST; UGC, DBT, ICSSR, etc. and total grants received:**

UGC approved project titled "Synthesis, Characterization and Potential Applications of Nano Sized Transition Metal Oxides (Ti, Fe, Cu, Ni, and Zn) and

its polymer Blends” having Ref. No.: F.No. 8-3 (47)/2011 (MRP/NRCB).

### 18. Research Centre recognized by the University:

Dr. S. K. Shukla is recognised as research guide for supervising Ph. D. Students.

### 19. Publications:

#### • Publication per faculty

Name of the faculty	Publications in journal	Books edited	Chapters in books	Publication in Conference Proceeding	Paper presented in Conference
Dr. S. K. Shukla	19	1	5	Nil	13
Dr. Sidhharth Sirohi	3	Nil	Nil	Nil	8
Dr. Susmita Dey Sadhu	22	Nil	1	Nil	7

#### Citation Index:

Name	Citation Index	H-Index
Dr. S. K. Shukla	313	8
Dr. Sidhharth Sirohi	5	1
Dr. Susmita Dey Sadhu	568	10

### 20. Areas of consultancy and income generated:

Not Applicable

### 21. Faculty as members in

- **National committees b) International Committees c) Editorial Boards d) University Committees**
  - a) **National committees:** NIL
  - b) Editorial Board: Reviewer of “Dyes and Pigments” under Elsevier Publication
  - c) University Committees: All Faculties

## 22. Students projects

- a) **Percentage of students who have done in-house projects including inter departmental/program:** Percentage of students who have done in-house projects including interdepartmental/program: All second and third year students of B. Sc. Polymer Science from batch 2004-2007 to batch 2010-2013 i.e., 07 batches and bathes 2011-14 and 2012-2015 project have done in summer vacation after IV Semester, made project on the basis of Departmental and industrial R&D Training. The 20% students have been completed project in departments. However, the in-house projects have again been introduced in FYUP
- b) **Percentage of students placed for projects in organizations outside the institution i.e.in Research laboratories/Industry/other agencies:** 80 % students placed for projects in R& D organizations, Research laboratories and Industries outside the institution.

## 23. Awards/ Recognitions received by faculty and students

- Dr. S. K. Shukla: IAMM Scientist award 2011, ISCAS Bronze medal award 2011, 1<sup>st</sup> Prize in best poster award in APM-2013.
- Dr. Susmita Dey Sadhu: Received ***Best Paper Award Honorable Mention*** for Original Contribution for the paper entitled “*Acrylonitrile Butadiene Rubber Based Nanocomposites: Preparation & Mechanical Properties*” from **American Chemical Society**, Rubber Division, U.S.A., in 2003
- **Certificate of Appreciation for Best Display in the Theme Business Ideas:** DU Innovation Project BCAS 205 titled “To prepare edible packaged low cost healthy snack from fruit and vegetable waste and its effect on healthy respondents”. The team comprises of Principal Investigators: Dr. Meenakshi Garg, Department of Food Technology, **Dr. Susmita Dey Sadhu, Department of Polymer Science** and Dr. Shivani G. Varmani, Department of Biomedical Science.
- **Certificate for Best Innovative Idea:** DU innovation project BCAS 202 titled “Agro Waste Material Management: From Waste to Wealth”. The team comprises of Principal Investigators: **Dr. S. K. Shukla, Department of**



**Polymer Science**, Dr. Anand Bharadvaja, Department of Physics and Dr. Rizwana, Department of Food Technology.

#### **24. List of eminent academicians and scientists/ visitors to the department**

- Professor A. K. Gosh, Center of Polymer Science, Indian Institute of Technology Delhi, Delhi
- Dr. Joseman Jacob, IIT Delhi
- Dr. Bhanu Nandan, IIT Delhi
- Prof. Parbati Biswas, Dept.of Chemistry, DU
- Dr. G. C. Dubey, SSPL, New Delhi
- Prof. A. K. Bakshi, Department of Chemistry, University of Delhi, Delhi
- Professor D. Kumar, Department of Polymer Science and Applied Chemistry, Delhi Technological University, Delhi.
- Dr. R. K. Diwan, Sri Ram Institute for Industrial Research, University of Delhi, Delhi-07
- Professor G. L. Verma, Department of Polymer Science and Applied Chemistry, Delhi Technological University, Delhi.
- Professor A. K. Gosh, Center for Polymer Science and engineering, Indian Institute of Technology Delhi, Delhi
- Sh. Siddharth Mitra, Deputy General Manager, Indian Oil Corporation Ltd., New Delhi.
- Prof. S. K. Tandon, Pro-Vice Chancellor, University of Delhi.
- Dr. J Jacob, Center of Polymer Science, Indian Institute of Technology Delhi, Delhi
- Dr. G. C. Dubey, SSPL, New Delhi
- Prof. Monika Datta, Department of Chemistry, University of Delhi, Delhi.
- Prof. Bhuvanesh Gupta, Textile Technology, IIT-Delhi.
- Dr. P. Thavamani, Director, Irmra, Mumbai.
- Mr. Murlimohan Bayer Industries Ltd., New Delhi.

- Dr. Kinkar Mukherjee, Reliance Industries Ltd., New Delhi.
- Mr. Sunil Jain, Rajoo Engineers Ltd., New Delhi.
- Dr. R. K. Khandal, Director, Sriram College for Industrial Research, Delhi.
- Prof. A.K. Bakhshi, Vice Chancellor, Allahabad University.
- Prof. V.P. Sharma, Chairman, NASI, Delhi Chapter.
- Dr. P. Thavamani, Director, IRMRA, Mumbai.
- Dr. N. B. Singh, Sarda University.
- Dr. V. B. Lall, SCJ Plastics Limited.
- Prof. B.S. Garg, Deptt. Of Chemistry, University of Delhi.
- Dr. Madhusudan M. Bhagwat, Deputy General Manager, Jubilant Organosys Ltd., Noida.
- Sh. Bibhuti R. Pradhan, Chief Manager, Indian Institute of Petroleum Management, Gurgaon.
- Professor D. Kumar, Department of Polymer Science and Applied Chemistry, Delhi Technological University, Delhi.
- Prof. A. K. Bakshi, Deptt. Of Chemistry, University of Delhi.
- Prof. B. S. Garg, Deptt. of Chemistry, University of Delhi.

## **25. Seminars/ Conferences/Workshops organized & the source of funding**

### **National:**

- CSIR , UGC, SERB, ICMR, Department of Bio Technology (DBT), Ministry of New Renewable Energy, Ministry of Earth Sciences, Defence Research Development Organisation (DRDO), Board of Research in Nuclear Sciences and DST Funding
- A National seminar was organized on “Advancements in Packaging, Food and Social Impact” held on November 3, 2014 in college campus for which Dr. Susmita Dey Sadhu was the Convenor of the seminar and the funding agency was Indian Council of Medical Research (ICMR), SERB and DST.
- Department of Polymer Science organized a two day national symposium on

Innovations in Polymers towards Sustainability and Growth in association with National Academy of Sciences and Polymer Processing Academy on March 2-3, 2012, which was funded by Council of Scientific and Industrial Research (CSIR).

- A National Conference on “Solid State Chemistry and Allied Areas” held on May, 8-10, 2015 in association with Indian association of Solid State Chemists and Allied Scientists for which Dr. S. K. Shukla was one of the Editors and was funded by Department of Science & Technology (DST), Department of Bio Technology (DBT), Ministry of New Renewable Energy, Ministry of Earth Sciences, Defence Research Development Organisation (DRDO), UGC, Board of Research in Nuclear Sciences.

International : NIL

## 26. Student profile program/course wise:

Name of the Course/program (refer question no. 4)	Year wise enrolment	Selected	Enrolled In Ist year		Pass Percentage of three years
			*M	*F	
B. Sc (H) Polymer Science	2011-12	65	41	24	I year 95.38 II Year 100 III year 100
B. Sc (H) Polymer Science	2012-13	69	54	15	I year 94.83 II Year 98.33 III year 100
B. Tech. Polymer Science	2013-14	40	39	1	I year 92.31 II Year 96.08 III year 74.14
B. Sc. (H) Polymer Science	2014-15	51	41	10	I year 68.09 II Year 96.97 III year 43.33
B. Sc. (H) Polymer Science	2015-16	43	38	5	I year II Year III year

\*M=Male \*F=Female

**27. Diversity of Students**

Name of the Course	Year wise Enrolment	% of students from same state	% of students from other States	% of students from abroad
B. Sc (H) Polymer Science	2011-12	84.61	15.38	Nil
B. Sc (H) Polymer Science	2012-13	79.71	20.29	Nil
B. Teach. Polymer Science	2013-14	82.50	17.50	Nil
B. Sc. (H) Polymer Science	2014-15	74.51	25.49	Nil
B. Sc. (H) Polymer Science	2015-16	46.51	53.49	Nil

**28. How many students have cleared national and state competitive examinations such as NET, SLET, GATE, Civil services, Defense services, etc.:** NA

**29. Student progression (PASS OUT STUDENTS have been requested to send their whereabouts) Annexure –I**

Student progression	Against % enrolled
UG to PG	81.08 %
PG to M.Phil.	-
PG to Ph.D.	-
Ph.D. to Post-Doctoral	-
<ul style="list-style-type: none"> <li>Employed</li> <li>Campus selection</li> <li>Other than campus recruitment</li> </ul>	5.40 % 10.81 %
Entrepreneurship/Self-employment	1.70

**30. Details of Infrastructural facilities**

Department of Polymer Science has well equipped laboratories to train the students with synthesis, processing and testing of polymers. The laboratories are having all the latest facilities to meet their requirement of the experiments up to the mark of industrial standards. Apart from the syllabus experiments, students are also trained in handling, maintenance and trouble-shooting of various

equipments available in the laboratories. A few of notable equipment are Injection Molding Machine, Compression Molding Machine, Two-Roll Mill, Single Screw Extruder, Universal Testing Machine, Impact Tester, MFI Tester, Flammability Tester, Heat Distortion Temperature & Vicat Softening Point Apparatus, Ubbelohde Viscometers with Temperature Controlled Bath, Abrasion Tester, Hardness Testers, Opacity Tester, Carbon Content Measuring Apparatus, UV-Vis spectrometer, FT-IR, Rheometer etc.

**31. Number of students receiving financial assistance from college, university, government or other agencies**

Financial year	No. of Students
2009-10	2
2010-11	3
2011-12	2
2012-13	2
2013-14	1
2014-15	5
2015-16	10

**32. Details on student enrichment program (special lectures / workshops / seminar) with external experts:** Apart from attending class room lectures, students participate in various conferences, workshops, symposiums & industrial visits. Department of Polymer Science society (known as PEARLS) organizes popular lectures of eminent Professors & Scientists from various institutions to enhance awareness of students towards latest research and developments in the field of polymer science.

***Industrial visits/exposure visits by the students/summer training, winter training***

S. No.	Year	Name of the Institute	Duration	Number of Students
1.	2010	Different polymer based industry	2+2 Months	All students of B. Sc. Second and third year
2	2011	Different polymer based industry	2+2 Months	All students of B. Sc. Second and third year
3.	2012	Different polymer based industry	2+2 Months	All students of B. Sc. Second and third year
4.	2013	Different polymer based industry	2 Months	All students of B. Sc. Second year
5	2014	Different polymer based industry	2 Months	All students of B. Sc. Second year
6.	2015	Bony polymer (P) Ltd and other	2 Months	5 B. Tech. Polymer Science students

**Guest Lectures delivered (Name of the Expert, Talk Title) NIL**

**33. Teaching methods adopted to improve student learning**

Lectures, power point presentations, seminars etc.

**34. Participation in Institutional Social Responsibility (ISR) and Extension activities**

Department of Polymer Science society (PEARLS) organises various activities/seminars and conferences on polymer technology and awareness programs where students learn about the positive and negative impacts of polymers and its implication on society and environment.

The department is actively involved in various research activities where the research works mainly involve the idea of “waste to wealth” generation, biodegradable package development, development of useful products from food waste, polymeric waste etc. which will in turn help in reducing the waste management problem.

The students who are engaged in various research activities of the department get an opportunity to closely understand and use their ideas in important issues like the problem of Polymer waste and environmental issues. In long run this knowledge helps them to establish themselves in important positions in polymer academia and industries.

### **35. SWOC analysis of the department and Future plans**

#### **a. Strengths**

- Well qualified committed faculty actively involved in research activities along with regular teaching.
- Exposure to students and faculty of the college as well as other institutes to industry technology and production of polymer goods, , latest trends and areas of interest in research, opportunities, challenges, etc. through workshops, guest lectures by stalwarts of the relevant field.
- Faculty well qualified and competent in the different fields of Polymer Science.
- Books (References as well as text) by reputed authors and publishers available in the library.
- References Books for advance study and research also available in the library.

#### **b. Weaknesses**

- Due to lack of space at present, infrastructure constraints extra or spare time available to the students in the laboratory is limited.

#### **c. Opportunities**

- In house research, exploration can be carried in the laboratories itself where synthesis and testing based experimentation and exploration can be performed before the actual experiment are carried out.

#### **d. Challenges**

- In the present world where students are attracted and inclined towards quick and high pay packages, the challenge is to motivate them towards core research and studies.

#### **List of Research Publications:**

##### **Dr. Sidhharth Sirohi Publications:**

- Sirohi S, Singh D, Nain R, Parida D, Agrawal A K and Jassal M (2015)

“Electrospun Composite Nanofibres of PVA Loaded with Nanoencapsulated n-Octadecane”, RSC advances, 5, 34377-34382, 2046-2069, 3.289.

- Pani B, Sirohi S, Barwa M S (2013) “Effect of Seasonal Variation on Metal Speciation in Leachate from a Thermal Power Plant Ash Pond: Impact on Ground Waters”, International Journal of Engineering Sciences & Research Technology, 2(10), 2927-2937, 2277-9655, 1.852.
- Pani B, Sirohi S, Singh D (2013) “Studies on the Effects of Various Flame Retardants on Polypropylene”, American Journal of Polymer Science, 3(4), 63-69, 2163-1352.

**Paper presented in conference:**

- Sidhharth Sirohi, Krishna Dutt, Ratyakshi Nain, Ashwini K. Agrawal, Naveen Yadav, Astha Gangwar, Shoaib Khan, Sabita Yadav “Studies on Biodegradability of Thermosetting Polyester Film of Lactic Acid, Maleic Anhydride and Ethylene Glycol” in Vth National Symposium (supported by DST, UGC and Royal Society of Chemistry) held on 2-3 Feb., 2016 at Gurunank Dev University Amritsar. -National Conference
- Sidhharth Sirohi, Krishna Dutt, Ratyakshi Nain, Ashwini K. Agrawal, Naveen Yadav, Astha Gangwar and Shoaib Khan "Synthesis and Characterization of Printable Thermosetting Polyester Films" in One day seminar on Polymer Modification, Processing and Characterization held on January 25, 2016 at Bhaskaracharya College of Applied Sciences (Delhi).
- Sidhharth Sirohi, Krishna Dutt, Ratyakshi Nain, Ashwini K. Agrawal, Naveen Yadav, Astha Gangwar, Shoaib Khan, Sabita Yadav “Studies on Biodegradability of Thermosetting Polyester Film of Lactic Acid, Maleic Anhydride and Ethylene Glycol” in One day seminar on Polymer Modification, Processing and Characterization held on January 25, 2016 at Bhaskaracharya College of Applied Sciences (Delhi).
- Sidhharth Sirohi, Ratyakshi Nain, Krishna Dutt, Nishant Jain, Ravinder Singh, Piyush Wadhwa, Gajendra Saini and Kamlesh Panwar, Synthesis of Well Dispersed ZnO Nanoparticles for Nanofinishing Textiles and Biomedical Applications in International Conference on Nanostructured Polymeric Materials and Polymer Nanocomposites (ICNPM 2015) held on 13, 14 and 15



November at Mahatma Gandhi University, Kottayam (Kerala), India-  
International Conference-Invited Talk

- Sidhharth Sirohi, Manjeet Jassal, Ashwini K. Agrawal, Dharendra Singh and G. Saini, PVAcNanofibres with Nanocapsules of PCM obtained via. RAFT Miniemulsion Polymerization, Oral presentation in Asian of Polymer Association 2013 ( APA-2013 ) (21-23 Feb. 2013) at Chandigarh (India)-International Conference
- Sidhharth Sirohi, Manjeet Jassal, Ashwini K. Agrawal, PVA Nanofibres with Nanocapsules of PCM obtained via. RAFT Miniemulsion Polymerization, Oral presentation in 41st TRS - Textile Research Symposium 2012 (TRS-2012 )(12-14, Sep.2012) at Guimaraes (Portugal)-International Conference
- Sidhharth Sirohi, Manjeet Jassal, Ashwini K. Agrawal, Synthesis and Characterization of Polymeric Surfactants Via RAFT Miniemulsion Polymerization, Oral presentation in HEALTH CARE-2012 (under Asian Polymer Association Congress) (20-24 Feb.2012) - at Delhi-International Conference
- Sidhharth Sirohi, Manjeet Jassal, Ashwini K. Agrawal, Synthesis and Characterization of Polymeric Surfactants via RAFT Polymerization, Oral Presentation in Golden Jubilee Young Researcher's Symposium on Emerging Trends in Textile / Fiber Research & Applications (11-12 March 2011) at IIT, Delhi-2011- National Conference

**Dr. Susmita Dey Sadhu Publications:**

- Sabharwal P. K., Garg M., Aditi and Sadhu S. D. (2016) "Advancement in conventional packaging – edible packaging", World Journal of Pharmaceutical and Life Sciences, Vol. 2, Issue 3, 160-170, 2454-2229, 3.347.
- Sadhu S. D., Soni A and Garg M (2016) "Thermal Studies of the Starch and Polyvinyl Alcohol based Film and its Nano Composites", Journal of Nanomed Nanotechnol, 2157-7439, doi:10.4172/2157-7439.S7-002, 3.573.
- Sadhu S. D. and Garg M (2015) "Preparation and Thermal and Morphological Characterization of Nanocomposite Based on Phenol Formaldehyde – Nylon

Thermoset IPN”, International Journal of Advanced Research, 3(10), 505 – 510, 2320-54075.336.

- Garg M., Sabharwal P. K., Sharma S., Varmani S. G. and Sadhu S. D. (2015) “Evaluation of Mathematical models to describe thin layer drying and to determine drying rate of potato peels using tray drying”, International Journal of Scientific Engineering and Applied Science, 1(7), 1-15, 2395-3470, 3.466.
- Varmani S. G., Panda H., Sadhu S. D. and Garg M. (2014) “Beta-Thalassemia major and Osteoporosis: Etiology, Pathogenesis, Diagnosis and Management”, International Journal of Pharmacy and Integrated Life Sciences, 2(17), 64-78, 2320-0782,1.9
- Varmani S. G., Arora H., Garg M. and Sadhu S. D. (2014) “Iron Overload and Chelation Therapy in Beta- Thalassaemia (major), International Journal of Pharmacy and Integrated Life Sciences, 2(17), 47-63, 2320-0782,1.9.
- Sadhu S. D., Chakraborty S., Garg M. and Varmani S. G. (2014), Review: Polymers in Energy Harvesting, International Journal of Engineering Science Invention, 3(4), 01-05, 2319-6734, 1.786.
- Sadhu S. D., Soni A., Varmani S. G. and Garg M. (2014) “Preparation of starch- polyvinyl Alcohol (PVA) Blend Using Potato and study of Its Mechanical Properties”, International Journal of Pharmaceutical Invention, 3(3), 33-37, 2319-6718, 1.695.
- Varmani S G, Mehta K, Garg M and Sadhu S D (2014) “Review Paper: Diabetes Mellitus in  $\beta$ -Thalassaemia Major- Pathogenesis and Management Strategies; International Journal of Food and Nutritional Sciences, 3(3), 127, 2320-7876, 1.021.
- Garg M, Sharma S, Varmani S G and Sadhu S D (2014) “Drying Kinetics of Thin Layer Pea Pods using Tray Drying”, International Journal of Food and Nutritional Sciences, 3(3), 61, 2320-7876, 1.021.
- Sharma R, Jain P, Sadhu S D and Kaur B (2013) “Mechanical and thermal properties of impact modified PBT blends and impact modified PBT

Nanocomposites”, Journal of Polymer Engineering, 33(6), 489, 0334-6447, 0.5.

**Publications prior to 2012:**

- Sadhu S D, Rajeev R S, and Bhowmick A K (2008) “Thermal degradation of elastomer based nanocomposites, Polymers & Polymer Composites”, 16(5), 283-293, 0967-3911, 0.255.
- Maiti M, Sadhu S and Bhowmick A K (2006) “Ethylene-Octene Copolymer (Engage)–Clay Nanocomposite: Preparation & Characterization”, Journal of Applied Polymer Science, 101(1), 603-610, 0021-8995, 1.600.
- Sadhu S and Bhowmick A K (2005) “Unique rheological behavior of rubber based nanocomposites”, Journal of Polymer Science: Part-B: Polymer Physics, 43, 1854-1864, 1099-0488, 3.83.
- Sadhu S and Bhowmick A K (2005) “Morphology Study of Rubber Based Nanocomposite by Transmission Electron Microscopy & Atomic Force Microscopy”, Journal of Materials Science, 40, 1633-1642, 0022-2461, 2.163.
- Sadhu S and Bhowmick A K (2005) “Effect of Nano clay on the Dynamic Mechanical Properties of Styrene Butadiene & Acrylonitrile Butadiene Rubber Vulcanizates”, Rubber Chemistry & Technology, 78(2), 321-335, 0035-9475, 0.44.
- Maiti M, Sadhu S and Bhowmick A K (2005) “Effect of Carbon Black on Properties of Rubber Nanocomposites”, Journal of Applied Polymer Science, 96, 443-451, 0021-8995, 1.600.
- Sadhu S and Bhowmick A K (2004) “Preparation and Characterization of Styrene Butadiene Rubber Based Nanocomposites and Study of their Mechanical Properties”, Advanced Engineering Materials, 6(9), 738-742, 1438-1656, 1.75.
- Sadhu S and Bhowmick A K (2004) “Preparation and Properties of Nanocomposites Based on Acrylonitrile-Butadiene Rubber, Styrene-Butadiene Rubber, and Polybutadiene Rubber”, Journal of Polymer Science: Part B: Polymer Physics, 42, 1573-1585, 1099-0488, 3.83.

- Sadhu S and Bhowmick A K (2004) "Preparation and Properties of Styrene-Butadiene Rubber Based Nanocomposites: The Influence of the Structural and Processing Parameters", Journal of Applied Polymer Science, 92, 698-709, 0021-8995, 1.600.
- Maiti M, Sadhu S and Bhowmick A K (2004) "Brominated Polyisobutylene-co-paramethylstyrene (BIMS) - Clay Nanocomposites: Synthesis & Characterization", Journal of Polymer Science: Part B: Polymer Physics, 42, 4489-4502, 1099-0488, 3.83.
- Sadhu S and Bhowmick A K (2003) "Effect of Chain Length of Amine & Nature & Loading of Clay on Styrene Butadiene Rubber-Clay Nanocomposites", Rubber Chemistry & Technology, 76(4), 860-875, 0035-9475, 0.44.

**Paper/Poster presented in conference:**

- Omair Malik and Susmita Dey Sadhu, Paper presented during "one day seminar on Polymer Modification, processing and characterisation" on 25th January 2016 in Bhaskaracharya college of Applied Sciences.
- Susmita Dey Sadhu, paper presentation in the Conference on Advancements in Polymer Science & Technology on *Thermal Studies of the polyvinyl alcohol-starch nanocomposite* held on Oct. 29-31, 2015 at Saurashtra University, Rajkot, India.
- Susmita Dey Sadhu, paper presentation in International Conference on Polymeric Biomaterials, Bioengineering & Biodiagnostics on *Gelatin-Wax Based emulsion for coating of Processed Food Products*, held on October 27-30, 2014, New Delhi.
- Susmita Dey Sadhu, A. Soni, Meenakshi Garg and Shivani G. Varmani, *Study of Mechanical Properties of Starch-Poly Vinyl Alcohol Blend Based Nanocomposites for Food Packaging*, paper presentation in Asian Polymer Association (APA) International Conference on 20-21st February 2014, India Habitat Centre, New Delhi.

- Sadhu S D, Raj R, Garg M and Varmani S G (2014) “Bio-Polymer: A solution to Environmental Hazard”, International Conference on Polymers and Allied Materials(ICPAM-2014), Department of Materials Science and Engineering, IIT Patna, pp 293.
- Susmita Dey Sadhu, Kushagra Malik, Meenakshi Garg and Shivani G Varmani, (2014) “Atomic Force Microscopy for characterization of polymers”, International Conference on Polymers and Allied Materials(ICPAM-2014), Department of Materials Science and Engineering, IIT Patna , pp. 245.
- Susmita Dey Sadhu,paper presentation in International Conference on Nanomaterials & Nanotechnology on18-21 Dec, 2011 at Conference Centre, University of Delhi, India.

**Patent Filed:**

- INDIA –Patent Application No. 471/DEL/2013, Dated –February 19, 2013 entitled “NUTRITIONAL COMPOSITIONS AND METHODS FOR MANUFACTURING THE SAME”.
- INDIA –Patent Application No. 473/DEL/2013, Dated –February 19, 2013 entitled “COATING COMPOSITIONS AND METHODS FOR PREPARATION THEREOF”

**Book Chapter:**

- Madhuchhanda Maiti, Susmita Sadhu and Anil K. Bhowmick, Contributed a chapter titled Elastomer-Clay Nanocompositesin “Current Topics in Elastomer Research by A.K. Bhowmick, Taylor and Francis Group, CRC Press; 2008.ISBN-13;978-0-8493-7317-6

**Dr. S. K. Shukla Publications:**

- Shukla S K, Govender P P, Agorku E S (2016) "A resistive type humidity sensor based on crystalline tin oxide nanoparticles encapsulated in polyaniline matrix”, Microchimica Acta, 183 (2), 573-580, 0026-3672, 4.831.

- Shukla S K, Sagar, Naman, Deepika, Sundaram, Prateeksha, Ankur, Arun, Srishti, Vaishali, Rakesh, Rizwana, Bharadvaja A and Dubey G C (2015) "Extraction of Cellulose Micro Sheet from Rice Husk: A Scalable Chemical Approach", DU Journal of Undergraduate Research and Innovation, 1(3), 187-194.2395-2334.
- Pandey N, Shukla S K, Singh N B (2015) "Zinc oxide-urea formaldehyde nanocomposite film as low-cost adsorbent for removal of Cu(II) from aqueous solution", Advanced Materials Letters, 2015, 6(2), 172-178, 0976-3961, 1.024.
- Shukla S K, Nidhi, Sudha, Pooja, Namrata, Charu, Akshay, Silvi, Manisha, Rizwana, Bharadvaja A and Dubey G C (2014) "Metal decontamination from Chemically Modified Rice Husk Film", Advanced Material Letters, 5(6), 352-355, 0976-3961, 1.024.
- Shukla S K, Parlak O, Shukla S K, Mishra S, Turner A P F, Tiwari A (2014) "Self-reporting micellar polymer nanostructures for optical urea bio-sensing", Industrial & Engineering Chemistry Research, 53, 8509–8514, 0888-5885, 2.567.
- Shukla S K, Nidhi, Sudha, Pooja, Namrata, Charu, Akshay, Silvi, Manisha, Rizwana, Bharadvaja A and Dubey G C, Tiwary A (2013) "Preparation and Characterization of Cellulose Derived from Rice Husk for Drug Delivery", Advanced Materials Letters, 4(9), 714-719, 0976-3961, 1.024.
- Shukla S K (2013) "Synthesis and characterization of polypyrrolegrafted cellulose for humidity sensing", International Journal of Biological Macromolecules, 62, 531-536, 0141-8130, 2.858
- Shukla S K , Singh N B, Rastogi R P (2013) "Efficient ammonia sensing over zinc oxide/ polyaniline nanocomposite", Indian Journal of Engineering and Materials Science, 20(4), 319-324, 0975-1017, 0.456.
- Shukla S K, Bharadvaja A, Parashar G K, Mishra A P and Dubey G C, Tiwari A (2012) "Fabrication of ultra-sensitive optical fiber based humidity sensor using TiO<sub>2</sub> thin film", Advanced Materials Letters, 3(5), 365-370, 0976-3961, 1.024.

- Shukla S K, Deshpande S R, Shukla S K, Tiwari A (2012) "Fabrication of a tunable glucose biosensor based on zinc oxide/chitosan-graft-poly(vinyl alcohol) core-shell nanocomposite", *Talanta*, 99, 283-287, 0039-9140, 3.545.
- Shukla S K, Vamakshi M, Bharadavaja A, Shekhar A, Tiwari A (2012) "Fabrication of electro-chemical humidity sensor based on zinc oxide/polyaniline nanocomposites", *Advanced Materials Letters*, 3(5), 421-425, 0976-3961, 1.024.
- Shukla S K (2012) "Synthesis of polyaniline grafted cellulose suitable for humidity sensing", *Advanced Materials Letters*, 19(6), 417-420, 0976-3961, 1.024.

**Publications prior to 2012:**

- Rastogi R P, Singh N B, Shukla S K (2011) "Nano-size copper oxide encapsulated urea - formaldehyde resin film for arsenic (III) removal from aqueous solutions", *Indian Journal of Engineering and Materials Science*, 18(5), 390-392, 0975-1017, 0.456.
- Shukla S K, Bharadvaja A, Tiwari A, Parashar G K, Dubey G C (2010) "Synthesis and characterization of highly crystalline polyaniline film promising for humid sensor", *Advanced Materials Letters*, 1(2), 129-134, 0976-3961, 1.024.
- Rastogi R P, Singh N B, Shukla S K (2010) "Synthesis of NiO nano crystals through nitrate eutectic melt", *Indian Journal of Engineering and Materials Sciences*, 17(6), 477-480, 0975-1017, 0.456.
- Shukla S K, Tiwari A, Parashar G K, Mishra A P, Dubey G C (2009) "Exploring fiber optic approach to sense humid environment over nano-crystalline zinc oxide film", *Talanta*, 80, 565-571, 0039-9140, 3.545.
- Tiwari A, Mishra AP, Dhakate S R, Khan R, Shukla S K (2007) "Synthesis of electrically active biopolymer-SiO<sub>2</sub> nanocomposite aerogel", *Materials Letters*, 61, 4587-4590, 0167-577X, 0.985.
- Shukla S K, Parashar G K, Mishra A P, Misra P, Yadav B C, Shukla R K, Bali L M, Dubey G C (2004) "Nano-like magnesium oxide films and its

significance in optical fiber humidity sensor”, *Sensors and Actuators B*, 98, 5-11.0925-4005, 4.758.

- Lakshmi, Shukla S K and Singh S K (2002) “Synthesis of New Types of Complexes by the Interaction of Rare Earth Ions With Sodium Sulfide in Solid State in Presence of Sun Light”, *Progress in Crystal Growth and Characterization of Materials*, 97-101, 0960-8974, 4.750.

**Paper/ Poster/ presented in Conferences & Publication in Conference proceedings:**

- Rizwana, SK Shukla, Anand Bhardvaja, ankur Rawat, Arun Kumar Gupta, Pratiksha, Shristi Mazumdar, vaishali Mahajan, Rakesh Bindu, Sundaram, Naman, Deepika, GC Dubey, poster presented on *Development and characterization of biocomposite film from rice Husk and its application for packaging cookies*, polymers in conference on Solid State Chemistry and Allied Areas, organized by Bhaskaracharya College of Applied Sciences (BCAS) in association with ISCAS at BCAS, New Delhi held on May, 8-10 2015.- National Conference.
- S K Shukla paper presented on *Chemically modified optical fiber for chemical and bio-chemical sensor application*, polymers in conference on Solid State Chemistry and Allied Areas, organized by Bhaskaracharya College of Applied Sciences (BCAS) in association with ISCAS at BCAS, New Delhi held on May, 8-10 2015.- National Conference.
- Neeta Pandey, S K Shukla, N B Singh, presented paper on *Photo-degradation of methylene blue over Fe<sub>2</sub>O<sub>3</sub> impregnated polyacrylamide grafted polyvinyl alcohol hydrogel*, polymers in conference on Solid State Chemistry and Allied Areas, organized by Bhaskaracharya College of Applied Sciences (BCAS) in association with ISCAS at BCAS, New Delhi held on May, 8-10 2015.- National Conference.
- S K Shukla, Oral presentation was given at Sector conference: Smart Materials and Surfaces- Bangkok, 26-28 August 2014, Bangkok, Thailand.
- S K Shukla, Nidhi, Sudha, Pooja, Namrata, Charu, Aksay, Silvi, Manisha, Rizwana, Anand Bhardvaja and G.C. Dubey, poster presentation on



*Preparation and Characterization Agro-Waste Derived Cellulose Membrane for Biomedical Devices* in Emerging Trends in Development of Drugs and Devices, Department of Chemistry, University of Delhi, 21st-23rd January, 2013.

- S K Shukla, Nidhi, Priyaka, Sudha, Pooja, Namrata, Charu, Rizwana, Anand, presented a paper on *Metal Decontamination from Bioactive Film Development from Rice Husk* in National Conference on Solid State Chemistry and Allied Areas at Dr H S Gour University, 15<sup>th</sup>-17<sup>th</sup> February 2013, Sagar, M. P.
- S K Shukla, Nidhi, Priyanka, Sudha, Pooja, Namrata Pant, Charugarg, Rizwana and AnandBhardvaja presented poster on *Development of Hard Packaging Materials from Bagasse* in International Conference on Advancement in Polymeric Materials(APM-2013), 1st-3rd March 2013, Lucknow.
- Rizwana, Nidhi, ManishaRawat, Priyanka, SilviGarg, Vandana, AkshayBhalla, Sudha Joshi, Pooja Sharma, Namrata Pant, Charugarg, SK Shukla, Anand Bhardvaja and GC Dubey presented poster on *Development and Efficiency of Rice Rusk based packaging on the Shelf Life of Eggs* in International Conference on Multifunctional Materials, Energy and Environment (ICMFMEE) at Sharda University, Noida from 21-23 Aug 2013.
- S K Shukla presented poster on *Efficient Metal removal from bioactive film developed from rice huskin* Advanced Material World Congress at IZMIR, TURKEY on September 16-19, 2013.
- S K Shukla presented paper in Solid State Chemistry and Allied Areas, 7th National Symposium and Conference held on Nov. 24-26, 2011 by the Department of Chemistry, JamiaMiliaIslamia, New Delhi.
- S K Shukla presented paper in Frontiers in Polymer Science, National Science organized by Department of Chemistry, HP University, Shimla held on Nov. 18-19, 2011.
- S K Shukla presented paper in National Conference on Futuristic Materials held on 15-17 Sept., 2011, at Sharda University, Noida.

- S K Shukla has participated as Invited speaker in the Institute of research & Development, Gujarat Forensic Sciences University held at G.F.S.U., Gandhi Nagar.

**Book Chapter:**

- S K Shukla, (2013) *Nanostructure Polymers in function Generating Substitute and Organ Transplants*; Nanomaterials in Drug Delivery, Imaging, and Tissue Engineering, pages 395-423, 978-1-118-29032-3.
- A Tiwari, S Pilla, P Mani, S K Shukla, AM Rahatgaonkar, P Kumari, H Li, S Li, (2010) *Stimuli-responsive redox gum Arabic and polyaniline copolymers capable for biosensor applications*; Polysaccharides: Development, properties and Applications, pages 1-16, 9781608765447.
- S K Shukla, (2012) *Advancement in cellulose based Bio-Plastics for Biomedicals*; Intelligent Nanomaterials: Processes, Properties and Applications, pages 467-486, 978-0-470-93879-9.
- S K Shukla and A Tiwari, (2010) *Tailored Polysaccharides based on cellulose/polyelectrolytes: preparation, properties and applications*; Polysaccharides: Development, properties and Applications, pages 201-212, 978-1-61209-095-5.
- S K Shukla, NG Giri, VK Singh, A Tiwari, (2010) *Cellulose based bio-nanocomposites: Tailoring and applications*; Recent Developments in Bio-Nanocomposites for Biomedical Application, pages 467-497, 978-1-61761-008-0.

**Book Edited:**

- Ashutosh Tiwari and SK Shukla, (2014) Advance Materials Series, *Advanced Carbon Materials and Technology*, by Wiley, 978-1-118-68623-2.

# **ANNEXURE**

## Annexure I

**BHASKARACHARYA COLLEGE OF APPLIED SCIENCES**

(UNIVERSITY OF DELHI)

**SECTOR-2, PHASE-I, DWARKA, NEW DELHI-110075****Phone : 25087597, Fax : 25081015**

Ref. No. BCAS/PO/2016/NAAM/1743

Dated ....13/10/2016.....

**Declaration by the Head of the Institution**

I certify that the data included in this Self-Study Report (SSR) are true to the best of my knowledge.

This SSR is prepared by the institution after internal discussions, and no part thereof has been outsourced.

I am aware that the Peer team will validate the information provided in this SSR during the peer team visit.

  
13.10.16

Signature of the Head of the institution

with seal:

**Dr. BALARAM PANI**  
Principal  
Bhaskaracharya College of Applied Sciences  
(University of Delhi)  
Sector-2, Phase-I, Dwarka, New Delhi-75

Place:

Date:

## Annexure IIa

66

UNIVERSITY GRANTS COMMISSION  
BAHADUR SHAH ZAFAR MARG  
NEW DELHI

July, 1998

No.F.8-32/98(CPP-I)

The Asstt. Registrar  
University of Delhi,  
Delhi - 110 007.

College of Applied Sciences  
Diary No. 366 Dt. 15 JUL 1998

Sub : List of Colleges prepared under Section-2(f) of the  
UGC Act, 1956-Inclusion of New Colleges.

Sir,

I am directed to refer to your letter No.CB-II/98/10(72)/60 dated 12/15-06-98 on the above subject and to say that the name of the following college has been included in the above list under constituent college(s) teaching upto Bachelor's Degree:-

Name of the College	Year of Estt.	Remarks
Bhaskaracharya College of Applied Sciences, Pusa, New Delhi - 110 012 (Dr. C.R. Chopra).	1995	The college is eligible to receive central assistance in terms of rules framed under Section 12-B of the UGC Act, 1956.

Yours faithfully,

*(D.D. Mehta)*  
(D.D. Mehta)  
Under Secretary

Copy forwarded to:-

1. The Principal, Bhaskaracharya College of Applied Sciences, Pusa, New Delhi - 110 012.
2. The Secretary, Govt. of India, Ministry of Human Resource Development, Deptt. of Education, 2A-14 Section, New Delhi.
3. All Sections: UGC
4. SO (ED-III/200 section) UGC, New Delhi
5. DTP Cell, UGC
6. Guard file.

*C.P. Arora*  
(C.P. Arora)  
Section Officer

## Annexure IIb

Annexure-2

23236351, 23232701, 23237721, 23234116  
23235733, 23232517, 23236735, 23239437

10(3)

S.O. No. 29/2004

विश्वविद्यालय अनुदान आयोग  
बहादुरशाह जफर मार्ग C-13  
नई दिल्ली 110 002

UNIVERSITY GRANTS COMMISSION  
BAHADURSHAH ZAFAR MARG  
NEW DELHI-110 002

भारतीय विज्ञान संस्थान

फ. 1-1/2004 (CPP-I)

August, 2004

**OFFICE CORRIGENDUM**

The name of Bhaskaracharya College of Applied Science has already been included under Section 2 (f) & 12 (B) of the UGC Act, 1956 in the directory of Colleges as on 31.3.2004.

The above College has shifted from Pusa Complex, New Delhi to Dwarka, New Delhi. The exact location of the College is as under:

Bhaskaracharya College of Applied Science,  
Sector-2, Phase-I, Dwarka,  
New Delhi-110 075.

Yours faithfully  
*(Mrs. Urmil Gulati)*  
Under Secretary

**Copy to:-**

1. The Registrar, University of Delhi, Delhi-110 007.
2. The Principal, Bhaskaracharya College of Applied Science, Sector-2, Phase-I, Dwarka, New Delhi-110 075.
3. Publication Officer, UGC-Website,
4. All Sections, UGC, New Delhi.
5. Guard file.




## Annexure IIIa

AICTE File :  
Sh. Surinder  
25/5/15 A C-33

S.O. Admn  
18/5/15

Date: 29/04/2015

425  
28/5/15

 **All India Council for Technical Education**  
(A Statutory body under Ministry of HRD, Govt. of India)  
7th Floor, Chandralok Building, Janpath, New Delhi - 110 00  
Phone: 23724151/52/53/54/55/56/57 FAX: 011-23724183 www.aicte-india.org

F. No. AICTE/NWRO/DU Colleges/BCAS/1-2557889311/2013-14

To,  
The Vice Chancellor  
University of Delhi  
University of Enclave  
Delhi - 110007

Sub: Letter of Special Approval for the Technical courses run by colleges affiliated to University of Delhi for the academic year 2013-14.

Ref: MHRD letter No. 20-2/2015 TS-II dated 16-02-2015

Sir/Madam,

University of Delhi has changed the duration of all Degree Courses from 3 years to 4 years in the A/Y 2013-14. The duration has again been rolled back to 3 years on the direction of UGC. The duration of B. Tech Programme has however been retained to 4 Years. Further, the approval of AICTE for the 4 Year B. Tech Programme has not been obtained by these institutions. With a view to streamline this, UGC has issued guidelines to University of Delhi vide letter No. 43-10/2013(CU dated 29/06/2014 and University of Delhi forwarded the UGC guidelines to all its colleges for necessary action.

Further, MHRD vide letter No. 20-2/2015 TS-II dated 16-02-2015 has informed that the matter regarding approval of 4 year B. Tech Programmes under the colleges of University of Delhi has been examined in the Ministry. In the light of MHRD directions under clause 20 (I), chapter 4 of AICTE Act, 1987 and the subsequent approval of E.C. in its meeting held on 07/04/2015 and Council Meeting held on 09/04/2015 and 27-04-2015, I am directed to convey the onetime special approval to

Regional Office	NWRO, Chandigarh	Application Id	1-2557889311
Name of the Institute	BHASKARACHARYA COLLEGE OF APPLIED SCIENCES	Institute Address	(UNIVERSITY OF DELHI) SECTOR 2, PHASE 1, DWARKA, NEW DELHI- 110075
Institute Type	Government aided		

to conduct following courses with the intake indicated below for the academic year 2013-2014

Application Id : 1-2557889311				Course	Full / Part Time	Affiliating Body	Intake for 2013-14 as certified by University of Delhi	PIO	NRI
S. No.	Programme	Shift	Level						
1	ENGINEERING AND TECHNOLOGY	1st Shift	UG	COMPUTER SCIENCE	Full Time	University Of Delhi	52	NA	NA
2	ENGINEERING AND TECHNOLOGY	1st Shift	UG	ELECTRONICS	Full Time	University Of Delhi	39	NA	NA
3	ENGINEERING AND TECHNOLOGY	1st Shift	UG	FOOD TECHNOLOGY	Full Time	University Of Delhi	43	NA	NA
4	ENGINEERING AND TECHNOLOGY	1st Shift	UG	INSTRUMENTATION	Full Time	University Of Delhi	108	NA	NA
5	ENGINEERING AND TECHNOLOGY	1st Shift	UG	POLYMER SCIENCE	Full Time	University Of Delhi	40	NA	NA

## Annexure IIb

## All Institutions shall fulfill the following general conditions:

1. The Institution shall not conduct any course(s) in the field of technical education in the same premises / campus and / or in the name of the Institution without prior permission / approval of AICTE. If found so, appropriate action as per the notified regulations shall be initiated against the Institution.
2. The institution shall operate only from the approved location, and that the institution shall not open any off campus study centers / extension centers directly or in collaboration with any other institution / university / organization for the purpose of imparting technical education without obtaining prior approval from the AICTE. If found so, appropriate action as per the notified regulations shall be initiated against the Institution.
3. The tuition and other fees shall be charged as prescribed by the Competent Authority of the University of Delhi within the overall criteria prescribed by the Council from time to time. No capitation fee shall be charged from the students / guardians of students in any form. If found so, appropriate action as per the notified regulations shall be initiated against the Institution by the Competent Authority of the University of Delhi.
4. The teaching and other staff appointed for the course shall fulfill the qualifications and experience prescribed by the Council from time to time and pay scales are as per the norms prescribed by the Council from time to time.
5. It shall be mandatory for the institution to maintain a Website providing the prescribed information. The Website information must be continuously updated as and when changes take place.
6. It is open for the Competent Authority of the University of Delhi to carry out random inspections round the year for verifying the status of the Institutions to ensure maintenance of norms and standards.
7. The Institution by virtue of the approval given by the Council shall not automatically become claimant to any grant-in-aid from the Central or State Government.
8. The Institute shall take appropriate measures for prevention of ragging in any form, in the light of AICTE regulation "Prevention and Prohibition of Ragging in Technical Institutions, Universities including Deemed to Universities imparting technical education" Regulation 2009 (F.No. 37-3/Legal/AICTE/2009 dated 01/07/2009). In case of failure to prevent the instances of ragging by the Institutions, appropriate action as per the notified regulations will be taken.
9. This is a "One time approval" given to the institute for the batch admitted in 2013-14 only and will not be valid for any other technical course without prior approval of the Council.
10. The institute shall submit compliance report of the affidavit regarding the deficiencies existing in the institution within the time duration, failing which, appropriate disciplinary action will be taken.

The Management of the Institute shall strictly follow further conditions as may be specified by the Council from time to time. The Competent Authority of the University of Delhi will monitor the Academic Progress and also other administrative matters from time to time and any violation of the above conditions and / or non-adherence to the norms and standards prescribed by the Council, mis-representation of facts and submitting factually incorrect information will be liable for penal action.



Dr P.B. Ullagaddi  
Advisor-II (Approval Bureau)

## Copy to:

1. **The Regional Officer,**  
Plot No. 1A, 5<sup>th</sup> Floor, DTE(Pb.) Building,  
Dakshin Mark, Sector 36-A, Chandigarh-160 036
2. **The Secretary to Govt**  
**Higher Education, MHRD, Shastri Bhawan, New Delhi**
3. **The Director Of Technical Education,**  
(Higher & Technical Education)  
Muni Maya Ram Marg,  
Pitampura,  
Near T V. Tower, Delhi-110088
4. **The Registrar, University of Delhi** to submit an undertaking stating that the syllabus of the B. Tech courses under the Four Year Undergraduate Programme introduced by it in the AY 2013-14 is at par to the curriculum imparted in AICTE approved institutions. Further the University shall have periodic review of the academic progress in respect of courses under intimation to the Council.
5. **The Principal / Director,**  
Bhaskaracharya College of Applied Sciences  
(University of Delhi)  
Sector 2, Phase 1, Dwarka  
New Delhi- 110075
6. **Guard File(AICTE)**



## Annexure IVa

Bhaskaracharya College of Applied Sciences  
(University of Delhi)  
Sector-2, Dwarka, New Delhi-110075.

## Income and Expenditure A/c of the College for the year 2012-2013.

Previous Yr. 2011-12	Expenditure	Current Yr. 2012-13	Previous Yr. 2011-12	Income	Current Yr. 2012-13
50592033.00	<b>SALARY &amp; ALLOWANCES</b>	57771688.00	6060.00	<b>TUITION &amp; OTHER FEES</b>	5590.00
3600.00	To Teaching Staff	3600.00	161100.00	By Admission Fee	193860.00
0.00	To Bursar Allowance	5197.00	671250.00	By Tuition Fee	807750.00
18278181.00	To Vice-Principal Allowance	21406516.00	447500.00	By Laboratory Fee	553500.00
6480.00	To Non-Teaching Staff	8100.00		Room Fee	
12330.00	To Washing Allowance	12127.00	223750.00	BY Computer Lab. Fee	276750.00
1800.00	To Special Allowance (Family)	1800.00	134250.00	By Water & Elect. Fee	161550.00
169246.00	To Cashier Allowance	165792.00	179000.00	By Garden Fee	236000.00
0.00	To Bonus	0.00	111875.00	By Magazine Fee	134875.00
423996.00	To Deputation Allowance	467210.00		<b>OTHER RECEIPTS</b>	
79518.00	To Pension	86722.00	2157000.00	By Computer Fee	2488867.00
1800000.00	To Family Pension	1704000.00	1262000.00	By Polymer Science	1637000.00
1000.00	To Guest Lecture Payment	40000.00	1197000.00	By Biomedical Sc.	1403000.00
1530206.00	To Honorarium	1311837.00	8950.00	By Identity Card	56910.00
1465339.00	To Reimbursement of Tuition Fee	1039886.00	72805.00	By Fine A/c	96428.00
0.00	To Medical Reimbursement	128928.00	42190.00	By Misc. Income	39802.00
	To Gratuity A/c		6157.00	By Canteen Rent	2500.00
76962.00	<b>LIBRARY</b>	261999.00	13440.00	By Licence Fee	13440.00
38524.00	LIBRARY N.Paper/Jou./Sub. A/c	21916.00	4660.00	By Water Charges	4360.00
	<b>SCIENCE CONTINGENCY A/c</b>		75755.00	By Electricity Charges	93244.00
54478.00	To Biology	119033.00	788.00	By Penal Interest	294.00
14987.00	To Physics	15000.00	294.00	By RTI	436.00
256020.00	To Chemistry	324436.00		Interest A/c	1346463.56
24000.00	To Electronics	28625.00	1324677.00	Retirement Benefits	121700.00
280652.00	To Food Technology	372666.00	5196416.00	A/c	
201647.00	To Computer	158347.00			
14920.00	To Instrumentation	20957.00			
55157.00	To Biochemistry	35876.50			
<b>75381075.00</b>		<b>85512260.50</b>	<b>13296917.00</b>		<b>9674319.56</b>

Page 1



## Annexure IVb

Bhaskaracharya College of Applied Sciences  
(University of Delhi)  
Sector-2, Dwarka, New Delhi-110075.

Previous Yr. 2011-12	Expenditure	Current Yr. 2012-13	Previous Yr. 2011-12	Income	Current Yr. 2012-13
75381076.00	B.F.	85512260.50	13296917.00	B.F.	9674319.56
161431.00	To Polymer Science	372374.00			
418449.00	To Biomedical Science	550110.00			
0.00	Human Communication Contingency	0.00	683000000.00	By Grant-in-Aid (Rec.)	855000000.00
0.00	Mathematics Contingency A/c	7500.00			
258533.00	Microbiology Contingency A/c	243846.00			
0.00	Sports Contingency A/c	111584.00	20768944.70	By Unspent Balance (Recurring 2011-12)	20677848.62
	<b>OFFICE EXPENSES</b>				
33667.00	To Postage & Courier A/c	34284.00			
42828.00	To Advertisement	22891.00			
71285.00	To Printing	66947.00			
119482.00	To Stationery	68261.00			
2944.00	To Replacement of Bulbs & Tubes etc. A/c	2640.00			
196753.00	To Office Contingency	98447.00			
36743.00	To Conveyance	44572.00			
14966.00	To Refreshment	16967.00			
20981.00	To Maintenance of Office Equipments	20699.00			
48207.00	To Telephone	41080.00			
56982.00	To Garden Expenses	54569.00			
117117.00	To Maintenance of Scientific Equipments	97197.00			
3000.00	To Audit Fees	3000.00			
39127.00	To Maintenance of Staff Car	58650.00			
4500.00	To TA to Staff & Others	25300.00			
60325.00	To Diesel A/c	48819.00			
0.00	To Legal Charges	8720.00			
1850180.00	To Electricity Expenses	2223764.00			
0.00	To TA to attend the interview	0.00			
78938556.00		89732481.50	102365861.7		115852168.18



Page 2

## Annexure IVc

Bhaskaracharya College of Applied Sciences  
(University of Delhi)  
Sector-2, Dwarka, New Delhi-110075.

Previous Yr. 2011-12	Expenditure	Current Yr. 2012-13	Previous Yr. 2011-12	Income	Current Yr. 2012-13
78938556.00	B.F.	89732481.50	102365861.70	B.F.	115852168.18
704228.00	To Property Tax A/c	704228.00			
27039.00	Overtime Allowance	34010.00			
95359.00	To Water Expenses	69268.00			
2000.00	To Registration fee for approved conference/seminar	21000.00			
36330.00	Repair & Replacement of Furniture A/c	1200.00			
722245.00	To Sanitation Services A/c	628665.00			
8765.00	To Bank Charges	11762.00			
5153.00	To Car Insurance	4230.00			
347379.00	To LITCHC A/c	343396.00			
0.00	Uniform A/c	11662.00			
795669.08	To Security Services A/c	604014.00			
0.00	To Encashment of Leave A/c	192345.00			
5290.00	To Reimbursement of Newspaper Bill A/c	13840.00			
	To Difference in Trail Balance	10.00			
81688013.08	Total Expenditure Rs.	92372111.50			
20677848.62	Unspent Balance (Rec.) (2012-13)	23480056.68			
102365861.70	TOTAL Rs.	115852168.18	102365861.70	TOTAL Rs.	115852168.18

Treasurer

Principal

Bursar

S. O. (Accounts)

AUDITOR'S REPORT : Signed in terms of our report of even date attached  
For M/s. Sanjay Rathi & Co.

CHARTERED ACCOUNTANTS



Place : New Delhi  
Date : 16-9-13

Page 3



## Annexure IVd

**BHASKARACHARYA COLLEGE OF APPLIED SCIENCES  
(UNIVERSITY OF DELHI)  
SECTOR-2, DWARKA, NEW DELHI-110075.**

**ANNEXURE FOR NON-RECURRING EXPENDITURE FOR THE YEAR 2012-2013.**

Previous Yr. 2011-12	Payments	Current Yr. 2012-13	Previous Yr. 2011-12	Receipts	Current Yr. 2012-13
582242.00	Physics Apparatus A/c	779025.00			
302006.00	Chemistry Apparatus A/c	287629.00	7500000.00	GRANT-IN-AID A/C	10078000.00
478710.00	Biology Apparatus A/c	376981.00			
799869.00	Electronics Apparatus A/c	205622.00			
688894.00	Food Tech. Apparatus A/c	103163.00			
365355.00	Biochemistry Apparatus A/c	54766.00			
1263982.00	Instrumentation Apparatus A/c	1009826.00			
0.00	Computer Apparatus A/c	0.00		<b>UNSPENT BALANCE</b>	
1629069.00	Bio. Medical Apparatus A/c	1049629.00			
1161878.00	Polymer Sc. Apparatus A/c	224831.00	7476370.87	Non-Recurring (2011-12)	3856502.87
0.00	Mathematics Apparatus A/c	0.00			
1485995.00	Microbiology Apparatus A/c	160523.00		Advance refunded by NICS	167.00
0.00	Human Communication	0.00	4298.00		
	Apparatus A/c				
	<b>LIBRARY BOOKS &amp; INVESTMENTS</b>				
1856391.00	Library Books A/c	747859.00			
0.00	Library Equipments A/c				
	<b>BUILDING FUND A/C</b>				
0.00	Library Furniture A/c	0.00			
213728.00	Furniture A/c (Office)	302304.00			
0.00	Office Equipment A/c	0.00			
<b>10828119.00</b>	<b>TOTAL Rs.</b>	<b>5302158.00</b>	<b>14980668.87</b>	<b>TOTAL Rs.</b>	<b>13934669.87</b>



Page 1

## Annexure IVe

**BHASKARACHARYA COLLEGE OF APPLIED SCIENCES  
(UNIVERSITY OF DELHI)  
SECTOR-2, DWARKA, NEW DELHI-110075.**

ANNEXURE FOR NON-RECURRING EXPENDITURE FOR THE YEAR 2012-2013.

Previous Yr. 2011-12	Payments	Current Yr. 2012-13	Previous Yr. 2011-12	Receipts	Current Yr. 2012-13
10828119.00	B.F.	5302158.00	14980668.87	B.F.	13934669.87
102515.00	Sports Good Apparatus A/c	276750.00			
85365.00	Garden Apparatus A/c	0.00			
108167.00	Extra Curricular Activity A/c	0.00			
0.00	Advance payment for purchase of Equipments in foreign currency	1121217.00			
		6700125.00			
3856502.87	Unspent Balance Non-Recurring (2012-13)	7234544.87			
14980668.87	<b>TOTAL Rs.</b>	<b>13934669.87</b>	<b>14980668.87</b>	<b>TOTAL Rs.</b>	<b>13934669.87</b>

S. O. (Accounts)

Bursar

Principal

Treasurer

AUDITOR'S REPORT : Signed in terms of our report of even date attached  
For M/s. Sanjay Rathi & Co.  
CHARTERED ACCOUNTANTS



PROP.

Place : New Delhi  
Date : 16-9-13

## Annexure IVf

**BHASKARACHARYA COLLEGE OF APPLIED SCIENCES  
(UNIVERSITY OF DELHI)  
SECTOR-2, DWARKA, NEW DEHI - 110075.**

**ANNEXURE FOR SPORTS EXPENDITURE FOR THE YEAR 2012-2013.**

Previous Yr. 2011-12	Payments	Current Yr. 2012-13	Previous Yr. 2011-12	Receipts	Current Yr. 2012-13
0.00	Sports Goods Expenditure	0.00	0.00	GRANT-IN-AID A/C	0.00
0.00		0.00		<u>UNSPENT BALANCE</u>	
0.00		0.00			
0.00		0.00			
0.00		0.00	15150.00	Sports Grant (2011-12)	15150.00
0.00		0.00			15150.00
15150.00	Unspent Balance Sports Grant (2012-2013)	15150.00			
15150.00	<b>TOTAL Rs.</b>	15150.00	15150.00	<b>TOTAL Rs.</b>	15150.00

*Beshwamy*  
S. O. (Accounts)

*[Signature]*  
Bursar

*[Signature]*  
Principal

*[Signature]*  
Treasurer

AUDITOR'S REPORT : Signed in terms of our report of even date attached  
For M/s. Sanjay Rathi & Co.  
CHARTERED ACCOUNTANTS

Place : New Delhi  
Date : 16-9-13



PROP.



## Annexure IVg

**BHASKARACHARYA COLLEGE OF APPLIED SCIENCES  
(UNIVERSITY OF DELHI)  
SECTOR-2, DWARKA, NEW DELHI-110075.**

ANNEXURE OF EXPENSES MADE DURING THE YEAR 2012-2013 UNDER UGC 11th PLAN GRANT.

Previous Yr. 2011-12	Payments	Current Yr. 2012-13	Previous Yr. 2011-12	Receipts	Current Yr. 2012-13
				<u>GRANT RECEIVED</u>	
0.00	Books & Journals (Tfr. to D. U. Books Grant)	81749.00			
0.00	Equipment	0.00	0.00	For 11th Plan	0.00
0.00	Field work	0.00			
0.00	Remedial Courses	0.00	540000.00	For 11th Plan (merged scheme)	0.00
0.00	Examination Reform	0.00			
12000.00	Participation of teacher in Academic conference	500.00	2666165.35	Unspent Balance (2011-12)	3170254.35
23911.00	Merged Scheme	256774.00			
35911.00	<b>Total Expenditure Rs.</b>	<b>339023.00</b>			
3170254.35	<b>Unspent Balance (2012-13)</b>	<b>2831231.35</b>			
3206165.35	<b>TOTAL Rs.</b>	<b>3170254.35</b>	<b>3206165.35</b>	<b>TOTAL Rs.</b>	<b>3170254.35</b>

*gesham*  
S. O. (Accounts)

*[Signature]*  
Bursar

*[Signature]*  
Principal

*[Signature]*  
Treasurer

AUDITOR'S REPORT : Signed in terms of our report of even date attached  
For M/s. Sanjay Rath & Co.  
CHARTERED ACCOUNTANTS

Place : New Delhi  
Date : 16-9-13



## Annexure IVh

F.Y. 2013-14

**BHASKARACHARYA COLLEGE OF APPLIED SCIENCES**  
**UNIVERSITY OF DELHI**

INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31-MARCH-2014

**A. Income**

(Amount Rs.)

	Schedule	Current year	Previous Year
Grants in aid / subsidies	6	106,231,291	82697791.94
Academic receipts	7	6,042,110	7,955,652
Income from Investments/Interest earned	8	1,246,154	1,346,464
Other Income	9	362,846	372,194
Total (A)		113,882,401	92,372,102
<b>B. Expenditure</b>			
Establishment expenses	10	105,440,762	84,736,994
Academic expenses	11	1,449,813	2,644,272
Administrative expenses	12	6,991,826	4,990,836
Total (B)		113,882,401	92,372,102

Balance Being Excess of Income over Expenditure

-

Less:- Utilised for Capital Expenditure

-

Balance being surplus / (Deficit) carried to corpus / Capital Fund

-

Significant Accounting Policies

13

Contingent liabilities &amp; Notes as Accounts

14

S. O. (Accounts)

Bursar

Principal

Hony. Treasurer/Chairman

In terms of our separate report of even date attached  
**FOR HARI & ASSOCIATES**  
**CHARTERED ACCOUNTANTS**

(PANKAJ GUPTA)  
 PARTNER



Place: Delhi

Dated: 18/11/2014



## Annexure IVi


**BHASKARACHARYA COLLEGE OF APPLIED SCIENCES**  
**UNIVERSITY OF DELHI**

INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31-MARCH-2015


A. Income		(Amount Rs.)	
	Schedule	Current year	Previous Year
Grants in aid / subsidies	6	107,108,668.40	106231290.70
Academic receipts	7	5,852,275.00	6042110.00
Income from Investments/Interest earned	8	1,820,549.00	1246154.00
Other Income	9	419,233.00	362846.00
Total (A)		115,200,725.40	113882400.70
<b>B. Expenditure</b>			
Establishment expenses	10	108,370,932.00	105440762.00
<u>Academic expenses</u>			
DHE Grant	11	755,727.00	1449813.00
UGC Grant	11	14,560.00	
Administrative expenses	12	6,059,506.40	6991825.70
Total (B)		115,200,725.40	113882400.70

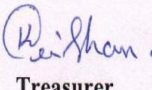
Balance Being Excess of Income over Expenditure	-	0.00
Less:- Utilised for Capital Expenditure	-	0.00
Balance being surplus / (Deficit) carried to corpus / Capital Fund	-	0.00

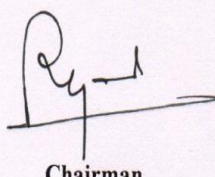
Significant Accounting Policies 13  
 Contingent liabilities & Notes as Accounts 14

  
 S. O. (Accounts)


  
 Bursar

  
 Principal

  
 Treasurer

  
 Chairman

In terms of our separate report of even date attached  
**FOR HARI & ASSOCIATES**  
**CHARTERED ACCOUNTANTS, FR. NO.001852C**

  
 (SACHIN JAIN)  
 PARTNER  
 M.No. 094187

Place: Delhi

Dated: 30-10-15

**BHASKARACHARYA COLLEGE OF APPLIED SCIENCES**

(UNIVERSITY OF DELHI)

SECTOR-2, PHASE-I, DWARKA, NEW DELHI-110075

Tel.: 25081015, Telefax: 25087597

E.mail: [bhaskaracharya.college@gmail.com](mailto:bhaskaracharya.college@gmail.com)

Ref. No. BCAS/PO/2016/NAAC/1744

Dated: 13/10/2016

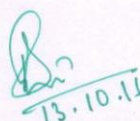
**Certificate of Compliance**This is to certify that **Bhaskaracharya College of Applied Sciences** fulfills all norms:

1. Stipulated by the affiliating University and/or
2. Regulatory Council/Body (such as UGC, NCTE, AICTE, MCI, DCI, BCI, etc.) and
3. The affiliation and recognition is valid as on date.

In case the affiliation/ recognition is conditional then a detailed enclosures with regard to compliance of conditions by the institution will be sent.

It is noted that NAAC's accreditation, if granted, shall stand cancelled automatically once the institution loses its University affiliation or recognition by the Regulatory Council, as the case may be.

In case the undertaking submitted by the institution is found to be false then the accreditation given by NAAC is liable to be withdrawn. It is also agreeable that the undertaking given to NAAC will be displayed on the College website.

  
13.10.16**Dr. Balaram Pani**  
Principal**Dr. BALARAM PANI**  
Principal  
Bhaskaracharya College of Applied Sciences  
(University of Delhi)  
Sector-2, Phase-I, Dwarka, New Delhi-75





**BHASKARACHARYA COLLEGE OF APPLIED SCIENCES  
(UNIVERSITY OF DELHI)  
SECTOR-2, PHASE -1, DWARKA, NEW DELHI-110075**