

# ANNUAL REPORT

वार्षिक प्रतिवेदन

2016 - 17



भारतीय प्रौद्योगिकी संस्थान रुड़की  
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE



## **Vision**

**To attain global level of excellence in education and to create sustainable and equitable society through innovative research in Science and Technology**

## **Mission**

**To create an environment that shall foster the growth of intellectually capable, innovative and entrepreneurial professionals, who shall contribute to the growth of Science and Technology in partnership with industry and develop and harness it for the welfare of the nation and mankind.**

# वार्षिक प्रतिवेदन **ANNUAL REPORT**

**2016 - 2017**

01 अप्रैल 2016 - 31 मार्च 2017  
(01 April 2016 - 31 March 2017)



भारतीय प्रौद्योगिकी संस्थान रुड़की  
**INDIAN INSTITUTE OF TECHNOLOGY ROORKEE**



**Visitor**  
**His Excellency Sri Pranab Mukherjee**  
President of India

**Chairman, IIT Council**  
Hon'ble Shri Prakash Javadekar  
*Minister of Human Resource Development*  
*Government of India*

**Chairman, Board of Governors**  
**Prof. Ashok Misra**

**Director**  
**Prof. Pradipta Banerji (upto 31.10.2016)**  
**Prof. P.K. Ghosh (w.e.f. 01.11.2016 to 08.01.2017)**  
**Prof. Ajit K. Chaturvedi (w.e.f. 09.01.2017)**

**Deputy Director**  
**Prof. Vinod Kumar (upto 30.05.2016)**  
**Prof. P.K. Ghosh (w.e.f. 31.05.2016)**

**Deans**

Academics	: Prof. Pramod Agarwal
Administration	: Prof. U.P. Singh (upto 09.05.2016) Prof. Rama Bhargaya (w.e.f. 10.05.2016)
Alumni Affairs & International Relations	: Prof. Sandeep Singh
Faculty Affairs	: Prof. Deepak Kashyap (upto 30.04.2016) Prof. B.K. Mishra (w.e.f. 01.05.2016)
Finance & Planning	: Prof. P.K. Ghosh (upto 09.05.2016) Prof. U.P. Singh (w.e.f. 10.05.2016)
Sponsored Research & Industrial Consultancy	: Prof. M. Parida
Students' Welfare	: Prof. D.K. Nauriyal
<b>Registrar</b> <b>Sri Prashant Garg</b>	



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## ANNUAL REPORT : AT A GLANCE 2016-2017

### DEPARTMENTS/CENTRES/UNITS

Academic Departments/Centres	22
Centres of Excellence	08
Service Centres	05
Other Units	05

### GRANTS

*(Amount in Lacs of Rs.)*

<b>MHRD</b>		<b>33847.00</b>
• Plan Grant	-	9700.00
• Non-Plan Grant	-	24147.00
<b>UGC</b>		<b>90.00</b>
<b>Others</b>		<b>11165.89</b>
• CSIR	-	181.00
• Research & Consultancy	-	11004.89
<b>Total</b>		<b>45102.89</b>

### STUDENTS ADMITTED

B.Tech./B.Arch./IDD	966
PG Degree	903
Research Scholars	352
<b>Total</b>	<b>2221</b>

### STUDENTS STRENGTH

B.Tech./B.Arch./IDD	4289
PG Degree	1820
Research Scholars	1816
<b>Total</b>	<b>7925</b>

### NUMBER OF DEGREES AWARDED

B.Tech./B.Arch.	1091
PG Degree/R.G. Diploma	922
Ph.D.	292
<b>Total</b>	<b>2305</b>

### FACULTY/STAFF STRENGTH

Faculty in Position	476
Scientist/Others in Position	20
Non-Teaching Staff in Position	
• Group A	79
• Others	662

### RESEARCH PAPERS

Journals	1332
Conference/Symposia	670
<b>Total</b>	<b>2002</b>

### CONSULTANCY PROJECTS

Number of New Projects	797
Outlay (Lacs of Rs.)	5095.30

### SPONSORED RESEARCH PROJECTS

Number of New Projects	134
Outlay (Lacs of Rs.)	6769.37



## Director's Report



Since its establishment as the first technological Institution in Asia in 1847, the Institute has played a vital role in providing manpower and know-how to the country and the world at large. More than 41 distinguished professors and scientists visited the Institute from abroad and 135 faculty members and officers went abroad to attend various programmes. The Institute ranks amongst the best technological institutions in the world and has contributed to all sectors of technological development.

The institute has witnessed a substantial increase in students' intake and we have made every possible effort to develop the infrastructure and necessary facilities to meet the needs of the students.

In order to increase collaborative learning and experience sharing, 34 (23+11) MoUs have been signed with several institutions of higher learning and research within India and abroad.

### Admission

GATE 2017 ONLINE examination was conducted this year for the fourth time as a fully computer based test in all 23 papers (AE, AG, AR, BT, CE, CH, CS, CY, EC, EE, EY, GG, IN, MA, ME, MN, MT, PE, PH, PI, TF, XE and XL) on two weekends i.e. 04-05 February 2017 and 11-12 February 2017 in 8 sessions. IIT Roorkee was the Organizing Institute for GATE 2017. For the first time GATE 2017 examinations were conducted in Bangladesh (Dhaka), Ethiopia (Addis Ababa), Nepal (Kathmandu), Singapore (Singapore), Sri Lanka (Colombo) and United Arab Emirates (Dubai). A new paper Atmospheric and Oceanic Sciences has been added in XE (Engineering Sciences) paper. Multi-session papers were reduced from 3 to 2 for better normalization.

Our Institute Festival Thomsa-2016 was organized during 21<sup>st</sup> – 23<sup>rd</sup> Oct 2016 and Technical Festival Cognizance was organized during 24<sup>th</sup>–26<sup>th</sup> March 2017.

### Training & Placement

More than 2800 companies were invited for campus placement. Our students received 1167 job offers and 80 companies visited the campus for the first time. More than 703A Category job offers were received.

### Convocation and Other Events

The 16<sup>th</sup> Annual Convocation of the Institute was held on September 30, 2016. Hon'ble Dr. Mukesh D. Ambani, Chairman, Managing Director Reliance Industries Limited (RIL) Mumbai was the Chief Guest. In the Convocation, 1091 Degrees of B.Tech. /B.Arch., 676 Degrees of M. Tech. (Engg.)/ M. Arch./ MURP/ P.G. Diploma and 246 Degrees of M.Sc / M. Tech. (Science) MCA/MBA were awarded. In addition, 292 PhD Degrees were conferred in various disciplines.

### Faculty

The Institute has been able to attract outstanding faculty members. The Institute has 428 highly qualified faculty members, 13 Emeritus Fellows, 35 Visiting faculty/PDF/IF and 20 scientific & other Academic Staff.

### Sponsored Research and Industrial Consultancy

The total numbers of New Sponsored Research Projects were 134 with annual turnover of Rs. 6769.375 lakhs. The numbers of new Consultancy projects have been 797 with a total outlay Rs. 5095.30 lakhs.

### Finance and Accounts

In 2016-17, I.I.T. Roorkee received a sum of Rs. 33,847.00 lakhs from MHRD to meet plan and non-plan expenditure; MHRD contributed Rs. 24,147.00 lakhs towards Non-plan Grant, and Rs.9,700.00 lakhs towards Plan grant. Institute receipts totaled Rs. 6,761.43 lakhs, contribution from UGC & CSIR are Rs. 90.00 & 161.03 lakhs was also received respectively. Auditing of annual accounts for the year 2016-17 was completed.

### Acknowledgement

The Institute places on record its grateful acknowledgment of the financial support provided by MHRD, MNRE, DST, CSIR, DBT, MCIT, NAIP, DRDO, BMTPC, BARC, Max Planck Society, Germany, UNDP, UKIERI and other governmental and non-governmental agencies.

December, 2017

Aji K. Chaturvedi

Director





**(L to R) Hon'ble Dr. Mukesh D. Ambani, Chief Guest; Hon'ble Prof. Ashok Misra, Chairman, Board of Governors and Prof. Padipta Banerji, Director, IIT Roorkee on the occasion of Annual Convocation held on September 30, 2016**



**Dr. Mukesh D. Ambani, awarding degree on the occasion of Annual convocation held on September 30, 2016.**



**Prof. Pradipta Banerji, Director, IIT Roorkee awarding degree on the occasion of Annual convocation held on September 30, 2016.**



**After taking degree the students are coming outside the convocation hall and throwing their caps in air with cheers.**

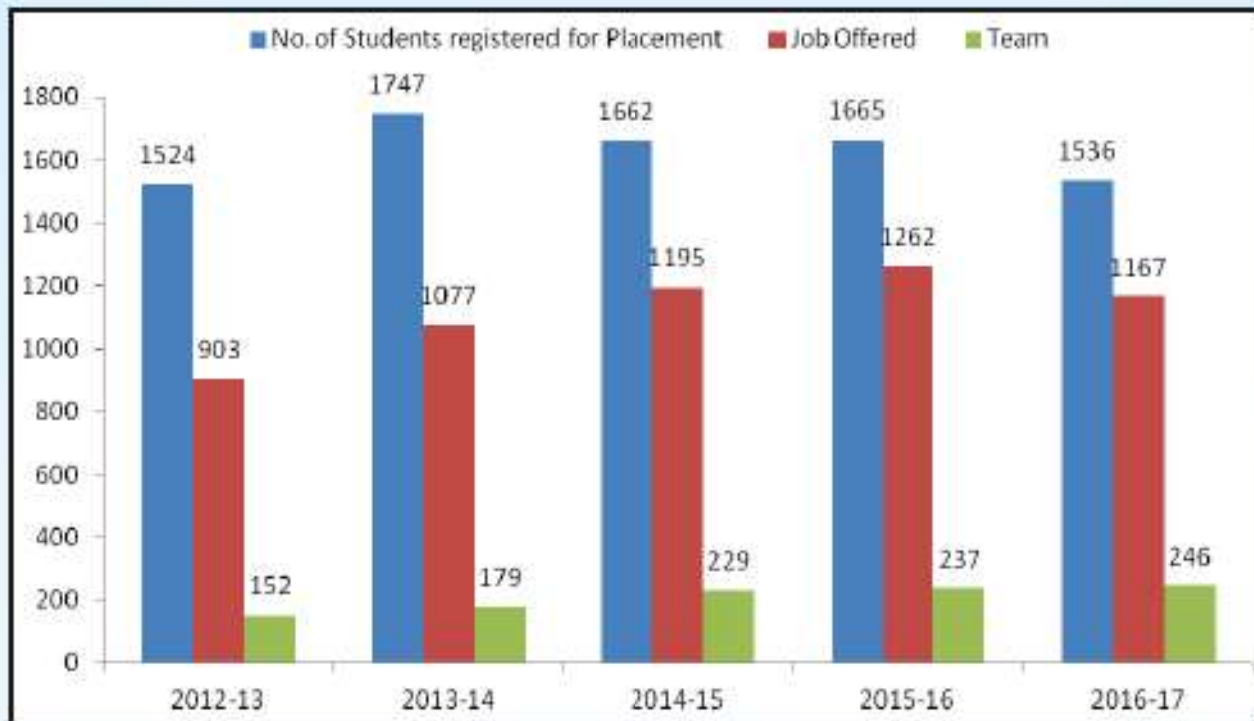




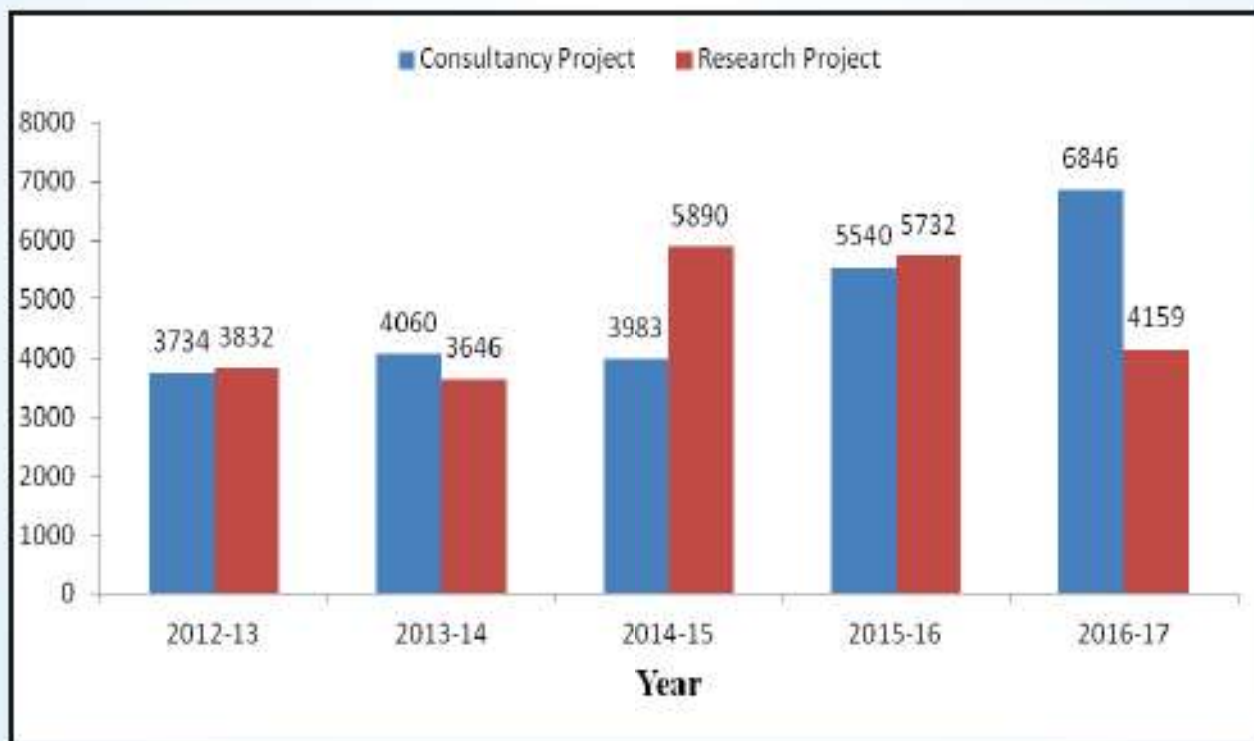
**"OUR'S IS THE SMARTEST TEAM"**



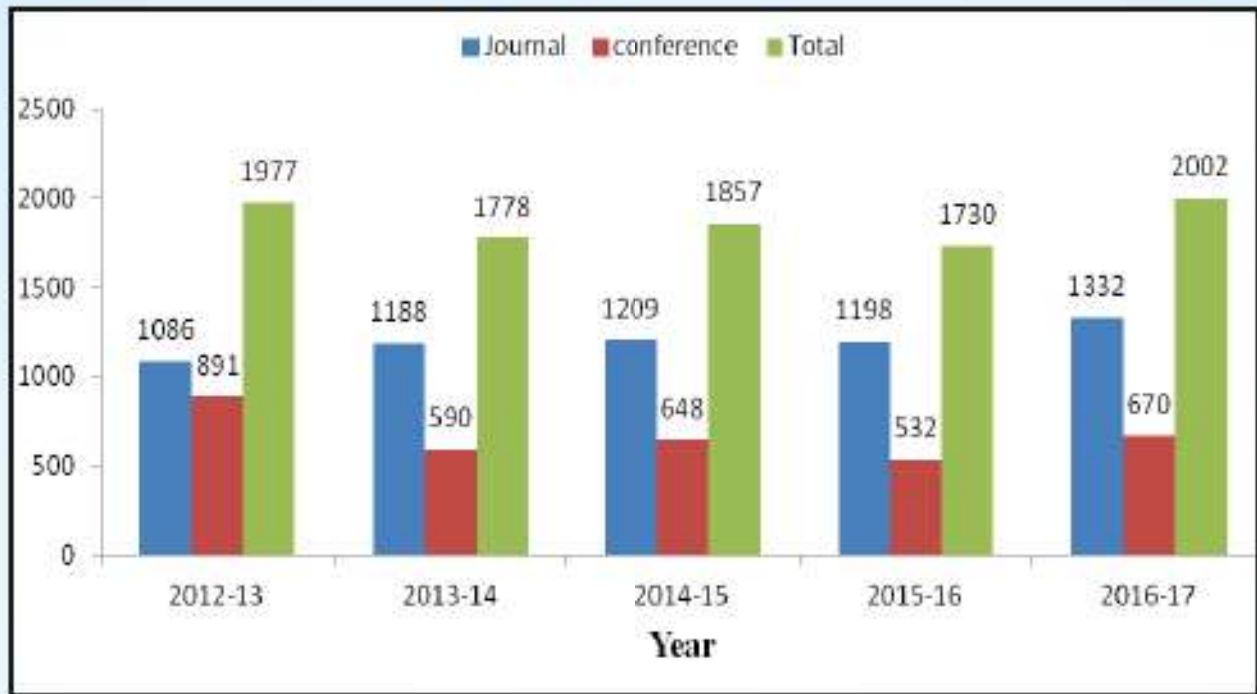
**IIT ROORKEE CONTINGENT**



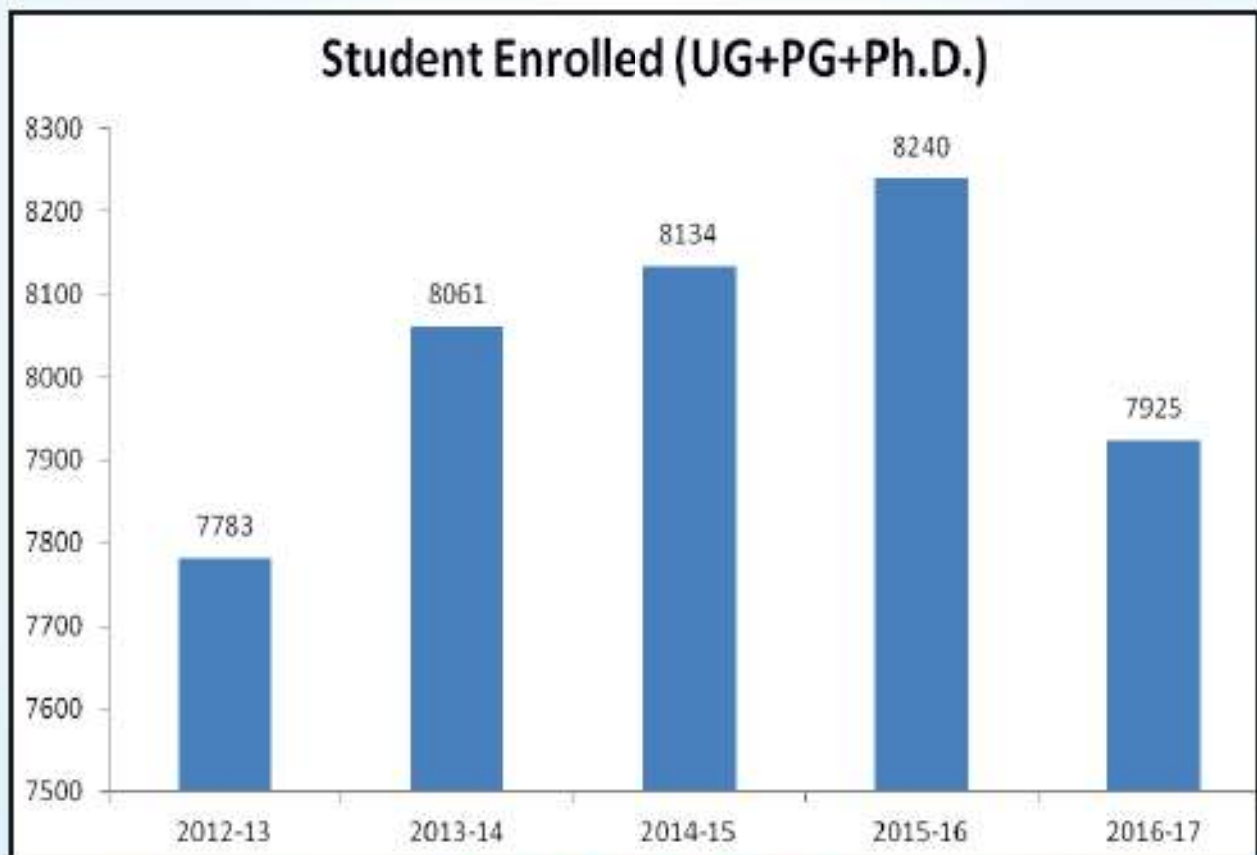
**Figure 1: Effective placement of students and selection team visited**



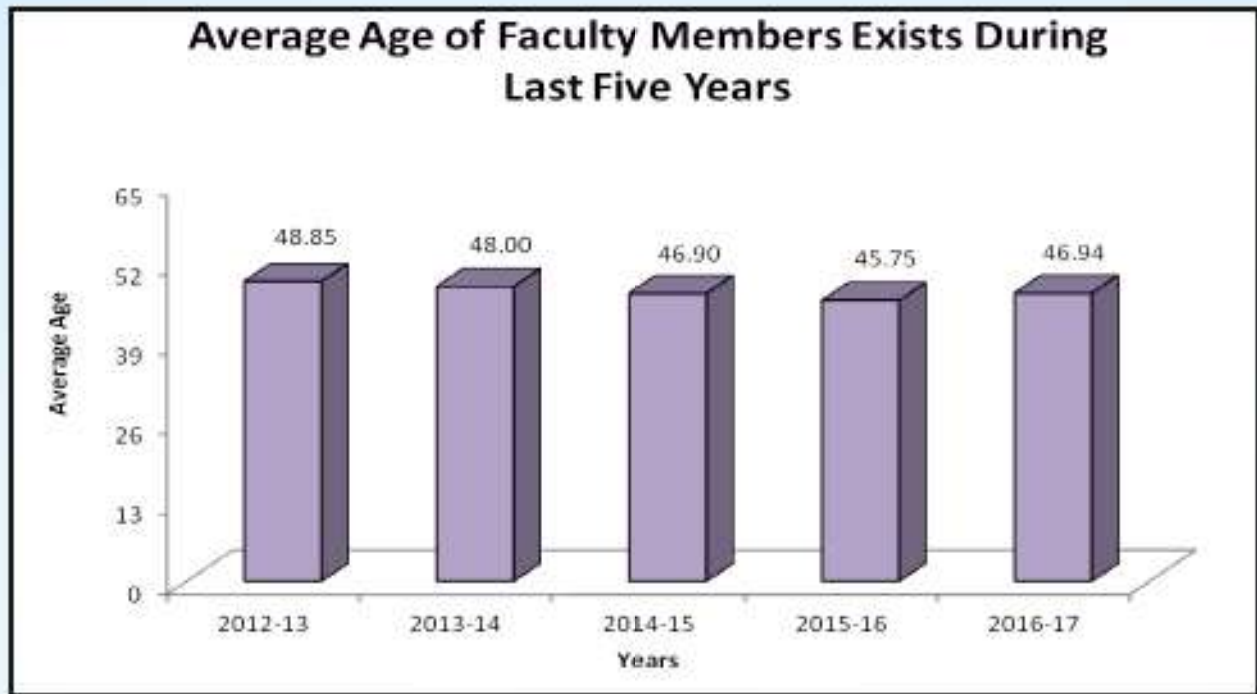
**Figure 2: Total Receipt from Sponsored research & Consultancy Project**



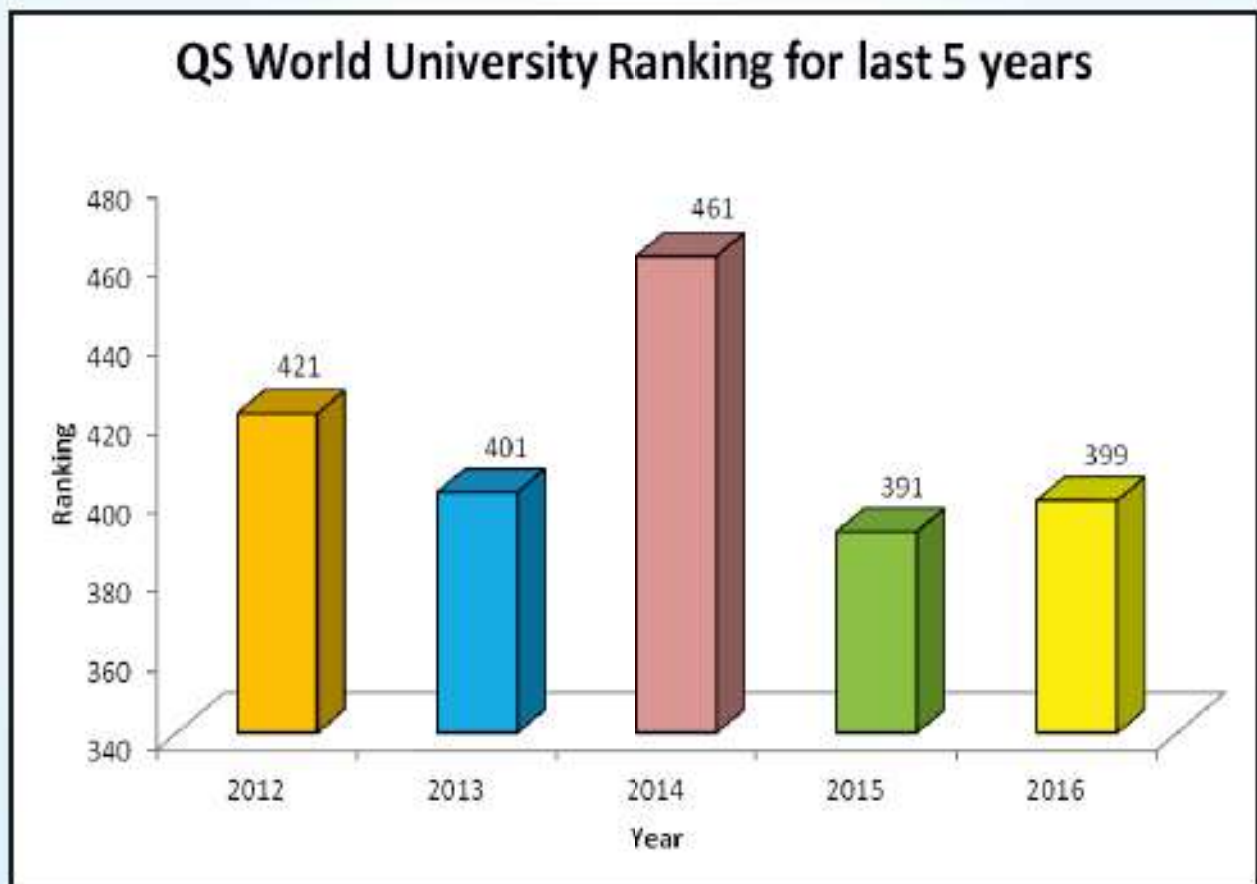
**Figure 3: Research Papers published**



**Figure 4: Students Enrolled**



**Figure 5: Average Age of Faculty Members Exist During Last Five Years**



**Figure 6: QS World University Ranking**

- 1.1 IIT Council
- 1.2 Board of Governors
- 1.3 Finance Committee
- 1.4 Building & Works Committee
- 1.5 Senate

- 1.6 Administration
- 1.7 Academic Departments and Centres, Centres of Excellence, Service Centres & Other Units

Indian Institute of Technology Roorkee, created on 21<sup>st</sup> September 2001, is the successor Institute of the University of Roorkee, chartered in 1949 and the Roorkee College founded in 1847, which was later renamed as the Thomason College of Civil Engineering. The Roorkee College was the first engineering college to be established in the whole of the British Commonwealth, or the British Empire, as it was known at that time.

The Institute has a glorious past of more than 169 years and has been widely acclaimed for its excellence in education, research and training. A special emphasis is laid on total personality development along with the quality education and technical training of the students. The present chapter describes the organization and administrative structure of the Institute during the period between 1 April 2016 to 31 March 2017.

### 1.1 IIT COUNCIL

#### CHAIRMAN:

**Hon'ble Shri Prakash Javadekar,**  
(Chairperson)  
Minister of Human Resource Development,

#### MEMBERS :

**Shri Ninong Ering,** Member of Parliament,  
Lok Sabha

**Delhi Address :-** 92, South Avenue,  
New Delhi - 110 011

**Arunachal Pradesh Address :-** Mirku Dapi  
Village, P.O. Pasighat, Distt. East Siang  
Arunachal Pradesh

**Shri Abhishek Singh,** Member of Parliament,  
Lok Sabha,

**Delhi Address :-** Chhattisgarh Sadan, Near  
Safdarjung Hospital, New Delhi

**Chhattisgarh Address :-** House No.5, Raipur-  
Nandgaon Road, Kavardha P.O./Distt. Kabirdham,  
Chhattisgarh  
09993388777 (M)

**Shri Prabhat Jha,** Member of Parliament,  
Rajya Sabha,

**Delhi Address :-** 28, Meena Bagh ,  
New Delhi - 110 011

e-mail :- prabhat.jha@sansad.nic.in

**Madya Pradesh Address :-** 5 Ashoka  
Apartments, Madhya Bharat Khadi Sangh,  
Near Hanuman Mandir, Jivajiganj, Lashkur,  
Gwallior, Madhya Pradesh

**Shri Dilip Shanghvi,**

Managing Director,  
Sun Pharmaceutical Industries Ltd.,  
Sun House, CTS No. 201 B/1, Western Express  
Highway, Goregaon (E), Mumbai, 400063,  
Email: piedade.dsouza@sunpharma.com

**Shri Kumar Mangalam Birla,**  
Chairman, BOG IIT Delhi

Chairman, Aditya Birla Group,  
Aditya Birla Centre, 3<sup>rd</sup> Floor, S.K. Ahire Marg,  
Worli, Mumbai-400 030  
Email: chmo@adityabirla.com

**Dr. Rajiv I. Modi**

**Chairperson, BOG, IIT Guwahati**

Chairman & Managing Director  
Cadila Pharmaceuticals Limited,  
Cadila Corporation Campus,  
Sarkhej-Dholka Road, Bhat,  
Ahmedabad-382 210, Gujarat  
Email: rimodi@cadilapharma.co.in,  
dev.mukherjee@cadilapharma.co.in

**Shri R.C. Bhargava**

**(Chairperson, BoG, IIT Kanpur)**

Chairman, Maruti Udyog Ltd.  
220, Sector 15A  
Noida-201 301.  
Email: robhargava@maruti.co.in

**Dr. Pawan Goenka,** Chairman, BoG, IIT Madras,

Chennai-600036 and Executive Director and  
President, Mahindra & Mahindra, Mahindra  
Towers, GM Bhosale Marg, Worli, Mumbai  
Tel: 022-24970162 (Worli), Tel: 022-28852904  
(Kandivli) M.: 09892080035  
Email: goenka.pawan@mahindra.com

**Dr. Srikumar Banerjee,**

Chairman, BoG, IIT Kharagpur, and DAE Homi  
Bhabha Chair Professor, BARC Central Complex  
Bhabha Atomic Research Centre, Trombay,  
Mumbai. Tel. 25505333 M: 09833602494,  
Email: sbanerjee1946@gmail.com

**Prof. Ashok Misra,**  
Chairman, Board of Governors,  
Indian Institute of Technology, Roorkee, Roorkee-  
2247667 (Uttarakhand), and Chairman – India,  
Intellectual Ventures India Consulting Pvt. Ltd., 68  
Adarsh Vista, Basavanagar, Bangalore 560037.  
Tel: 080-66485555, F: 080-66485500, M:  
09972232233, Tel: 01332-272742, 285500, Fax:  
01332-273560, 285815 Email-  
ashokmisra47@gmail.com

**Shri Pankaj Ramanbhai Patel,**  
**(Chairperson, BoG, IIT Bhubaneswar)**  
Chairman & Managing Director  
Cadila Healthcare Limited,  
Zydus Tower, Satellite Cross Roads,  
Ahmedabad-380015, Gujarat  
Email: pankaj@zyduscadila.com  
cmdoffice@zyduscadila.com

#### **VACANT**

**Chairman, Board of Governors,  
Indian Institute of Technology, Gandhinagar**

**Dr. B. V. R. Mohan Reddy,** Chairman, Board of  
Governors, Indian Institute of Technology-  
Hyderabad (A.P.) and Chairman and Managing  
Director, Infotech Enterprises Ltd. Plot No. 11,  
Software Unit Layout, Infocity, Madhapur,  
Hyderabad-500081, Ph:040-23112871, (M)  
9849022686 E-mail: mohan.reddy@infotech-  
enterprises.com

#### **VACANT**

**Chairman, Board of Governors, Indian Institute  
of Technology-Jodhpur, VACANT**

Chairman, BoG, Indian Institute of Technology-  
Indore, Indore (M.P.)

**Shri Subodh Bhargava**  
**(Chairpeso, BOG, IIT Mandi)**  
Chairman, TATA Communications Ltd.  
New Delhi  
A-15/1, DLF City  
Phase I, Gurgaon 122 002  
Telephone - +91124 4063146, +91124 2563146  
Mobile +9811030342  
Email: S Bhargava<s.bhargava@vsnl.net

**Shri Ajai Chowdhry,** Chairman, Board of  
Governors, Indian Institute of Technology- Patna,  
Pataliputra Colony, (Bihar) and Founder HCL, 10,  
Ishwar Nagar, New Delhi-110065. Ph: 011-  
26848440/26849264 (M) 9810245008, E-mail:  
ajai@ajaichowdhry.in

**Mrs. Lila Poonawalla,** Chairman, Board of  
Governors, Indian Institute of Technology, Ropar  
(Punjab) and Padmashree Mrs.Lila Poonawalla,  
Former CMD Alfa Laval-Tetra Pak India,  
Chairperson Lila Poonawalla Foundation,  
Fili Villa, 101/102 Survey No.23, Balewadi, Baner,  
Pune 411 045 Ph: 020-27224264/5/6/7,  
M: 09373311949  
Email: lila@lilapoonawalla.com,  
lilapoonawalla@hotmail.com

**Prof. Girish Chandra Tripathi,** Chairman  
BoG, IIT(BHU), Varanasi and Vice-Chancellor,  
Banaras Hindu University, Varanasi -221 005  
(U.P) Tel: 0542-2368938, 2368339  
Fax: 0542-2369100, 2369951,  
e-mail: vcbhu1@gmail.com, vc\_bhu@sify.com

#### **List of Directors of IITs**

**Prof. Devang V. Khakhar,** Director  
Indian Institute of Technology, Bombay,  
IIT-Powai, Mumbai – 400 076.  
Tel: 022-25723488/25767001  
Fax No. : 022-2572 3546, Mobile: 9820605351  
E-mail : director@iitb.ac.in

**Prof. V Ramgopal Rao,** Director  
Indian Institute of Technology, Delhi, Hauz Khas,  
New Delhi – 1100 16.  
Tel : 011-26591701 (M): 9818001702  
Fax No. : 011-2658 2659  
E-mail : director@admin.iitd.ac.in

**Prof. Indranil Manna,** Director,  
Indian Institute of Technology, Kanpur,  
Kanpur – 208016.  
Tel : 0512-2590763 (M) 8127884422  
Fax : 0512-2590260  
e-mail : director@iitk.ac.in

**Prof. Pradipta Banerji (upto 31.10.2016)**  
Director,  
Indian Institute of Technology Roorkee,  
Roorkee – 247 667

**Prof. P.K. Ghosh** (w.e.f. 1.11.2016 to 08.01.2017)  
Officiating Director  
Indian Institute of Technology Roorkee  
Roorkee – 247 667

**Prof. Ajit Kumar Chaturvedi,** Director  
Indian Institute of Technology, Roorkee,  
Roorkee – 247667. (Uttarakhand)  
Tel : 01332-285221, 285500  
Fax : 01332-273560, 282815  
Mobile:- 7500662233,  
e-mail : director@iitr.ernet.in

**Prof. Partha P. Chakrabarti,** Director,  
Indian Institute of Technology, Kharagpur,  
Kharagpur – 721302. Tel: 03222-282002  
Fax : 03222-282000 (M): 9434013691  
E-mail : ppchak\_99@yahoo.com,  
ppchak@adm.iitkgp.ernet.in

**Prof. Bhaskar Ramamurthi,** Director  
Indian Institute of Technology, Madras,  
Madras.

Tel : 044-2257 8001 (M): 9444008001  
Fax : 044-22578003  
e-mail : director@iitm.ac.in, bhaskar@iitm.ac.in

**Prof. Gautam Biswas**, Director  
Indian Institute of Technology, Guwahati,  
Guwahati – 781039, Phone:0361-2690401(O) (M)  
8811086524  
Fax:0361-26923211, Email: gtm@iitg.ernet.in

**Prof. Rajeev Sangal**, Director  
Indian Institute of Technology (BHU),  
Varanasi – 221005 (UP)  
Phone: +91 542 2368106, 2368427, 2307000  
Fax: +91 542 2368428, (M) 8004927336, Email:  
director@iitbhu.ac.in, director\_it@bhu.ac.in

**Prof. C.V.R. Murty**, Director  
Indian Institute of Technology, Jodhpur,  
Old Residency Road,  
Ratanada, Jodhpur – 342 011.  
Tele : 0291-2512141, (M) 09445567653  
Fax No. : 0291-251 6823,  
E-mail : director@iitj.ac.in,

**Prof. Sudhir K. Jain**, Director  
Indian Institute of Technology, Gandhinagar,  
Vishwakarma Govt. Engg. College (VGEC)  
Campus, Chandkheda, Visat-Gandhinagar  
Highway, Ahmedabad – 382424.  
Fax : 079-2397 2583, (M): 9687600342  
E-mail : director@iitgn.ac.in, skjain@iitk.ac.in

**Prof. Pushpak Bhattacharyya**, Director  
Indian Institute of Technology- Patna,  
Govt. Polytechnic, Pataliputra's Colony,  
Patna – 800 013. Tel : 0612-2277380 / 2552001,  
Fax: 0612-2277384/383  
E-mail : director@iitp.ac.in

**Prof U.B. Desai**, Director  
Indian Institute of Technology- Hyderabad,  
Ordnance Factory Estate,  
Yeddumailaram – 502205, Andhra Pradesh  
Tele : 040-2301 6002 Fax: 040-2301 6003  
Mobile:-9491040801, E-mail : ubdesai@iith.ac.in  
dir@iith.ac.in, director@iith.ac.in

**Prof. Sarit Kumar Das**, Director  
Indian Institute of Technology - Ropar,  
Nangal Road, Rupnagar, Punjab – 140 001.  
Fax No. : 01881-223393, Tel: 01881-223394 (M)  
09478100300  
E-mail : director\_rpr@admin.iitd.ac.in,  
mirle@materials.iisc.ernet.in

**Prof. R.V. Raja kumar**, Director  
Indian Institute of Technology, Bhubaneswar,  
Samantapuri (Rear side of Hotel Swosti Plaza),  
Jaydev Vihar,  
Bhubaneswar – 751 013, Odisha.  
Tele: 0674-230 6200/1291/1292  
Fax No. : 0674-230 6203, E-mail :  
director@iitbbs.ac.in

**Prof. Timothy Gonsalves**, Director  
Indian Institute of Technology, Mandi,  
PWD Rest House, 2nd Floor, Near Bus Stand,  
Mandi – 175 001, (Himachal Pradesh)  
Tel: 01905-237943, (M): 9418047732,  
(F) 01905-237945,  
E-mail : director@iitmandi.ac.in

**Prof. Pradeep Mathur**, Director  
Indian Institute of Technology Indore,  
Institute of Engineering and Technology,  
DAVV Campus, Khandwa Road, Indore – 452  
017. (M): 9820153234  
Fax : 0731-236 8282, 2361482, E-mail :  
director@iiti.ac.in

**Prof. D.C. Panigrahi**  
Officiating Director,  
IIT (ISM) Dhanbad  
Mob. No. 09431711056  
Email: dc\_panigrahi@yahoo.co.in

**Prof. K.N. Satyanarayana**  
Director,  
Indian Institute of Technology, Tirupati  
Tirupati(AP)  
Mob. No.09444019311  
Email: satyakn@iitm.ac.in

**Prof. P.B. Sunil Kumar**  
Director,  
Indian Institute of Technology, Palakkad  
Palakkad(Kerala)  
Mobile No.9840329487  
Email: sunil@iitm.ac.in,  
sunil.kumarpb@gmail.com

**Prof. B.K. Mishra**  
Director- IIT Goa  
bk@iitgoa.ac.in

**Prof. Rajat Moona**,  
Director-  
IIT Bhilai-Durg

**Prof. Seshu Pasumarthy**,  
Director, IIT Dharwad (Karnataka)

**Director, IIT Jammu (J&K) - Vacant**

**Prof. Ved Prakash**, Chairman,  
University Grants Commission, Bahadurshah  
Zafar Marg, New Delhi – 110002.  
Tel : 2323 4019/6350  
Fax : 2323 9659  
e-mail : cm.ugc@nic.in

**Dr. Girish Sahni**, Director General  
(DG) of Council of Scientific and Industrial  
Research (CSIR), Anusandhan Bhawan,  
2 Rafi Marg, New Delhi – 110 001.  
Tel : 23710472/ 23717053, Fax : 23710618  
e-mail: dgcsir@csir.res.in, dg@csir.res.in

**Dr. P. Rama Rao**, Chairman,  
Governing Council of Indian Institute of Science,  
Bangalore and Former Vice Chancellor,  
University of Hyderabad,  
Balapur, Hyderabad-50005.  
(M) 09849765123  
Email: palierama\_rao@yahoo.co.in

**Prof. Anurag Kumar**, Director,  
Indian Institute of Science, Bangalore,  
Bangalore. Ph.: 080-23600960/3600411,  
Fax : 080-23600936,  
e-mail : dir@admin.iisc.ernet.in

**Secretary (Expenditure)**,  
Ministry of Finance,  
Department of Expenditure,  
North Block, New Delhi – 1.  
Tel : 23092929, 23092663  
Fax : 23092546, e-mail : secyexp@nic.in

**Secretary, Department of Information Technology**,  
Electronics Niketan, CGO Complex, Lodhi Road,  
New Delhi-11003.  
Phone : 24364041, Fax : 24363134,  
e-mail : secretary@mit.gov.in,  
secyoffice@mit.gov.in

**Prof. Anil D. Shahrabudhe**, Chairman,  
All India Council for Technical Education (AICTE),  
7th Floor, Chanderlok Building, Janpath,  
New Delhi - 110 001.  
Phone No. 23724188, Fax No. 23724189,  
e-mail: chairman@aicte.ernet.in,  
chairman@aicte-india.org,  
anil.sahasrabudhe@gmail.com

**Prof. Ashok Jhunjhunwala**,  
Professor, Department of Elect. Engineering  
(Te Ne T) Group, Indian Institute of Technology –  
Madras, Chennai – 600 036 (T.N.)  
FAX: 044 – 22570120  
Email: ashok@nimbus.ee.iitm.ernet.in ,  
ashok@tenet.res.in

**Prof. Vijayalakshmi Ravindranath**,  
Professor & Chair,  
Centre For Neuroscience,

Indian Institute of Science,  
C.V. Raman Avenue,  
Bangalore-560012.  
Ph.080-2293 3433, Fax.No:080-23603323  
E-Mail: viji@cns.iisc.ernet.in

**Dr. (Mrs.) Tessy Thomas**  
Outstanding Scientist & Director  
Advanced Systems Laboratory (ASL)  
Hyderabad.  
(Office) : 040-24188004  
Phone (Fax) : 040-24343779 (M): 09441208877  
Email : director@asl.drdo.in,  
tessy\_1963@yahoo.com

**Prof. S.K. Joshi**,  
National Physical Laboratory,  
Dr. K S Krishnan Marg, South Patel Nagar,  
Pusa, New Delhi – 110012  
Email: skjoshinpl@gmail.com

**Prof. R.C. Budhani**, Director,  
Director's Secretariat,  
National Physical Laboratory,  
Dr. K S Krishnan Marg, South Patel Nagar,  
Pusa, New Delhi – 110012  
FAX: 011 – 4560 9310  
Email: dnpl@nplindia.org ,  
rcb@iitk.ac.in

**Shri K.K. Sharma**  
Secretary (Higher Education), & the current  
Chairperson, BOG of six new IITs at Tirupati,  
Jammu, Goa, Dharwad, Bhillai-Durg and Palakkad  
Ministry of Human Resource Development  
New Delhi. E-mail:- secy.dhe@nic.in

**Shri R. Subrahmanayam**,  
Additional Secretary(TE) Secretary (IIT Council)  
Ministry of Human Resource Development  
Department of Higher Education,  
New Delhi.  
E-mail:- subrahdyd@gmail.com

**Ms. Darshana M. Dabral**,  
Joint Secretary & Financial Advisor (JS&FA),  
Ministry of Human Resource Development,  
Department of Higher Education,  
New Delhi.  
Email: jsfa.edu@gov.in

## 1.2 BOARD OF GOVERNORS

### CHAIRMAN:

**Prof. Ashok Misra**  
Chairman, BOG, IIT Roorkee &  
68, Adarsh Vista, Basavanagar  
Bangalore 560037

### MEMBERS:

**Prof. Pradipta Banerji (upto 31.10.2016)**  
Director,  
Indian Institute of Technology Roorkee,  
Roorkee – 247 667

**Prof. P.K. Ghosh (w.e.f. 1.11.2016 to 08.01.2017)**  
Officiating Director  
Indian Institute of Technology Roorkee  
Roorkee – 247 667

**Prof. Ajit K. Chaturvedi (w.e.f. 09.01.2017)**  
Director  
Indian Institute of Technology Roorkee  
Roorkee – 247 667



**Shri Sameer Dhingra**

15-A, New Road  
Dehradun 248 001

Principal Secretary to Government of Haryana,  
Technical Education Department, Employment &  
Mines and Geology Department, Room No.335,  
3<sup>rd</sup> Floor, Haryana Civil Secretariat (New Building)  
Sector – 17, Chandigarh - 160001

**Additional Secretary (TE)**

Ministry of Human Resource Development  
Department of Higher Education  
Shastri Bhavan  
New Delhi-110 015

**Mrs. J. Manjula**

Director General (Electronics & Communication  
Systems), O/o DG (ECS)  
DARE Campus, CV Raman Nagar PO  
Bangaluru-560 093

**Dr. Jaya Sivaswami Tyagi, Professor, Biotechnology**

All India Institute of Medical Sciences (AIIMS)  
Ansari Nagar, New Delhi-110 029

**Dr. Rentala Madhubala, Professor**

School of Life Sciences  
Jawaharlal Nehru University  
New Mehrauli Road, New Delhi-110 067

**Prof. (Mrs.) Pushplata**

Department of Architecture & Planning  
Indian Institute of Technology Roorkee

**Prof. S.K. Nath**

Department of Metallurgical & Materials Engg.  
Indian Institute of Technology Roorkee

**Deputy Director**

Special Invitee  
Indian Institute of Technology Roorkee

**Sri Prashant Garg, Secretary**

Registrar  
Indian Institute of Technology Roorkee

### 1.3 FINANCE COMMITTEE

**CHAIRMAN****Prof. Ashok Misra**

Chairman, BOG, IIT Roorkee &  
68, Adarsh Vista, Basavanagar  
Bangalore 560037

**Member****Prof. Pradipta Banerji (upto 31.10.2016)**

Director,  
Indian Institute of Technology Roorkee,  
Roorkee – 247 667

**Prof. P.K. Ghosh (w.e.f. 1.11.2016 to 08.01.2017)**

Officiating Director  
Indian Institute of Technology Roorkee  
Roorkee – 247 667

**Prof. Ajit K. Chaturvedi (w.e.f. 09.01.2017)**

Director,  
Indian Institute of Technology Roorkee  
Roorkee – 247 667

**Addl. Secretary (TE)**

Government of India  
Ministry of Human Resource Development  
Department of Secondary & Higher Education  
Shastri Bhawan  
New Delhi – 110 115

**Addl. Secretary & Financial Advisor**

Ministry of Human Resource Development  
Government of India  
Department of Secondary & Higher Education  
Technical Section I, Shastri Bhawan, New Delhi

**Shri R.S.T. Sai (upto September 2016)**

Chairman & Managing Director  
Tehri Hydro Development Corporation Ltd.  
Pragtipuram, Bypass Road  
Rishikesh – 249 201 (Uttarakhand)

**Shri Sameer Dhingra (w.e.f. October 2016)**

15-A, New Road  
Dehradun 248 001

**Prof. Rama Bhargava (upto September 2016)**

Department of Mathematics  
Indian Institute of Technology Roorkee

**Prof. S.K. Nath (w.e.f. October 2016)**

Department of Metallurgical & Materials Engg.  
Indian Institute of Technology Roorkee

**Dr. U.P. Singh**

Dean, Finance & Planning (Ex-Officio)  
Indian Institute of Technology Roorkee

**Deputy Director, Special Invitee**

Indian Institute of Technology, Roorkee  
Roorkee

**Sri Prashant Garg, Secretary**

Registrar  
Indian Institute of Technology Roorkee

## 1.4 BUILDING & WORKS COMMITTEE

### CHAIRMAN:

**Prof. Pradipta Banerji, (upto 31.10.2016)**

Director  
Indian Institute of Technology, Roorkee

**Prof. P.K. Ghosh (w.e.f. 1.11.2016 to 08.01.2017)**

Officiating Director  
Indian Institute of Technology Roorkee  
Roorkee – 247 667

**Prof. Ajit K. Chaturvedi (w.e.f. 09.01.2017)**

Director,  
Indian Institute of Technology Roorkee  
Roorkee – 247 667

### MEMBER:

#### Deputy Director

Indian Institute of Technology Roorkee

#### Chairman, Estate & Works

Indian Institute of Technology Roorkee

**Er. Pravendra Kumar (upto 31.12.2016)**

Director, Management Development Centre  
U.P. Housing & Development,  
Sector 14, Indira Nagar  
Lucknow – 226 016 (U.P.)

**Er. Rajeev Garg (w.e.f. 01.01.2017)**

Indian Institute of Technology Kanpur  
Kanpur

#### Deputy General Manager

Uttaranchal Power Corporation Ltd.,  
Roorkee – 247 667

**Prof. Pushplata**

Department of Architecture & Planning  
Indian Institute of Technology Roorkee

**Prof. Pramod Agarwal (upto 31.12.2016)**

Department of Electrical Engineering  
Indian Institute of Technology Roorkee

**Prof. N.P. Padhy (w.e.f. 01.01.2017)**

Department of Electrical Engineering  
Indian Institute of Technology Roorkee

**Prof. Pradeep Kumar (upto 31.12.2016)**

Department of Civil Engineering  
Indian Institute of Technology Roorkee

**Prof. N.K. Samadhiya (w.e.f. 01.01.2017)**

Department of Civil Engineering  
Indian Institute of Technology Roorkee

#### Institute Engineer

Indian Institute of Technology Roorkee

**Er. Salek Chand (upto 31.08.2016)**

Special Permanent Invitee  
Chief Engineer, Level-I  
P.W.D. Bareilly Zone, Bareilly

**Dr. U.P. Singh, Special Invitee**

Dean, Finance & Planning  
Indian Institute of Technology of Roorkee

**Sri Prashant Garg, Secretary**

Registrar  
Indian Institute of Technology Roorkee

## 1.5 SENATE

### CHAIRMAN:

The Director

### MEMBERS:

Deputy Director

### All Professors of the Institute:

#### 1. Architecture & Planning

Prof. (Mrs.) Pushplata  
Prof. V. Devdas  
Prof. Ila Gupta

#### 2. Biotechnology

Prof. (Mrs.) Ritu Barthwal upto 30.09.2016  
Prof. G.S. Randhawa  
Prof. R.P. Singh  
Prof. Ramasare Prasad  
Prof. Vikas Pruthi  
Prof. Partha Roy

#### 3. Chemical Engineering

Prof. Bikash Mohanty  
Prof. Vijay Kumar Agarwal  
Prof. B. Prasad

Prof. Shishir Sinha

Prof. C.B. Majumdar

Prof. P.P. Kundu

#### 4. Chemistry

Prof. R.N. Goyal upto 31.05.2016

Prof. Ravi Bhushan

Prof. V.K. Gupta upto 30.06.2016

Prof. Anil Kumar

Prof. (Mrs.) Mala Nath

Prof. A.K. Singh upto 30.06.2016

Prof. U.P. Singh

Prof. M.R. Maurya

Prof. K.C. Gupta

Prof. Bina Gupta

#### 5. Civil Engineering

Prof. S.S. Jain

Prof. Deepak Kashyap upto 30.06.2016

Prof. Pradeep Kumar

Prof. P.K. Garg

Prof. C.S.P. Ojha

- Prof. Pradeep Bhargava  
 Prof. Satish Chandra  
 Prof. S.K. Ghosh  
 Prof. Mahender Singh  
 Prof. Manoj K. Arora  
 Prof. Manoranjan Parida  
 Prof. Praveen Kumar  
 Prof. N.K. Samadhiya  
 Prof. A.K. Ahuja  
 Prof. K.S. Hari Prasad  
 Prof. Akhil Upadhyay  
 Prof. Z. Ahmad  
 Prof. Kamal Jain  
 Prof. Ajay Gairola  
 Prof. A.A. Kazmi  
 Prof. B.R. Gurjar  
 Prof. P.K. Gupta  
 Prof. Vipul Prakash
- 6. Computer Science & Engineering**  
 Prof. Manoj Misra
- 7. Earthquake Engineering**  
 Prof. M.L. Sharma  
 Prof. Ashok Kumar (upto 31.07.2016)  
 Prof. (Mrs.) Amita Sinvhal (upto 30.06.2016)  
 Prof. Yogendra Singh  
 Prof. B.K. Maheshwari  
 Prof. Pankaj Agarwal  
 Prof. J.P. Narayan  
 Prof. M. Shrikhande
- 8. Earth Sciences**  
 Prof. D.C. Srivastava  
 Prof. D.K. Mukhopadhyay  
 Prof. Rathinam Anbalagan (upto 31.05.2016)  
 Prof. A.K. Saraf  
 Prof. Mohd. Israil  
 Prof. Sunil Bajpai  
 Prof. G.J. Chakrapani  
 Prof. (Mrs). Sagarika Mukhopadhyay  
 Prof. Sandeep Singh  
 Prof. A.K. Sen  
 Prof. Anand Joshi  
 Prof. R. Krishnamurthi
- 9. ELECTRICAL ENGINEERING**  
 Prof. Vinod Kumar (Upto 31.05.2016)  
 Prof. Pramod Agarwal  
 Prof. Girish Kumar Singh  
 Prof. Sajjan Pal Singh  
 Prof. R.P. Maheshwari  
 Prof. S.P. Srivastava  
 Prof. N.P. Padhy  
 Prof. Biswarup Das  
 Prof. R.S. Anand  
 Prof. Rajendra Prasad  
 Prof. G.N. Pillai  
 Prof. M.L. Dewal
- 10. ELECTRONICS & COMMUNICATION ENGINEERING**  
 Prof. M.J. Nigam  
 Prof. M.V. Kartikeyan  
 Prof. Dharmendra Singh
- 11. HYDROLOGY**  
 Prof. N.K. Goel  
 Prof. Himanshu Joshi  
 Prof. M. Perumal  
 Prof. D.S. Arya
- 12. HUMANITIES & SOCIAL SCIENCES**  
 Prof. Pashupati Jha  
 Prof. D.K. Nauriyal  
 Prof. (Mrs.) Renu Rastogi  
 Prof. Sukh Pal Singh  
 Prof. (Mrs.) Rashmi Gaur  
 Prof. Nagendra Kumar
- 13. PAPER TECHNOLOGY, SAHARANPUR CAMPUS**  
 Prof. A.K. Singh  
 Prof. Satish Kumar (upto 31.08.2016)  
 Prof. S.P. Singh  
 Prof. Y.S. Negi  
 Prof. Dharam Dutt  
 Prof. S.C. Sharma
- 14. MANAGEMENT STUDIES**  
 Prof. J.P. Singh
- 15. MATHEMATICS**  
 Prof. S.P. Sharma (upto 31.01.2017)  
 Prof. (Mrs.) Rama Bhargava  
 Prof. R.C. Mittal  
 Prof. P.N. Agarwal  
 Prof. V.K. Katiyar  
 Prof. Roshan Lal  
 Prof. (Mrs.) Sunita Gakkhar  
 Prof. (Mrs.) Kusum Deep  
 Prof. (Mrs.) Tanuja Srivastava  
 Prof. N. Sukavanam  
 Prof. S.P. Yadav
- 16. MECHANICAL & INDUSTRIAL ENGINEERING**  
 Prof. Pradeep Kumar  
 Prof. Satish C. Sharma  
 Prof. Dinesh Kumar  
 Prof. P.K. Jain  
 Prof. Akhilesh Gupta  
 Prof. B.K. Gandhi  
 Prof. Bhanu Kumar Mishra  
 Prof. Ravi Kumar  
 Prof. Pradeep K. Sahoo  
 Prof. D.K. Dwivedi  
 Prof. Navneet Arora

**17. METTALLURGICAL & MATERIALS ENGINEERING**

Prof. P.K. Ghosh  
 Prof. S.K. Nath  
 Prof. Anjan Sil  
 Prof. B.S.S. Daniel  
 Prof. R. Jayaganathan

**18. PHYSICS**

Prof. B.D. Indu  
 Prof. Ravindra Nath (upto 30.11.2016)  
 Prof. Rajesh Srivastava  
 Prof. Vir Singh  
 Prof. (Mrs.) Tashi Nautiyal  
 Prof. K.L. Yadav  
 Prof. (Mrs.) Davinder Kaur Walla  
 Prof. G.D. Varma

**19. WATER RESOURCE DEVELOPMENT & MANAGEMENT**

Prof. S.K. Tripathi (upto 31.08.2016)  
 Prof. M.L. Kansal  
 Prof. Deepak Khare  
 Prof. S.K. Mishra

**20. INSTITUTE INSTRUMENTATION CENTRE**

Prof. Ramesh Chandra

**21. ALTERNATE HYDRO ENERGY CENTRE**

Prof. R.P. Saini  
 Prof. M.P. Sharma  
 Prof. Arun Kumar

Three persons other than employees of the Institute nominated by the Chairman of Board of Governors for a period of two years: **upto 31.12.2016**

1. Prof. Bhim Singh  
 Department of Electrical Engineering,  
 Indian Institute of Technology Delhi  
 Hauz Khas, New Delhi.
2. Prof. Bodh Raj Mehta,  
 Department of Physics,  
 Indian Institute of Technology Delhi,  
 Hauz Khas, New Delhi.
3. Prof. Girishwar Mishra,  
 Vice-Chancellor

Mahatma Gandhi Antarrashtriya Hindi Vishwavidyalaya, P.O. Hindi Vishwavidyalaya Gandhi Hills, Wardha 442 001 Maharashtra

**Heads of the Departments/Academic Centres/Schools (other than Professors)**

Dr. Z. Rahman  
 Dr. R. Balasubramanian

**Deans & Associate Deans (other than Professors):**

Dr. Apurbba Kumar Sharma, Associate Dean (Academic Studies)  
 Dr. R.K. Peddinti, Associate Dean (Academic Research)  
 Dr. N.K. Nawani, Associate Dean of Students' Welfare (Bhawans)  
 Dr. Inderdeep Singh, Associate Dean of Students' Welfare (Discipline) upto 28.02.2017  
 Dr. S.H. Upadhyay, Associate Dean of Students' Welfare (Mess facilities) w.e.f. 01.03.2017  
 Dr. Aalok Mishra, Associate Dean of Students' Welfare (Students Wellness) w.e.f. 01.03.2017

**The Librarian of the Institute:**

Dr. C. Jaykumar

**One Chief Warden of the Institute:**

Vacant

**Six Members of the Staff for their special knowledge appointed by the Chairman of Board of Governors:**

- (i) Dr. Vipul Rastogi, Associate Professor, Department of Physics
- (ii) Dr. Barjeev Tyagi, Associate Professor, Department of Electrical Engineering
- (iii) Dr. Manish Mishra, Associate Professor, Department of Mechanical & Industrial Engineering.
- (iv) Dr. Umesh Sharma, Associate Professor, Department of Civil Engineering
- (v) Dr. K.R. Justin Thomas, Associate Professor, Department of Chemistry
- (vi) Dr. Rajat Agarwal, Associate Professor, Department of Management Studies

**Registrar**

Sri Prashant Garg Secretary

**1.6 ADMINISTRATION**

<b>CHAIRMAN, BOARD OF GOVERNORS</b>	Professor Ashok Misra Ji
<b>DIRECTOR</b>	Prof. Pradipta Banerji (upto 31.10.2016)
	Prof. P.K. Ghosh (officiating Director (01.11.2016 to 08.01.2017))
	Prof. Ajit K. Chaturvedi (w.e.f. 09.01.2017)

<b>Dy. Director</b>	Prof. Vinod Kumar (upto 31.05.2016)
	Prof. P.K. Ghosh (w.e.f. 31.05.2016)
<b>DEANS</b>	
Administration	Prof. U.P. Singh (upto 09.05.2016) Prof. (Mrs.) Rama Bhargava (w.e.f. 10.05.2016)
Alumni Affairs & International Relations	Prof. Sandeep Singh
Finance & Planning	Prof. P.K. Ghosh (Upto 30.04.2016) Prof. U.P. Singh (w.e.f. 01.05.2016)
Faculty Affairs	Prof. Deepak Kashyap (upto 30.04.2016) Prof. B.K. Mishra (w.e.f. 01.05.2016)
Academics	Prof. Pramod Agarwal
Sponsored Research & Industrial Consultancy	Prof. Manoranjan Parida
Students' Welfare	Prof. D.K. Nauriyal
<b>ASSOCIATE DEANS</b>	
SRIC	Prof. M. Shrikhande
Bhawans	Dr. S.H. Upadhyay (w.e.f. 01.03.2017)
Discipline	Dr. Indradeep Singh (28.03.2017)
Students Wellness	Dr. Aalok Mishra (w.e.f. 01.03.2017)
Mess Facilities	Dr. N.K. Navani
Academic Studies	Dr. Apurbba Kumar Sharma
Academic Research	Dr. R.K. Peddinti
International Students	Prof. Anand Joshi
Professor-in-Charge, Saharanpur Campus	Prof. Y.S. Negi
Faculty-in-Charge, Transportation	Dr. Sandip Banerjee
Professor-in-Charge, Training and Placement	Prof. N.P. Padhy
Professor-in-Charge, Guest House	Prof. Shishir Sinha
Faculty-in-Charge, Communications	Dr. R. Balasubramanian (w.e.f. 1.5.2016)
Faculty-in-Charge, Security	Dr. Barjeev Tyagi
Faculty-in-Charge, STEP/TIEDA	Dr. S.K. Manhas
Coordinator, Intellectual Property Rights Cell	Prof. Himanshu Joshi
Coordinator for IIT Roorkee, NBCC Joint Research Centre at Greater Noida Campus	Dr. Umesh Kumar Sharma
Coordinator, Institute Instrumentation Centre	Prof. Ramesh Chandra (upto 15.10.2016)
Coordinator, Centre for Railway Research	Prof. Satish C. Sharma
Coordinator, Incubation Centre for Construction Technology in Building and Roads	Dr. Bhupinder Singh
Co-coordinator, Centre for Railway Research	Prof. Akhil Upadhyay
Chairman, Hindi Cell	Dr. Nagendra Kumar
Chief Vigilance Officer	Prof. Satish C. Sharma
Liaison Officer, Liaison Cell (SC/ST)	Prof. Vikas Pruthi (upto 30.4.2016)
Liaison Officer, SC/ST Cell	Dr. M.K. Barua (w.e.f. 1.5.2016)
Liaison Officer (OBC)	Prof. Ramasare Prasad
Registrar	Shri Prashant Garg
Joint Registrar	Dr. Shyam Narayan Shri G.K. Rastogi
Dy. Registrar	Dr. Ajay Kumar Sharma Shri S.K. Saini Dr. Suman Kumar
Asstt. Registrar	Shri Rajvir Singh Khatri Sh. Pradeep Sharma Sh. N.K. Verma

	Sh. C.S. Verma
	Sh. Subhash Chand
	Smt. Marget C.
	Sh. Pramod Kumar
	Sh. Raj Kumar Sharma
	Smt. Sheeba Ramola
	Miss Bibi M. Barbhuiya
	Shri D.K. Toppo
Asstt. Registrar (on contract)	Shri Jain Singh
	Shri A.K. Sharma
	Shri Lalit Kumar
	Shri N.T. Diheung (upto 14.03.2017)
	Shri Rishi Sirohi
<b>Estate &amp; Works</b>	
Chairman (Estate and Works)	Dr. Z. Ahmad (w.e.f. 01.05.2016)
Vice Chairman, Estate & Works (Civil)	Dr. Pankaj Agarwal (w.e.f. 01.05.2016)
Vice Chairman, Estate & Works (Electrical)	Dr. M.K. Pathak
Institute Architect	Shri Devarata Singh
Institute Engineer	Shri Ajay Kumar Sharma
Executive Engineer	Shri Nepal Singh
Executive Engineer (Electrical) (on deputation)	Shri Shyam Mohan Garg (upto 20.07.2016)
Assistant Executive Engineer	Shri B.P. Singh (31.12.2016)
	Shri Rajiv Agarwal
	Shri D.N. Pandey
	Shri F.C. Jain
	Shri D.P. Singh
	Shri V.K. Goel
	Shri P.K. Dauhare
	Shri O.A. Verma
	Shri N.S. Rana
Assistant Executive Engineer (On Contract)	Shri Ashish Kumar
	Shri M.K. Kushwaha (upto 30.06.2016)
	Shri Vikram Singh (upto 01.04.2016)
<b>Mahatma Gandhi Central Library</b>	
Chairman, Library Advisory Committee	Prof. Praveen Kumar (upto 30.04.2016)
	Prof.M.V. Kartikeyan (w.e.f. 01.05.2016)
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Deputy Librarian	Shri Sompal Singh
	Shri Sanjeev Kumar Sunny
Assistant Librarian	Shri A.K. Sharma
	Shri Ramniwas Soni
	Dr. Rimai Atonring
Scientific Officer Gr.-II (on contract)	Smt. Nisha

<b>Hospital</b>	
Chairman, Hospital Advisory Committee	Prof. N.K. Goel (upto 03.11.2016)
	Prof. Rama Bhargava (w.e.f. 04.11.2016)
Chief Medical Officer	Dr. M.K. Jha
Institute Medical Officer	Dr. (Smt.) Vandana Suhas Khobragade
Medical Officer	Dr. (Miss.) Anjula Roy
	Dr. Monika Agarwal (upto 30.04.2016)
	Dr. Akhilesh Kumar
	Dr. R.R. Guru (w.e.f. 07.04.2016)
	Dr. Rao Farman Khan (w.e.f. 30.04.2016)
	Dr. Alok Anand (w.e.f. 14.06.2016)
Medical Officer (on contract)	Dr. Manoj Kumar Jain (Saharanpur Campus)
Medical Officer (Ad-hoc)	Dr. Vibhu Sharma (w.e.f. 17.03.2017)

### 1.7 ACADEMIC DEPARTMENTS & CENTRES, CENTRES OF EXCELLENCE, SERVICE CENTRES & OTHER UNITS

#### Academic Departments

- Architecture & Planning
- Biotechnology
- Chemical Engineering
- Chemistry
- Civil Engineering
- Computer Science and Engineering
- Earthquake Engineering
- Earth Sciences
- Electrical Engineering
- Electronics & Communication Engineering
- Humanities & Social Sciences
- Hydrology
- Management Studies
- Mathematics
- Mechanical & Industrial Engineering
- Metallurgical & Materials Engineering
- Paper Technology
- Polymer and Process Engineering
- Applied Sciences and Engineering
- Physics
- Water Resources Development & Management

#### Centres

- Alternate Hydro Energy Centre

#### Centres of Excellence

- Centre for Transportation System (CTRANS)
- Centre for Nano Technology
- Centre for Disaster Mitigation and Management
- Centre for Urban Design & Development
- Centre for Healthcare
- Centre for Packaging Technology
- Centre for Himalayan Studies
- Centre for IITR – NBCC Research Centre Noida

#### Service Centres

- Mahatma Gandhi Central Library
- Continuing Education Centre (CEC)
- Quality Improvement Programme Centre
- Institute Computer Centre (ICC)
- Institute Instrumentation Centre (IIC)

#### Other Supporting Units

- Education Technology Cell
- Intellectual Property Rights Cell
- Training & Placement Cell
- Institute Hospital
- Estate & Work

## 2. Academic & Non-academic Staff

- |   |  |
|---|--|
| 2.1 Academic Staff                                  | 2.6 Non-Teaching Officers  |
| 2.2 New Appointments and Selections to Higher Posts | 2.7 New Appointment  |
| 2.3 Appointments under SC/ST and OBC Categories     | 2.8 Recipients of Outstanding Teachers Award on Teacher's Day      |
| 2.4 Faculty / Officers / Staff Superannuated        | 2.9 Recipients of Incentive (Non-Teaching Staff) on Foundation Day |
| 2.5 Non-Academic Officers/Staff                     |  |

### 2.1 ACADEMIC STAFF (01.4.2016 to 31.3.2017)

Sl. No.	Department	Prof.	Assoc. Prof.	Asstt. Prof.	Asstt. Prof. (on contract)	Emeritus Fellow	Visiting Faculty/ PDF/IF etc.	Others	Total
1.	Arch. & Planning	03	03	09	03	00	02	00	20
2.	Applied Sc. & Engg.	01	04	00	00	00	00	00	05
3.	Biotechnology	05	08	13	00	00	03	00	29
4.	Chemical Engg.	07	07	07	00	01	00	00	22
5.	Chemistry	07	09	07	00	03	02	00	28
6.	Civil Engg.	22	13	07	03	01	04	00	50
7.	Computer Sc. & Engg.	01	04	06	02	00	01	00	14
8.	Earthquake Engg.	06	03	02	00	01	01	01	14
9.	Earth Sciences	11	01	10	00	03	00	00	25
10.	Electrical Engg.	10	11	08	03	01	01	00	34
11.	Electronics & Comm. Engg.	04	07	09	00	00	01	00	21
12.	Hum. & Soc. Sc.	06	04	05	02	00	00	00	17
13.	Hydrology	04	02	01	00	00	00	00	07
14.	Management Studies	02	06	06	00	01	02	00	17
15.	Mathematics	10	12	04	00	00	02	00	28
16.	Mech. & Ind. Engg.	11	20	10	00	00	03	03	47
17.	Metl. & Mat. Engg.	06	05	11	00	00	01	00	23
18.	Paper Technology	03	02	01	01	00	02	00	09
19.	Polymer & Process Engg.	01	04	07	00	00	01	00	13
20.	Physics	07	09	17	00	01	03	00	37
21.	WRD&M	03	01	01	00	01	05	00	11
22.	A.H.E.C.	03	01	02	00	00	00	00	06
23.	I.I.C.	01	00	00	00	00	00	03	04
24.	I.C.C.	00	00	01	00	00	00	05	06
25.	Nanotechnology	00	00	00	00	00	01	00	01
26.	M.G. Central Library	00	00	00	00	00	00	07	07
27.	Director Office	00	00	00	00	00	00	01	01
	<b>Total</b>	<b>134</b>	<b>136</b>	<b>144</b>	<b>14</b>	<b>13</b>	<b>35</b>	<b>20</b>	<b>496</b>



**2.2 NEW APPOINTMENTS AND SELECTIONS TO HIGHER POSTS  
(1.4.2016 to 31.3.2017)**

Sl. No.	Name	Designation	Department	DOJ
<b>Faculty Members</b>				
1.	Dr. Gopinath Packirisamy	Assoc. Prof.	Biotechnology	29.04.2016
2.	Dr. Ram Prakash	Assoc. Prof.	Chemical	29.04.2016
3.	Dr. Vimal Kumar	Assoc. Prof.	Chemical	29.04.2016
4.	Dr. Vishal Kumar	Assoc. Prof.	EED	29.04.2016
5.	Dr. Dheeraj Kumar Khatod	Assoc. Prof.	EED	29.04.2016
6.	Dr. Yogesh Vijay Hote	Assoc. Prof.	EED	29.04.2016
7.	Dr. Manoj Tripathi	Assoc. Prof.	EED	29.04.2016
8.	Dr. B.R. Bhalja	Assoc. Prof.	EED	29.04.2016
9.	Dr. Ravi Shankar Jakka	Assoc. Prof.	EQD	29.04.2016
10.	Dr. S.C. Gupta	Assoc. Prof.	EQD	29.04.2016
11.	Dr.(Ms.) Pooja Garg	Assoc. Prof.	HSS	29.04.2016
12.	Dr. Brijesh Kumar Yadav	Assoc. Prof.	Hydrology	29.04.2016
13.	Dr. D.N. Pandey	Assoc. Prof.	Mathematics	29.04.2016
14.	Dr. Sanjeev Kumar	Assoc. Prof.	Mathematics	29.04.2016
15.	Dr. Ameeya Kumar Nayak	Assoc. Prof.	Mathematics	29.04.2016
16.	Dr. Sudhakar Subudhi	Assoc. Prof.	MIED	29.04.2016
17.	Dr. Dhish Kumar Saxena	Assoc. Prof.	MIED	29.04.2016
18.	Dr. Vikram Vasant Dabhade	Assoc. Prof.	MMED	29.04.2016
19.	Dr. B.V.M. Kumar	Assoc. Prof.	MMED	29.04.2016
20.	Dr. Patit Paban Kundu	Professor	Chemical	03.05.2016
21.	Dr. Patit Paban Kundu	Professor	Chemical	03.05.2016
22.	Dr. Gargi Singh	Asstt. Prof. (OC)	CED	12.05.2016
23.	Dr. Sohoni Chakrabarty	Asstt. Prof. (OC)	EED	01.06.2016
24.	Dr. Sonal Atreya	Asstt. Prof. (OC)	Arch. & Planning	09.06.2016
25.	Dr. Kaustav Chatterjee	Asstt. Prof. (OC)	CED	20.06.2016
26.	Dr. Ranita Biswas	Asstt. Prof. (OC)	CS&E	20.06.2016
27.	Dr. Pratap Chandra Mohanty	Asstt. Prof.	HSS	02.08.2016
28.	Dr. Ganpule Shallesh Govind	Asstt. Prof.	MIED	02.08.2016
29.	Dr. Mayank Goswami	Asstt. Prof.	Physics	09.08.2016
30.	Dr. (Mrs.) Diptimayee Nayak	Asstt. Prof. (OC)	HSS	05.09.2016
31.	Dr. Nachiketa Rai	Asstt. Prof.	Earth Sciences	01.10.2016
32.	Dr. Arup Samanta	Asstt. Prof.	Physics	03.10.2016
33.	Dr. Biplab Banerjee	Asstt. Prof. (OC)	CS&E	14.10.2016
34.	Dr. Charan Kumar	Asstt. Prof.	Mathematics	15.11.2016
35.	Dr. Jeevanand S.	Asstt. Prof. (OC)	EED	15.12.2016
36.	Dr. Subhankar Mishra	Asstt. Prof.	CS&E	28.12.2016
<b>Non-Faculty Group 'A'</b>				
37.	Dr. Akhilesh Kumar	Medical Officer	Institute Hospital	01.04.2016
38.	Dr. Rashmi Ranjan Guru	Medical Officer	Institute Hospital	07.04.2016
39.	Smt. Subathra Murugesan	Scientific Officer Gr.-I (On Contract)	ICC	03.05.2016
40.	Sri Ravi Kumar Chauhan	Programmer	ICC	03.05.2016
41.	Shri Kaushik Chattopadhyay	Scientific Officer Gr.-II (On Contract)	ICC	09.05.2016
42.	Dr. Rao Farman Khan	Medical Officer	Institute Hospital	30.05.2016
43.	Dr. Alok Anand	Medical Officer	Institute Hospital	14.06.2016
44.	Shri Abhishek Kumar	Officer on Special Duty (On Contract)	Material Management	22.08.2016
45.	Sri Sanjeev Shukla	Senior Scientific Officer	ICC	30.08.2016
46.	Sri Kamal Singh Gotyan	Senior Scientific Officer	IIC	30.08.2016
47.	Dr. Vibhu Sharma	Medical Officer (Ad-hoc Basis)	Institute Hospital	17.03.2017

**2.3 APPOINTMENTS / PROMOTIONS UNDER SC/ST AND OBC CATEGORIES**  
(1.4.2016 to 31.3.2017)

Sl. No.	Name of staff	Designation	Department	Category
1.	Dr. Rashmi Ranjan Guru	Medical Officer	Institute Hospital	OBC
2.	Dr. Akhilesh Kumar	Medical Officer	Institute Hospital	SC

**2.4 FACULTY / OFFICERS / STAFF SUPERANNUATED**  
(1.4.2016 to 31.3.2017)

(a) Faculty / Officers

Sl. No.	Name	Designation	Department	Date of Birth	Date of Superannuation/ Resignation	Remarks
1.	Shri Vikram Singh	AEE (Civil) (On Contract)	Estate & Works	01.07.1965	01.04.2016	Relieved
2.	Dr. (Mrs.) Monica Agarwal	Medical Officer	Institute Hospital	01.10.1976	30.04.2016	Resigned
3.	Dr. R.N. Goyal	Professor	Chemistry	01.06.1951	31.05.2016	Retired
4.	Dr. R. Anbalagan	Professor	Earth Sciences	20.05.1951	31.05.2016	Retired
5.	Dr. Vinod Kumar	Professor	EED	16.05.1951	31.05.2016	Retired
6.	Shri M.K. Kushwaha	AEE (Civil) (On Contract)	Estate & Works	28.08.1988	04.06.2016	Resigned
7.	Dr. A.K.Singh	Professor	Chemistry	01.07.1951	30.06.2016	Retired
8.	Dr. Deepak Kashyap	Professor	CED	29.06.1951	30.06.2016	Retired
9.	Dr.(Mrs.) Arnita Sinvhal	Professor	EOD	10.06.1951	30.06.2016	Retired
10.	Dr. (Smt.) Sunita Devi	Programmer	WRD&M	14.06.1956	30.06.2016	Retired
11.	Shri Shyam Mohan Garg	Executive Engineer (Electrical) on Deputation	Estate & Works	31.12.1967	20.07.2016	Relieved to join parent deptt.
12.	Dr. Ashok Kumar	Professor	EOD	24.07.1951	31.07.2016	Retired
13.	Dr. Satish Kumar	Professor	Paper Tech.	03.08.1951	31.08.2016	Retired
14.	Dr. S.K. Tripathi	Professor	WRD&M	15.08.1951	31.08.2016	Retired
15.	Dr.(Mrs.) Ritu Barthwal	Professor	Biotechnology	22.09.1951	30.09.2016	Retired
16.	Dr. Ravinder Nath	Professor	Physics	10.11.1951	30.11.2016	Retired
17.	Dr. Patel Dhavalkumar Chaturbhai	Asstt. Prof.	CS&E	18.06.1981	27.12.2016	Resigned
18.	Shri B.P. Singh	AEE	Estate & Works	01.01.1957	31.12.2016	Retired
19.	Dr. S.P. Sharma	Professor	Mathematics	02.01.1952	31.01.2017	Retired
20.	Shri N.T. Diheung	Asstt. Registrar (on contract)	Academic	04.09.1982	14.03.2017	Resigned

(b) List of Employee retired from 01.04.2016 to 31.03.2017 (Group B, C & C-MTS)

Sl. No.	Name	Designation	Department	Date of Joining	Date of Retirement
1.	Mr. Suresh Kumar	Sr. Attendant (S.G.)	MIED	01.11.1980	30.06.2016
2.	Mr. Khalil Ahmed	Attendant	AHEC	16.01.1995	30.06.2016
3.	Mr. V.K. Sharma	Sr. Supdt. (S.G.)	WRD&M	25.01.1984	30.06.2016
4.	Mr. Irshad Ali	Sr. Attendant	Academic Section	26.05.1978	30.06.2016
5.	Mr. S.K. Sisodia	Sr. Attendant Grade – II	Chemical Engineering	25.05.1988	30.06.2016
6.	Mr. R.P. Tiluja	Superintendent	Academic (UG) Section	28.12.1982	30.06.2016
7.	Mr. Harpal	Sr. Attendant (S.G.)	DOSW	22.01.1980	30.06.2016
8.	Mr. Vinod Kumar	Sr. Attendant (S.G.)	Estate & Works	01.08.1978	30.06.2016
9.	Mr. Sarfarazul Haque	Sr. Attendant (S.G.)	MIED	01.09.1970	31.07.2016

10.	Mr. Sayeed Ahmed	Sr. Attendant (S.G.)	MIED	09.05.1983	31.07.2016
11.	Mr. V.K. Gupta	Sr. Supdt. (S.G.)	Academic (Res) Section	10.05.1978	31.07.2016
12.	Mrs. Suman Agarwal	Superintendent	MMED	15.09.1975	31.07.2016
13.	Mr. Naresh Kumar	Sr. Attendant (S.G.)	Civil Engineering	14.11.1983	31.07.2016
14.	Mr. Sukhmal Giri	Jr. Technical Superintendent	MMED	09.04.1990	31.07.2016
15.	Mr. Shiv Kumar Singh-I	Sr. Attendant (S.G.)	ICC	23.11.1983	31.07.2016
16.	Mr. Dungar Singh Rajput	Sr. Attendant (S.G.)	Physics	24.09.1977	31.07.2016
17.	Mr. Ashwani Kumar	Superintendent	IIC	16.09.1981	31.07.2016
18.	Mr. Mahipat Singh	Jr. Technical Superintendent	MIED	10.03.1974	31.07.2016
19.	Mr. Ashok Kumar	Technical Superintendent	IIC	11.04.1996	31.07.2016
20.	Mr. Arvind Kumar	Sr. Attendant (S.G.)	IIC	01.12.1980	31.07.2016
21.	Mr. R.K. Giri	Jr. Technical Superintendent	Earthquake Engineering	16.09.1986	31.07.2016
22.	Mr. Dinesh Kumar Gupta	Sr. Attendant (S.G.)	Chemical Engineering	01.09.1983	31.07.2016
23.	Mr. Dharam Singh	Sr. Attendant (S.G.)	Civil Engineering	01.12.1980	31.08.2016
24.	Mr. Nathi Ram	Sr. Attendant	Guest House	12.06.1984	30.09.2016
25.	Mr. Raj Pal Sharma	Attendant (I)	Civil Engineering	27.01.1995	30.09.2016
26.	Mr. Satyendra Pal	Sr. Lab. Assistant	Earthquake Engineering	17.07.1996	30.09.2016
27.	Mr. D.P. Dubey	Asstt. Lib. Info. Officer	MGCL	01.08.1980	31.10.2016
28.	Mr. Shyam Lal – I	Sr. Attendant (S.G.)	Chemical Engineering	17.10.1980	31.10.2016
29.	Mr. Vinod Dayal	Sr. Attendant (S.G.)	E&CE	24.11.1975	31.10.2016
30.	Mr. Guru Charan	Sr. Attendant	MIED	09.10.1980	31.10.2016
31.	Mr. Ratnesh Kumar	Sr. Tech. Supdt. (S.G.)	SRE Campus	24.04.1981	31.10.2016
32.	Mr. Prem Lal	Superintendent	SRE Campus	01.07.1993	31.10.2016
33.	Mr. H.P. Singh	Sr. Supdt. (S.G.)	Academic (U.G.) Section	17.09.1979	30.11.2016
34.	Mr. Abdul Gaffar	Sr. Supdt.(S.G.)	Humanities & Social Sciences	14.01.1980	30.11.2016
35.	Mr. Riyazuddin	Sr. Attendant (S.G.)	DOSW	06.07.1981	30.11.2016
36.	Mr. K.K. Sharma	Sr. Technical Superintendent	Physics	18.07.1983	31.12.2016
37.	Mr. Mahendra Pal	Sr. Attendant (S.G.)	DOSW	14.11.1975	31.12.2016
38.	Mr. Om Giri	Sr. Attendant (S.G.)	Alumni Affairs	01.11.1980	31.12.2016
39.	Mr. Rakam Singh	Sr. Attendant	Vehicle Section	15.09.1984	31.12.2016
40.	Mr. Rajveer Singh	Superintendent	Accounts Section	03.10.1983	31.01.2017
41.	Mr. Karam Pal	Jr. Supdt.	SRE Campus	02.11.1992	31.01.2017
42.	Mr. Kiran Singh	Sr. Attendant (S.G.) (I)	Mathematics	01.11.1980	31.01.2017
43.	Mr. Mange Ram	Sr. Attendant	Pension Cell	17.01.1995	31.01.2017
44.	Mr. Jabar Singh	Sr. Attendant (S.G.)	Earthquake Engineering	13.01.1978	31.03.2017
45.	Ms. Savita	L.I.O.	MIED	06.09.1979	31.03.2017
46.	Mr. Mehar Ali	Technical Supdt.	Estate & Works	22.02.1983	31.03.2017
47.	Mrs. Usha Juyal	Superintendent	Telephone Exchange	05.05.1983	31.03.2017

**Expired from 1-4-2016 to 31-03-2017**

Sl. No.	Name	Designation	Department	Date of Expired
1.	Dr. Ravindra Bhargava	Assoc. Prof.	Chemical	25.04.2016
2.	Mr. Susheel Kumar	Sr. Attendant	Estate & Works	20.05.2016
3.	Mr. Brijesh Kumar	Attendant (Safai Karmchari)	Hydrology	27.07.2016
4.	Dinesh Kumar Sharma	Sr. Attendant	Hindi Cell	08.11.2016
5.	Mr. Y.D. Sharma	Sr. Attendant	Earthquake Engg.	12.09.2016
6.	Mr. Kunwar Pal	Attendant	AHEC	14.12.2016

**Voluntary Retirement (01.04.2016 to 31.03.2017)**

Sl. No.	Name	Designation	Department	Date of VR
1.	Dr. V.K. Gupta	Professor	Chemistry	04.07.2016

**2.5 NON-ACADEMIC STAFF (Group B, C & C MTS)**  
as on 31.03.2017)

Sl. No.	Departments / Centers / Units / Offices	Working Position				Total	MTS
		Group B		Group C			
		Tech.	Min.	Tech.	Min.		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	Chemical Engg	2	2	6	1	11	10
2	Civil Engg	3	3	6	2	14	38
3	Electrical Engg	3	1	4	2	10	13
4	Mechanical & Ind. Engg	4	3	16	2	25	23
5	SRE Campus (i) Pulp & Paper Engg., (ii) Applied Sc.& Engg. (iii) Campus Services (Sports/Lib./Misc./Estate)	3	1	8	3	15	17
6	Architecture & Planning	1	1	4	2	8	9
7	E & CE	2	1	7	4	14	09
8	CSE						
9	M.M.E.D.	1	1	7	1	10	8
10	Biotechnology	3	0	1	2	6	4
11	Earth Science	1	0	3	2	6	5
12	Mathematics	1	2	0	0	3	6
13	A.H.E.C.	6	0	2	2	10	4
14	EQD	3	0	3	2	8	7
15	Hydrology	0	0	1	3	4	4
16	WRD&M	2	0	2	1	5	3
17	Chemistry	0	2	2	0	4	8
18	Physics	2	0	2	2	6	7
19	Center for Nanotechnology	0	0	0	1	1	2
20	Disaster Mitigation & Management	0	0	0	0	0	1
21	C-TRANS	0	0	0	0	0	1
22	DOMS	1	1	0	0	2	4
23	Humanities	0	0	0	2	2	3
24	QIP + Cont. Education	0	2	0	2	4	3
25	Director Office	0	0	0	0	0	3
26	D. D. Office	0	0	0	1	1	1
27	Dean Acad. Studies	0	0	0	0	0	0
28	DOFA & Assoc. DOFA	0	1	0	0	1	0
29	Dean, SRIC & Assoc. Dean	0	1	0	0	1	02
30	Dean, Administration	0	1	0	0	1	0
31	DOSW ADOSW (Bhawan) ADOSW (Discipline) ADOSW (Internal Students)	0	0	0	01	1	0
32	Dean, Alumni Affairs Off.	0	0	0	0	0	0
33	Registrar's Office	0	1	0	0	1	02
34	Academic Section	0	1	0	7	8	4
35	Finance Planning	0	2	0	13	15	05
36	Establishment Services	0	4	0	10	14	02
37	DR(Adm) with ACR Management	0	0	0	0	0	01
38	DOSW Office	0	0	0	6	6	37
39	Institute Hospital	4	1	11	0	16	6
40	M.G. Central Library	12	0	4	1	17	1
41	ICC	3	0	1	3	7	2
42	IIC	4	0	2	1	7	3
43	Security	3	0	2	1	6	11
44	Estate & work	9	1	8	3	21	45

45	Sports Council	1	1	1	0	3	0
46	SRIC Office	0	1	0	2	3	2
47	Material Management	0	0	0	4	4	03
48	Internal Audit	0	0	0	02	2	0
49	Transportation Section	0	0	2	0	2	3
48	Internal Audit	0	0	0	0	2	20
51	IPR Cell	0	1	0	0	1	0
52	ET Cell	0	0	0	0	0	1
53	James Thomson Building Gate	0	0	0	0	0	03
54	Statutory Meeting Sec.	0	1	0	0	1	02
55	Dy. Registrars	0	0	0	0	0	0
56	RTI Section	0	0	0	1	1	0
57	Medifare Cell	0	0	0	0	0	0
58	HRD Training	0	0	0	0	0	0
59	General Section including Legal, Central Diary & Dispatch etc.	0	2	0	3	5	02
60	JEE Office	0	0	0	1	1	01
61	KIH	0	0	0	0	0	01
62	Hindi Cell	0	2	0	2	4	0
63	NC Nigam Visitors Hostel	0	0	0	1	1	0
64	Gate Office	0	1	0	1	2	0
65	Hobbies Club	1	0	1	0	2	01
66	Placement Office	0	0	0	1	1	0
67	SC/ST Cell	0	0	0	0	0	0
	<b>Total</b>	<b>76</b>	<b>43</b>	<b>109</b>	<b>101</b>	<b>329</b>	<b>333</b>

**2.6 NON-TEACHING OFFICERS  
(01.4.2016 to 31.3.2017)**

Department/Centre/Office	Post	No. of Group 'A' Officers
Administration	Registrar	01
Academic Studies	Dy. Registrar	01
	Asstt. Registrars	01
Chemical Engineering	Technical Officer	01
Chemistry	Technical Officer	01
Civil Engineering	Scientific Officer	01
Director Office	Asstt. Registrar	01
	Senior Scientific Officer on contract	01
Dean of Students' Welfare	Counselor	01
	Assistant Registrar (On Contract)	01
Electrical Engineering	Technical Officer	01
Earthquake Engineering	Scientific Officer Grade-II	01
Establishment Services (Including Pension, Recruitment & Training)	Asstt. Registrar	02
	Asstt. Registrar (On Contract)	01
Estate & Works	Institute Architect	01
	Institute Engineer	01
	Executive Engineer	01
	Asst. Executive Engineer	08
	Asst. Executive Engineer (On Contract)	01

Finance & Accounts/ Internal Audit/ Material Management	Joint Registrar	01
	Dy. Registrar	01
	Officer on Special Duty	01
	Asstt. Registrar	03
	Asstt. Registrar (On Contract)	01
General Section/Legal/ Meeting Section	Dy. Registrar	01
	Asstt. Registrar	02
Institute Computer Centre	Programmer	02
	System Programmers	02
	Scientific Officer Grade	01
	Scientific Officer Grade-I (on contract)	01
	Scientific Officer Grade-II (on contract)	01
Institute Instrumentation Centre	Scientific Officer Grade-II	01
	Scientific Officer Grade-I	01
	Scientific Officer	01
	Technical Officer	03
Institute Hospital	Chief Medical Officer	01
	Institute Medical Officer	01
	Medical Officer	05
	Medical Officer (Ad-hoc)	01
M.G. Central Library	Librarian	01
	Dy. Librarian	02
	Asstt. Librarian	03
	Scientific Officer Grade.II (OC)	01
M.I.E.D.	Supdt. Workshop	01
	Asstt. Supdt. Workshop	02
M.M.E.D.	Technical Officer	01
RTI Cell	Deputy Registrar	01
Saharanpur Campus	Asstt. Registrar	01
	Institute Medical Officer (On Contract)	01
Security Office	Security Officer	01
SRIC Office	Asstt. Registrar	01
Sports Association	Sports Officer	01
	Asstt. Sports Officers	01
W.R.D.&M.	Technical Officer	01
Physics	Technical Officer	01
GNEC	Assistant Registrar (on contract)	01
<b>TOTAL</b>		<b>79</b>

**2.7 New Appointment for the period from 1-4-2016 to 31-3-2017**  
**(Group B, C & C-MTS)**  
**Compassionate ground on contract basis**

Sl. No.	Name of staff	Designation	Date of Joining	Category
01	Sri Devendra Kumar Sharma	Multi Skill Lab/Office Work	01.08.2016	UR

### Appointment in running Pay-Band

Sl. No.	Name of staff	Designation	Date of Joining	Category
01	Ms. Kusum	Pharmacist	09.02.2017	SC
02	Ms. Sandhya Yadav	Pharmacist	13.02.2017	UR

### 2.8 Recipients of Outstanding Teacher Award on Teachers' Day

Sl. No.	Name	Designation	Department
1.	Dr. Biswarup Das	Professor	Electrical Engineering
2.	Dr. Akshay Dvivedi	Associate Professor	Mech. & Indl. Engg
3.	Dr. Sugata Gangopadhyay	Associate Professor	Computer Sc. Engg
4.	Dr. Vinod Pankajashan	Assistant Professor	Electronics & Comm. Engg.

### 2.9 RECIPIENTS OF INCENTIVE ON FOUNDATION DAY

#### Group 'A' Administrative

1. Mr. Pradeep Kumar Sharma, Assistant Registrar (Services)

#### Group 'A' Technical

1. Mr. Kamal Singh Gotiyan, Senior Scientific Officer, IIC

#### Group 'B' Clerical

1. Mr. Nathi Ram, Superintendent, Meeting Section
2. Mr. Mohd. Nazim, Superintendent, MIED

#### Group 'B' Technical

1. Mr. Dharmveer Sharma, Senior Technical Superintendent, Earthquake Engg. Deptt.

#### Group 'C' Clerk & Stenographer

1. Mr. Tajendra Jeet Singh, Senior Assistant, Establishment Services
2. Mr. Rajveer Singh, Superintendent, Finance & Accounts
3. Mr. Mool Chand Dhiman, Finance & Accounts
4. Mrs. Rekha Tyagi, Senior Superintendent (S.G.), Earthquake Engineering Deptt.

#### Group 'C' Technical

1. Mr. Subodh Jain, Technical Superintendent, Earthquake Engineering Deptt.
2. Mr. Vinod Kumar Gaur, Senior Technical Superintendent (Lib), Saharanpur Campus
3. Mr. Dhan Prakash, Junior Laboratory Assistant, MMED

#### Multi Task Staff Non Technical

1. Mr. Bhagwan Singh, Senior Attendant Grade-II, Earth Sciences Deptt.
2. Mr. Sudhir Kumar, Senior Attendant Grade-II, Physics Deptt.

#### Multi Task Staff Technical

1. Mr. Shyam Singh, Senior Attendant, Saharanpur Campus
2. Mr. Basant Prasad, Attendant, Civil Engineering Deptt.

#### Multi Task Staff (Mall/Security Guards)

1. Mr. S. K. Sharma, Senior Attendant, Saharanpur Campus

#### Multi Task Staff (Sweepers)

1. Mr. Vicky, Attendant, Physics Deptt.

## 3. Academic Programmes

- 3.1 Courses of Study
- 3.2 Admissions
  - 3.2.1 Undergraduate Degree Courses
  - 3.2.2 Postgraduate Degree Courses
  - 3.2.3 Ph.D. Programmes
  - 3.2.4 Student Strength
  - 3.2.5 Scholarships to Students
- 3.2.6 Fellowships to Postgraduate Students
- 3.2.7 Special Facilities available to SC/ST Students
- 3.3 Institute Results
- 3.4 Annual Convocation
- 3.5 Foundation Day

### 3.1 COURSES OF STUDY

#### Alternate Hydro Energy Centre

- Master of Technology
  - Alternate Hydro Energy Systems
  - Environmental Management of Rivers and Lakes
- Doctor of Philosophy

#### Architecture and Planning

- Bachelor of Architecture
- Master of Architecture
- Master of Urban & Rural Planning
- Doctor of Philosophy

#### Biotechnology

- Bachelor of Technology
- M. Tech. Bio Process Engineering
- Master of Science
- Doctor of Philosophy

#### Chemical Engineering

- Bachelor of Technology (Chemical Engg.)
- Integrated Dual Degree CH/HC\*
- B.Tech. (Polymer Sciences and Engg.)
- Master of Technology
  - Computer Aided Process Plant Design
  - Industrial Pollution Abatement
- Doctor of Philosophy

#### Chemistry

- Integrated M.Sc Chemistry
- M.Tech. Advanced Methods of Chemical Analysis
- Master of Science
- Doctor of Philosophy

#### Civil Engineering

- Bachelor of Technology
- Integrated Dual Degree CE/ST\*
- Master of Technology
  - Environmental Engineering
  - Geomatics Engineering
  - Geotechnical Engineering
  - Hydraulic Engineering
  - Structural Engineering

- Transportation Engineering
- Doctor of Philosophy

#### Earthquake Engineering

- Master of Technology
  - Soil Dynamics
  - Structural Dynamics
  - Seismic Vulnerability and Risk Assessment
- Doctor of Philosophy

#### Earth Sciences

- Master of Science
  - Applied Geology
- Integrated Master of Technology
  - Geophysical Technology
  - Geological Technology
- Doctor of Philosophy

#### Electrical Engineering

- Bachelor of Technology
- Integrated Dual Degree EE/PE\*
- Master of Technology
  - Electric Drives and Power Electronics
  - Instrumentation and Signal Processing
  - Power System Engineering
  - Systems and Control
- Doctor of Philosophy

#### Centre for Nanotechnology

- M.Tech (Nanotechnology)
- Doctor of Philosophy

#### Centre of Excellence-Disaster Mitigation & Management

- M.Tech (Disaster Mitigation and Management)
- Doctor of Philosophy

#### Centre for Transportation Systems

- M.Tech (Infrastructure Systems)
- Doctor of Philosophy

#### Electronics and Communication Engineering

- Bachelor of Technology
- Electronics and Communication Engineering
- Integrated Dual Degree E&C/WC\*



- Master of Technology
  - Communication Systems
  - R.F. & Microwave Engineering
  - Microelectronics & VLSI
- Doctor of Philosophy
- Computer Science and Engineering**
  - Bachelor of Technology
    - Computer Science and Engineering
  - Integrated Dual Degree CSE/IT\*
  - Master of Technology
    - Computer Science and Engineering
  - Doctor of Philosophy
- Humanities and Social Sciences**
  - Doctor of Philosophy
  - M.Sc. Economics
- Hydrology**
  - Postgraduate Diploma /Master of Technology
  - Doctor of Philosophy
- Management Studies**
  - Master in Business Administration
  - Doctor of Philosophy
- Mathematics**
  - Integrated M. Sc Mathematics
  - Master of Science
    - Mathematics
  - Doctor of Philosophy
- Mechanical and Industrial Engineering**
  - Bachelor of Technology
    - Mechanical Engineering
    - Production & Industrial Engineering
  - Master of Technology
    - Machine Design Engineering
    - Production and Industrial System Engineering
    - Thermal Engineering
    - Welding Engineering
    - CAD,CAM & Robotics

- Doctor of Philosophy
- Metallurgical and Materials Engineering**
  - Bachelor of Technology
  - Integrated Dual Degree MT/ME\*
  - Master of Technology
    - Industrial Metallurgy
    - Materials Engineering
  - Doctor of Philosophy
- Paper Technology**
  - Bachelor of Technology
  - B. Tech. Polymer Science & Engineering
  - Polymer Science ((Discontinue))
  - B. Tech. Pulp & Paper Engineering (Discontinue)
  - Master of Technology
    - Pulp and Paper Engineering
    - Packaging Technology
  - Doctor of Philosophy
  - Integrated M. Tech Polymer Science & Technology\*
  - Integrated Dual Degree Process Engineering and M.B.A (Discontinue)
- Physics**
  - B.Tech. (Engineering Physics)
  - Integrated M. Sc Physics
  - Master of Science
  - M. Tech.
    - Solid State Electronic Materials
    - Photonics
  - Doctor of Philosophy
- Water Resources Development & Management**
  - Master of Technology/Postgraduate Diploma.
    - Irrigation Water Management
    - Water Resources Development
  - Doctor of Philosophy

### 3.2 ADMISSIONS

During the year 2016-17 the number of students admitted to various courses is as given below:

Ph.D.	352
M.Tech.	646
M. Arch./MURP	34
M.Sc.	140
MBA	83
B. Tech. (Including IDD)/Intg. M.Sc.	935
B. Arch.	31
<b>TOTAL</b>	<b>2221</b>

Gender wise Distribution of Admitted Students in Different Categories are given below:

<b>(i) Undergraduate</b>			
Categories	Male	Female	Total
General	422	46	468
OBC	243	15	258
SC	132	11	143
ST	75	09	84
PD	11	02	13
<b>Total</b>	<b>883</b>	<b>83</b>	<b>966</b>
<b>(ii) Postgraduate</b>			
Categories	Male	Female	Total
General	419	140	559

OBC	163	42	205
SC	81	20	101
ST	24	12	36
PD	02	0	02
Total	689	214	903

The number of foreign students admitted to various courses is as given below:

	Male	Female	Total
UG	-	-	-
PG	46	03	49
PhD	05	0	05
Total	51	03	54

### 3.2.1 Undergraduate Courses (2016-17)

Sl. No.	Course	Sanctioned Strength	Students Admitted
1.	B.Arch.	35	31
2.	B.Tech. (Biotechnology)	35	37
3.	B.Tech. (Chemical)	110	107
4.	B.Tech. (Civil Engg.)	120	120
5.	B.Tech.Comp.Sc.& Engg.)	75	74
6.	B.Tech. (Electrical Engg.)	120	120
7.	B.Tech. (E&C Engg.)	80	79
9	B.Tech. (Prod. Indl. Engg.)	40	40
9.	B.Tech. (Mech. Engg.)	100	100
10.	B.Tech. (Met. & Mat. Engg.)	100	102
11.	B.Tech Polymer Science	35	36
14	Integrated M.Sc Mathematics	30	30
15	B. Tech. Engg Physics	30	29
16.	Integrated M.Tech GPT	30	32
17.	Integrated M.Tech GT	30	29
	<b>Total</b>	<b>970</b>	<b>966</b>

### 3.2.2 Postgraduate Degree Courses (2016-17)

Sl. No.	Course	Sanctioned Strength	Students Admitted
<b>(I) M.Tech.</b>			
1.	Chemical	56	36
2.	Civil	144	117
3.	Earthquake	64	52
4.	Electrical	92	72
5.	Elec. & Comp.	48	58
6.	Hydrology	15	17
7.	Mechanical	87	50
8.	Metallurgical	36	33
9.	W.R.D.&M.	15	49
10.	A.H.E.C.	40	41
11.	M.Arch/MURP	36	34
12.	Pulp & Paper/ Packaging Technology	38	14

13.	Comp. Sc. & Engg.	54	45
14	Nanotechnology	15	9
15	Disaster Mitigation & Management	15	11
16	Infrastructure (TSC) Systems	15	13
	<b>Total</b>	<b>770</b>	<b>651</b>
<b>(ii) M.Tech. (Sciences)</b>			
1	Physics (S.S.E.M.)	18	12
2	Chemistry (A.C.A.)	15	5
3	Bio technology (Bioprocess Engineering)	15	1
<b>(iii) M.Sc.</b>			
	Applied Geology	15	15
1.	Bio. Technology	37	33
2.	Chemistry	25	24
3.	Mathematics	30	30
4.	Physics	25	22
5.	M.Sc. (Economics)	30	16
6	M.B.A.	95	83
	<b>TOTAL</b>	<b>1075</b>	<b>903</b>

\* Including Sponsored Candidates

### 3.2.3 Ph.D. Programmes (2016-17)

Sl. No.	Course	Students Admitted
1.	Biotechnology	38
2.	Chemical Engg.	13
3.	Chemistry	08
4.	Civil Engg.	24
5.	Earth Sciences	24
6.	Electrical Engg.	17
7.	Elect. & Comp. Engg.	10
8.	Mathematics	21
9.	Metallurgical & Materials	15
10	Mech. & Ind. Engg.	22
11	Hydrology	03
12	Physics	16
13	Earthquake Engg.	07
14	Architecture & Planning	17
15	W.R.D.&M.	03
16	Hum. & Social Sciences	14
17	Paper Technology	14
18	MBA	26
19	AHEC	08
20	Centre for Transportation	04
21	IIC	02
22	Nanotechnology	03
23	Disaster Mitigation	02
24	Computer Science	08
25	Applied Science & Engg.	17
26	Polymer & Process Engg.	16
	<b>TOTAL</b>	<b>352</b>

### 3.2.4 Student Strength (2016-17)

Sl.	Course	Registered Students
1.	B. Tech. / B. Arch / IDD	4289
2.	M. Tech./M.Arch./MURP	1426
3.	M. Sc.	254
4.	M.B.A.	140
5.	Ph.D.	1816
	<b>TOTAL</b>	<b>7925</b>

### 3.2.5 Scholarships to Students (2016-17)

SL No.	Courses	Institute Merit - Cum-Means Scholarships	Trust Scholarships
1.	B.Tech. / B.Arch. I Yr.	-	3
2.	B.Tech. / B.Arch. II Yr.	258	4
3.	B.Tech. / B.Arch. III Yr.	248	9
4.	B.Tech. / B.Arch. IV Yr.	271	3
5.	B.Arch. V Yr.	15	-
6.	M.Sc. (Chemistry) I Yr.	5	1
7.	M.Sc.(Chemistry) II Yr.	5	-
8.	M.Sc. (Physics) I Yr.	5	-
9.	M.Sc. (Physics) II Yr.	3	-
10.	M.Sc. Mathematics, I year	5	-
11.	M.Sc. Applied (Maths.) IIYr.	5	-
12.	M.Sc. (Industrial Maths & Informatics) II Yr.	-	-
13.	MCA III Yr.	-	-
16.	M.Sc. (Applied Geology) I Yr.	4	-
17.	M.Sc. (App. Geo.) II Yr.	5	-
19.	M. Tech. Geophysical Tech., III year	-	-
20.	M. Tech. Geological Tech. III year	-	-
21.	M.Sc Biotechnology IYr	32	-
22.	M.Sc Biotechnology IIYr	27	-
	<b>TOTAL</b>	<b>888</b>	<b>20</b>

### 3.2.6 Postgraduate Students admitted with Scholarship / Assistantship (2016-17)

The number of fellowships made available to the PG Students are as under:

Sl. No.	Course	No. of Students
1.	MURP & M.Arch.	18
2.	M. Tech. (Chemical)	28
3.	M. Tech. (Civil)	69
4.	M. Tech. (Earthquake)	30
5.	M. Tech. (Electrical)	45
6.	M. Tech. (Elect. & Comp.)	23
7.	M. Tech. (Mechanical)	37
8.	M. Tech. (Metallurgical)	17
9.	M. Tech. (Comp. Sci. & Engg.)	26
10.	M. Sc. (Biotechnology) I Yr	33
11.	M. Sc. (Biotechnology) II yr	27
12.	M. Tech. (A.H.E.S.)	24
13.	M. Tech. (P&P)	06
14.	M. Tech. SSEM (Physics)	08
15.	M. Tech (DISASTER MITIGATION & MANAGEMENT)	08
16.	M. Tech. (Hydrology)	08
17.	M. Tech Advance Chemical Analysis (Chemistry)	05
18.	M. Tech. WRDM	08
19.	M.Tech. Nanotechnology	07
20.	M.Tech (C. Trans)	07
21.	M.Tech. (Packaging)	07
22.	M.TECH. (BIOPROCESS ENGINEERING)	07
	<b>TOTAL</b>	<b>448</b>

### 3.2.7 Special facilities available to SC/ST Students

The following special facilities are available for the applicants of SC/ST categories for admission to the various courses:

1. Application fee for Entrance Examination, which is charged from SC/ST categories, is only 50% of the fee fixed for candidates of the general category.
2. The cut-off percentage in the qualifying paper for admission to B. Tech. / B. Arch. courses is relaxed for SC/ST candidates.
3. Minimum percentage of marks fixed for admission in all undergraduate courses on the basis of the entrance examination is again relaxed for SC / ST candidates.
4. Minimum qualification for admission to M.Sc. and M. Tech. in Earth Sciences is a graduate with

minimum 55% marks. This is lowered for SC / ST candidates by 50%.

5. The following facilities are given to all SC/ST candidates (UG, PG, Sciences including MCA).

- No tuition fee is charged. This exemption is irrespective of parents/guardians income.
- Room rent is exempted.
- The Institute provides a scholarship of Rs. 1000/- p.m. or free messing (basic menu only) and Rs. 250/- p.m. as pocket allowance.

#### Eligibility

SC/ST students whose parents/ guardians' income does not exceed the limit prescribed by the Government of India from time to time can opt for free messing (basic menu only) and Rs. 250/- per month as pocket allowance, in lieu of full amount of scholarship of Rs. 1000/- P. M. At present, the ceiling of gross income for such awards is Rs. 4.5 lakhs per annum. Students of reserved categories are provided text books from the Library under the 'Text Book Loan Scheme' against a nominal security deposit. Additional books are also provided. Financial assistance is also provided to them from Samaj Kalyan Vibhag. Number of students belonging to SC/ST in B.Tech. / B.Arch. courses at the Institute during the Academic Session 2016-17 is as given below:

Class	SC / ST		
	Total	Male	Female
B.Tech./B.Arch I	81	81	-
B.Tech / B.Arch II	79	74	5
B.Tech./B.Arch III	57	56	1
B.Tech /B.Arch IV	89	85	4
B.Arch V	17	16	1
Integrated Dual Degree I	-	-	-
Integrated Dual Degree II	-	-	-

Integrated Dual Degree III	2	2	-
Integrated Dual Degree IV	2	1	1
Integrated Dual Degree V	2	2	-
Integrated M.Sc I	1	1	-
Integrated M.Sc II	1	1	-
Integrated M.Sc III	3	3	-
Integrated M.Sc IV	1	1	-
Integrated M.Sc V	10	10	-
Integrated M.Tech I	6	6	-
Integrated M.Tech II	-	-	-
Integrated M.Tech III	1	1	-
Integrated M.Tech IV	2	2	-
Integrated M.Tech V	5	4	1
<b>Total</b>	<b>359</b>	<b>346</b>	<b>13</b>

Number of students belonging to SC / ST at the Institute during the academic session 2016-17 in P.G. courses is as given below :

Class	SC / ST		
	Total	Male	Female
M. Tech./ M.Arch I year	100	75	25
M.Tech. / M.Arch II year	134	104	30
<b>TOTAL</b>	<b>234</b>	<b>179</b>	<b>55</b>
M.Sc. Iyr.	33	18	15
M.Sc 2 <sup>nd</sup> year	19	14	05
M.B.A. I <sup>st</sup> year	24	19	04
M.B.A. II <sup>nd</sup> year	11	09	03
<b>TOTAL</b>	<b>87</b>	<b>60</b>	<b>27</b>

### 3.3 INSTITUTE RESULTS

The number of students who have been declared successful in diploma/degree examinations during the year 2015-16 is as given below:

Ph.D.	292
M.Tech. (Earth Sciences) Final year	17
M.Sc. Final year	106
M.B.A. Final year	83
M.C.A. Final year	40
B. Tech. / B. Arch. Final year/IDD/IMT/M.Sc	1091
M. Tech./M. Arch. / MURP Final year	657
M.Tech. (S.S.E.M) Final year	06
M.Tech. (Chemistry)Final year	12
PG. Diploma	01
<b>TOTAL</b>	<b>2305</b>

The names of scholars who were awarded Ph.D. degree at the Annual Convocation of the Institute held on 30 September 2016 and their thesis titles are given under respective departments (Chapter - 4).

### 3.3.1 Summary of Final Year Examination Results (2015-16)

Sl.	Name of Class	Appeared	Passed	Remarks
1.	B. Tech. / B. Arch. Final Year	1187	1091	96 Students not earned required credits
2.	M. Tech. (Earth Sciences) Final Year	0	0	-
3.	M. Sc. Final Year	107	107	-
4.	M.B.A. Final Year	83	83	-
5.	M.C.A. Final Year	0	0	-
6.	M. Tech./M. Arch./MURP Final Year	716	633	83 Students not earned required credits
7.	P.G. Diploma	1	1	-
	<b>TOTAL</b>	<b>2094</b>	<b>1915</b>	<b>179 Students not earned required credits</b>

### 3.3.2 Summary of other Examination Results (2016-17)

Sl.	Name of Class	Appeared	Passed	Remarks
1.	B. Tech. / B. Arch. I Yr.	888	882	06 student not earned required credits
2.	B. Tech. / B. Arch. II Yr.	941	941	-
3.	B. Tech. / B. Arch. III Yr.	880	880	-
4.	IDD II Yr.	00	00	-
5.	IDD III Yr.	09	09	-
6.	IDD IV Yr.	24	24	-
7.	IMSc. I Yr.	32	32	-
8.	IMSc. II Yr.	30	30	-
9.	IMSc. III Yr.	40	40	-
10.	IMSc. IV Yr.	42	42	-
11.	IMTech. I Yr.	59	59	-
12.	IMTech. II Yr.	56	56	-
13.	IMTech. III Yr.	41	41	-
14.	IMTech. IV Yr.	51	51	-
15.	M. Tech. II Yr. (E. Sc.)	0	0	-
16.	M.B.A. I Yr.	83	82	01 Student not earned required credits
17.	M.Sc. I Yr.	117	116	01 Student not earned required credits
18.	M. Arch. / MURP I Yr.	32	31	01 Student not earned required credits
19.	M. Tech. I Yr.	548	536	12 Student not earned required credits
	<b>TOTAL</b>	<b>3873</b>	<b>3852</b>	<b>21 Students not earned required credits</b>

## 3.4 ANNUAL CONVOCATION - 2016

The 16<sup>th</sup> Annual Convocation of the Indian Institute of Technology Roorkee was held on September 30, 2016. Hon'ble Dr. Mukesh D. Ambani, Chairman, Managing Director, Reliance Industries Limited (RIL), Mumbai was the Chief Guest. In the Convocation, 1091 Degrees of B.Tech. /B.Arch., 676 Degrees of M. Tech. (Engg)/ M. Arch./MURP/ P.G. Diploma and 246 Degrees of M.Sc / M. Tech. (Science) /MCA/MBA were awarded. In addition, 292 PhD Degrees were conferred in various disciplines.

## 4. Academic Departments and Centres

- |   |   |
|---|---|
| 4.1 Architecture and Planning             | 4.12 Hydrology                                  |
| 4.2 Biotechnology                         | 4.13 Management Studies                         |
| 4.3 Chemical Engineering                  | 4.14 Mathematics                                |
| 4.4 Chemistry                             | 4.15 Mechanical and Industrial Engineering      |
| 4.5 Civil Engineering                     | 4.16 Metallurgical and Materials Engineering    |
| 4.6 Computer Science & Engineering        | 4.17 Saharanpur Campus                          |
| 4.7 Earthquake Engineering                | 4.18 Physics                                    |
| 4.8 Earth Sciences                        | 4.19 Water Resources Development and Management |
| 4.9 Electrical Engineering                | 4.20 Alternate Hydro Energy Centre              |
| 4.10 Electronics and Computer Engineering |   |
| 4.11 Humanities and Social Sciences       |   |

### 4.1 DEPARTMENT OF ARCHITECTURE AND PLANNING

**Academic Staff : 19; Students Admitted : UG-31, PG-33, Ph.D.-15;**  
**Publications : Book/Books Chapters: 06, Conferences : 19; Journals : 20**  
**Research Projects: Rs.334.06 Lacs, Consultancy Projects: 41.50 Lacs**

#### 1. SALIENT FEATURES

The department of Architecture and Planning imparts high quality education in the professional fields of Architecture and Planning and offers Bachelor of Architecture(B. Arch.), Master of Architecture (M. Arch.), Master of Urban and Rural Planning (MURP) and Ph.D. programmes. The B. Arch. was started in 1956. The department has singular distinction of being the first in India in instituting a Masters Degree program M. Arch. in the year 1969-70 and later another one, MURP in 1973-74. At present, more than 35 Ph.D. scholars are pursuing research in the department. The department has facilities like Climatology Lab, Computer Lab and Computerized Design Studios equipped with the state-of-art equipment and software, an Art Lab and a Workshop. During the year 2016-17, many faculty members visited a number of institutions in India and abroad and participated in seminars, symposia and Conferences. Faculty members of the department were also engaged in sponsored research and consultancy projects. They published a number of research papers in National and International Journals and Conference Proceedings and also published books and monographs. The department has added, during the year, more than 300 books in the departmental library, upgraded studios with the improved drafting tables, air conditioners and LCD projection systems. The construction yard has been upgraded and the departmental lawns have been rekindled. Besides, the entire department was made Wi-Fi enabled. The department had the privilege of hosting a number of visitors from India and abroad. Department was also instrumental in organising a National Conference SBE 2017 and several other national and international events.

#### 2. LIST OF FACULTY MEMBERS

**Arindam Biswas**, Ph.D. (University of Tokyo, Japan) Urban & Regional Planning, Regional Science, Inclusive Growth, Governance, Policy Analysis, Economic & Development Studies, Urbanization & Economic Growth, Urban Development, Architectural Design  
**(Ms) Avlokita Agarwal**, Ph.D (Roorkee) Energy efficiency in Buildings, Sustainability, Traditional Passive Systems

**E. Rajasekar**, Ph.D.(IIT Madras) Thermal comfort, Energy efficiency and Carbon foot print of built environment; Architectural Acoustics and Lighting Design; Building Information Modeling and Simulation; GIS Integration for Sustainable Development; GIS Based Noise Mapping and Mitigation

**Gaurav, Raheja**, Ph.D. (Roorkee)  
Architecture Design, Accessibility Design

**(Mrs.) Harshit Sosan Lakra**, MURP, (Cornell University, U.S.A) Culture Based Planning and Creative Economy, Economic and Community Development, International Studies in Planning, Environmental Planning, Vernacular Architecture.

**(Mrs), Ila Gupta, Head**, Ph.D. (Meerut)  
Applied Arts, Art application in Architecture & Planning, History of Art & Culture, Visual Communication and Design

**(Mrs).M. Mukherjee**, Ph.D. (Jadavpur)  
Building Science, Sustainable Settlement

**(Mrs) Pushpiata**, Ph.D. (Roorkee) Urban Design, Architecture, Planning and Design of Hill Settlements

**P S., Chani**, Ph.D. (Roorkee) Architecture, Energy Estimated in Building

**(Mrs), Rita Ahuja**, M.Arch. (Roorkee)  
Architecture, Building Science

**Ram Sateesh Pasupuleti**, Ph.D. (SABE, University of Westminster London, UK) Culturally Responsive Built Environments,

Disasters, Culture, Development and

Attractive Winter cities, Design for all in all Climatic conditions

**(Ms) Smriti Saraswat**, MIAD (CEPT, Ahmedabad) Interior-Architecture; Craft and Technology; Cultural Heritage & Creative Economy; Visual Narratives; Design Research and Writing; and Pedagogy

**Sonal Atreya**, Ph.D. (IIT Delhi) Architecture, Industrial Design, Ergonomics, Inclusive Design, Product Innovation

**(Ms). Tina Pujara**, MAUD (Singapore) Urban Design, Sustainable Urban Development, Urban Social Sustainability

**Uttam Roy Kumar**, Ph.D. (Jadavpur University) New Township Planning, Affordable Housing & Architecture

**V., Devadas**, Ph.D. (IIT Kharagpur) Energy System, Development Planning, Infrastructure

**Asstt. Prof. (on Contract)**

**(Ms.) Manavvi Suneja**, Masters of Landscape Architecture (SPA, New Delhi) Form & meaning of cultural landscapes, Ecological drivers of a landscape, Green Infrastructure, Energy efficient landscape design, Psychology of space

**(Mr) Saptarshi Kolay**, Masters (IIT Kanpur) Architecture, Visual Communication, User-Experience Design, Craft

### 3. HONORS AND AWARDS TO FACULTY MEMBERS

#### 1. **Prof. Pushpiata** Appointed member of:

- RR Committee for Framing of the Recruitment Rules for the Faculty and Non-faculty positions in three National Institutes of Architecture – the Schools of Planning and Architecture (SPAs) at New Delhi, Bhopal and Vijayawada.
- UGC Expert Committee for Academic Review of the MOOCs Courses in Architecture and Urban Design
- Expert Committee for Selection of Architects, Ministry of Health and Social Welfare
- Expert Committee for Selection of Architects, IIT Mandi

#### 2. **Dr. Mahua Mukherjee** Visiting Research Faculty and Associate Professor and in April-June, 2017 in Kyoto University, Japan

#### 3. **Smriti Saraswat** achieve 2016: Best Paper Award in the section on 'Art, Craft and Heritage', in the International Conference on 'Sustainable Built Environment', IIT Roorkee, 03<sup>rd</sup>-05<sup>th</sup> Feb, 2017

#### 4. **Dr. Arindam Biswas**

- 2016: Best Paper Award; Exploring the Smart City Paradigm in the Context of Urban India; 7<sup>th</sup> October 2016; IBC New Delhi.
- 2016: Best Poster Award; A Planning & Architectural Intervention with Work-Living Solution For Migrants/Refugees In Cities, DWIH Conference: CityScape; 29<sup>th</sup> September – 1<sup>st</sup> October 2016; German House of Research & Innovation, New Delhi.
- Professor in charge for UN-Habitat Partner University program, July 2016.

#### 4. DISTINGUISHED VISITORS TO THE DEPARTMENT (NATIONAL / INTERNATIONAL)

\* Department/Institute Lectures/Talks (not class specific activities – open to all)

Sl. No	Name	Designation and Affiliation	Purpose of Visit	Dates
1.	Prof. S.C. Handa	Director General, Quantum Global Campus	Talk on*History of Indian Architecture(especially,covering TajMahal)*	19 April,2017
2.	Mr. Ar.Ved Mittal	Retd. Chief Town Planner	Interaction session	9 March,2017
3.	Ar. H.B. Singh	Retd. Prof.SPA Delhi		
4.	Mr. R. Jaiswal	Architect	First Stage Thesis seminar of B. Arch Vth year students	9-10 Sept, 2016
5.	Mr. Pradeep Sachdeva	Architect		
6.	Shri Nikhil Segal	Principal Designer	Second Stage Thesis seminar of B. Arch Vth year students	17-18 Oct, 2016
7.	Mr.Pradeep Sachdeva	Architect		
8.	Mr.Pradeep Sachdeva	Architect	Third Stage Thesis seminar of B. Arch Vth year students	9-10 Sept, 2016
9.	Shri Nikhil Segal	Principal Designer		
10.	Prof AmitHajela	Architect and Urban Designer	P.G. Dissertation (Viva –Voce Exam)	12-13 May, 2016
11.	Dr. Virendra Paul	SPA, New Delhi		
12.	Prof Kavay Kapadia	SPA New Delhi		
13.	Mr.R. Srinivas	TCPO (Govt. of India)		
14.	Prof R. Shankar	Former Head,APD		

#### 5. ACADEMIC ACTIVITIES ORGANIZED BY THE DEPARTMENT

\* This is a chronological account (class specific activities)

Sl. No	Details of Conf./ Seminar/ Symp./ Workshop/ Guest Lecture	Name of the Chairman	Sponsored by	Dates
01.	Cost benefit analysis in EIA & Project Planning and Management	HarshitS.Lakra	Institute/Dept	15-16 April, 2017
02.	Design and product Development	Ila Gupta	Institute/Dept	7 – 8April, 2017
03.	Game theory and its application in planning and assessment	HarshitS.Lakra	Institute/Dept	1 – 4April, 2017
04.	Site planning and Eco responsiveness	ManavviSuneja	Institute/Dept	8 – 9April, 2017
05.	Nature & Form	SmritiSaraswat	Institute/Dept	04 <sup>th</sup> – 05 <sup>th</sup> March, 2017
06.	Human centered design-Designing for people(UG)	SmritiSaraswat	Institute/Dept	31 March – 01April, 2017
07.	Talk on*History of Indian Architecture (especially covering TajMahal)*	SmritiSaraswat	Institute/Dept	19 <sup>th</sup> April, 2017
08.	Losing Biodiversity	ManavviSuneja	Institute/Dept	07 <sup>th</sup> September 2016

#### 6. SPONSORED RESEARCH PROJECT:

Sl. No.	Project Status	Total No. of Projects	Amount (Rs. In lacs)
1.	Completed Projects	05	39.88
2.	Ongoing Projects	02	27.80
3.	New Projects	03	266.38

#### 7. SERVICE TO INDUSTRIES

##### Consultancy Project

Sl. No.	Project Status	Total No. of Projects	Amount (Rs. In lacs)
1.	Completed Projects	-	-
2.	Ongoing Projects	02	41.50
3.	New Projects	-	-



**8. Summary of Major sponsored research schemes and consultancy projects (Rs. 20 Lacs and above) [A brief write-up up to 100 words]**

Ms. Harshit Lakra (P.I.)	The project "Model Village Development for Juang Tribe in Odisha through Public and Private Partnership" was designed to capture the essence of community life of the Juang tribe, their challenges, and to identify a comprehensive approach which may lead to the overall sustainable growth of the community while nurturing their uniqueness and cultural identity. This project was funded by HUDCO-HSMI and undertaken by IIT Roorkee Department of Architecture and Planning. The outcome of the project are Comprehensive Model Village Framework Integrating Various Infrastructure Components, Model Village layout and Strategies, Housing and Community Infrastructure Layout and Design, Financial Model, and Community Development Strategies.
Smriti Saraswat (Co-P.I.)	

**9. SCIENTIFIC AND TECHNICAL REPORTS**

S. No	Title of Projects	Participants	Authors	Remarks
1	Review of smart city proposal for Dehradun city		Dr. Ila Gupta Dr. Mahua Mukherjee; Dr. Uttam Roy; Dr. Arindam Biswas	

**10. RESEARCH PUBLICATION**

Sl. No.	Details	Total Number
a	Conference/Symp./Seminars	14
b	International Conference	05
c	National Journals	14
d	International Journals	06

## 4.2 DEPARTMENT OF BIOTECHNOLOGY

**Academic Staff: 27, Students Admitted: UG : 37; PG : 33; Ph.D : 38**  
**Publications In: Book/Books Chapters: 04, Journals 89, Conferences 28,**  
**Ongoing Projects: Research: 737.33 lacs**

### 1. SALIENT FEATURES

Fifteen students was awarded Ph.D. Degree in the convocation held in 2016. The 11<sup>th</sup> batch of students in the B.Tech. (Biotechnology) programme with a sanctioned intake of 45 students was admitted. M. Sc. Biotechnology programme with a sanction strength of 37 students has also been successfully running with annual finance aided Rs. 70.77 lacs by DBT Govt. of India, New Delhi. DST, DBT, CSIR & DRDO sponsored research project were successfully completed and Seven new research projects with funding from Science and Engineering Research Board, Department of Biotechnology, Govt. of India for a total outlay of **Rs. 737.33 lacslacs** have been sanctioned during 2016-17.

### 2. LIST OF FACULTY MEMBERS

**A. K. Sharma**, Ph.D.(AIIMS, New Delhi)  
Biochemistry, Structural Biology

**B. Chaudhuri**, Ph.D (IIT Madras)  
Biochemical Engineering

**D. Sircar**, Ph.D.(IIT kharagpur)  
Plant Functional Genomics & Metabolic  
Phytochemistry

**D. Sharma**, Ph.D (AIIMS, New Delhi)  
Computational Biology

**G. S. Randhawa**, Ph.D (PAU, Ludhiana)  
Genetics

**Harsh**, Ph.D (University of Delhi South  
Campus) Plant Molecular Biology

**(Mrs.) M. S., Nair**, Ph.D (CSJM University,  
Kanpur)Biophysics & Fluorescence  
spectroscopy

**N. K. Navani**, Ph.D(Imtech, Chd. Degree by  
PU, Chandigarh)Protein Engineering  
&MolecularBiology

**P. M. Krishna Mohan**, PhD (TIFR, Bombay)  
Biophysics &Biomolecular NMR

**P. K. Mandal**, PhD (JNU, New Delhi)  
Molecular Parasitology

**(Mrs.) P.P., Sarangi**, PhD (University  
ofTennessee, USA)Viral Immunology&  
Immunopathology

**P. Roy**, Ph.D(VBU, Kolkata)  
Head (from Feb. 01, 2015)  
Molecular Endocrinology

**P. Kumar**, Ph.D(AIIMS, New Delhi)  
Structural Biology

**P. Gopinath**, PhD (IIT Guwahati)  
Nano-Biotechnology

**(Mrs.) R. Barthwal**, Ph.D(IIT Delhi)  
Biophysics

**R. P. Singh**, Ph.D(CDRI, LKO., Degree by  
Kanpur University) Microbial Technology

**R. Prasad**, Ph.D(JNU, New Delhi)  
Molecular Biology & Proteomics

**(Mrs.)R. Pathania**, Ph.D(ImtechChd. Degree  
by JNU, New Delhi), Molecular biology &  
Molecular Microbiology

**(Mrs.) S. Tomar**, Ph.D(Purdue University)  
Molecular Biology & Virology

**S. Ghosh**, Ph.D (IIT Madras)  
Biochemical Engineering

**S. R. Yadav**, PhD (IIScBangalore)  
Plant Developmental Biology

**S.K. Ambatipudi**, PhD (Macquarie University,  
Australia), Marsupial Immunoproteomics

**S. Datta**, PhD (University of Kentucky, USA)  
Chemical Engineering

**S. Hazra**, Ph.D (University of Illinois, Chicago,  
USA)Structural Biology, Biochemistry,  
Structure Based Drug Designing

**S. P. Mukherjee**, PhD (Tata Institute of  
Fundamental Research, Mumbai)  
Chemical Science

**S. Rohtagi**PhD (Nil, New Delhi)  
Molecular Immunology

**V. Pruthi**, Ph.D(Imtech, Chd. Degree by PU,  
Chandigarh)Molecular Microbiology

### 3. HONOURS AND AWARDS TO FACULTY MEMBERS

<b>Prof. P. Roy</b>	Ramkumar Award 2016 for Excellence in Teaching and Research
<b>Prof. R. P. Singh</b>	Member Editorial Board, Journal of Biotechnology & Bioengineering, MedCravePubl, USA
	Member-Expert Committee, Biotechnology and Bioremediation, Life Science Research Board ( LSRB ), DRDO, Govt. of India
	Member-Pan IIT Executive Committee, PAN IIT Centre for Bioenergy, DBT, Govt. of India
	Member, Advisory Board, IFTM University, Moradabad
	Member, Academic Council, IFTM University, Moradabad
	Member, Board of Studies , Gautama Budhha University, Greater Noida
	Member, RDC , Uttarakhand Technical University, Dehradun
<b>Prof. R. Barthwal</b>	Lead Discussant, Selection committee for award of research projects to Women Scientists in BIO CARE Program of DBT , Govt of India, Sept 2016
<b>Dr. P. Kumar</b>	National Bioscience Award by Ministry of Science and Technology and Department of Biotechnology (DBT) in August 2016: Pravindra Kumar
	American Society of Microbiology and IUSSTF award: Pravindra Kumar
<b>Dr. P. Gopinath</b>	Dr.P. Gopinath has served as a member of the program committee of the 4th International Conference on Bio imaging held in Porto- Portugal from 21-23 of February 2017
<b>Dr. D. Sharma</b>	Dr. Deepak Sharma conferred Haryana YuvaVigyanRatna Award 2013-14. 2017

### 4. DISTINGUISHED VISITORS TO THE DEPARTMENT (NATIONAL/INTERNATIONAL)

Sl. No.	Name	Designation and Affiliation	Purpose	Dates
1.	<b>Dr. K. Durga Prasad, Ph.D.</b>	Distinguished Scientist ICRISAT	Seminar	April 18, 2016
2.	<b>Dr. R. K. Sen</b>	Department of Biotechnology IIT- Kharagpur	Seminar	July 04, 2016
3.	<b>Prof. Umesh R Desai, Ph.D.</b>	Professor of Medicinal Chemistry	Seminar	Augt. 02, 2016
4.	<b>Prof. H. S. Atreya</b>	Associate Professor, IISc Bangalore	Seminar	Nov. 26, 2016
5.	<b>Prof. Birgit Arnholdt-Schmitt</b>	Coordinating Investigator EU Marie curie Chair University of Evora (ICAAM, Polo da Mitra) Evora, Portugal	Seminar	Dec. 05, 2016
6.	<b>Dr. Vitaly Khanadeev, Ph.D.</b>	Senior Researcher, Laboratory of Nano-biotechnology, IBPPM RAS, 13 ProspektEntuziastov, Saratov 410049, Russia.	DST-Indo Russia collaborative research project work	Dec.18 – 26, 2016
7.	<b>Dr. C. N. Ramchand</b>	CEO, SakinlifesciencesPvt Ltd. Chennai & Francisco CEO, MagGenome technologies Pvt. Ltd., Cochin, Kerala	Seminar	Jan. 10, 2017
8.	<b>Dr. Neelima Khairatkar Joshi</b>	Sr. Vice President & Head, NCE Drug Discovery Research Glenmark Pharmaceuticals, New Mumbai, India	Seminar	Jan 19, 2017
9.	<b>Dr. Devika Sirohi</b>	Post-Doctoral Research Associate, Purdue University West Lafayette	Seminar	March 30, 2017

### 5. ACADEMIC ACTIVITIES ORGANIZED BY THE DEPARTMENT

Sl. No.	Name of the conf./seminar/symp./workshop	Name of the Chairman	Sponsored by	Dates
1.	Industry Academia Interactions	Partha Roy	Eppendorf India	March 25, 2017
2.	ISHAN vikas programme, delivered a lecture entitled "Biotechnology from the eyes of a Microbiologist"	Dr. G. D. Ransinchund R.N	Govt. of India	Dec. 13, 2016

**6. SPONSORED RESEARCH PROJECTS:**

Sl. No.	Projects Status	Total No. of Projects	Amount (Rs. in lacs)
1.	Completed Projects	04	76.63
2.	Ongoing Projects	21	737.33
3.	New Projects	09	292.00

**7. SERVICE TO INDUSTRIES  
Consultancy Project**

Sl. No.	Project Status	Total No. of Projects	Amount (Rs. in lacs)
1	Completed Projects	01	46.63
2.	Ongoing Projects	01	48.31
3.	New Projects	03	78.50

**8. SUMMARY OF MAJOR SPONSORED RESEARCH SCHEMES AND CONSULTANCY PROJECTS (Rs. 20 lacs) (A brief Write-up upto 100 words) (New Projects during the year 2016-17).****Prof. P. Roy**

**Project 1:** Screening iron, zinc and carotenoid bioavailability from biofortified staple crops using coupled in vitro digestion/ Caco-2 cell model: The basic goal of this project is to develop an assay system to analyze the level of bioavailable zinc in staple crops which has been enriched for zinc. The bioavailabilities of these micronutrients are a critical element for health benefit since it determines the health benefit of those crops. By developing this model we can try to control the problems arising out of "hidden hunger" which is a real problem in a country like India.

**Project 2:** Assessment of the role of pterostilbene and its derivatives for the prevention of bone loss in breast cancer induced bone metastasis: Plant based medicines are coming up as potent therapeutic system, especially in India where traditional healthcare system has been practiced since ages. In the current project we are dealing with a plant based molecule i.e., pterostilbene which has been used in Ayurvedic medicines since long. We are trying to elucidate its mechanism of action in the prevention of breast cancer and also its action in preventing metastasis of cancer cells to bones which is a common problem associated with breast cancer. On completion of this project we will probably able to develop a natural therapeutic system to control metastasis for which till date no cure exists.

**Dr. P. Gopinath:**

COPD is one of the most prevalent diseases in the world with limited treatment options. Therefore new and innovative ways in treating this important disease would be significant. The innovation lies in the approach of developing targeted therapeutic nanoparticles for this disease. The research can result in innovative approaches to a common disease which may reduce the burden of COPD.

Dr. Shri Ram Yadav's research focus is towards understanding genetic regulation of crown root development in economically important crop species with a long term goal to improve root architecture in rice plant resulting stress tolerant rice varieties. Our group is working towards identifying key regulators of crown roots and understanding their specific functions in rice. We also aim to understand how plant hormones such as auxin and cytokinin interact to regulate root formation. These studies would lead towards genetic manipulation of key regulators for efficient root architecture in crop plants.

**Dr. S. Datta: Industrial Consultancy**

- (i) Design of zero discharge tertiary water treatment plant at SIDCUL, Haridwar – Prof. C. B. Majumder, Dr. Sujoy Chattopadhyay and Dr. Saurav Datta [**completed in Dec., 2016**]
- (ii) Design of low discharge effluent water treatment plant for Bharat Electronics Ltd, Kotdwara – Prof. C. B. Majumder, Dr. Abhijit Maity and Dr. Saurav Datta [**ongoing**]

**Dr. Harsh**

Development of Heat tolerant barley through transgenic approaches by using heat shock factor genes. The project aims development of transgenic barley which can cope the global warming and rising temperatures which can then be used for molecular breeding in Indian barley cultivars.

## 9. SCIENTIFIC AND TECHNICAL REPORTS

Sl. No.	Title of the Projects	Participants	Authors	Remarks
1.	Development of Engineered Microalgae for Enhanced Lipid Accumulation	Prof. R. P. Singh	Prof. R. P. Singh	

## 10. RESEARCH PUBLICATION

Sl. No.	Details	Total Number
a.	Conference/Symp./Seminars	19
b.	International Conference	9
c.	National Journals	-
d.	International Journals	89

### 4.3 DEPARTMENT OF CHEMICAL ENGINEERING

**Academic Staff: 24; Students Admitted: B.Tech.- 110; M.Tech.-36;  
Publications: Journals- 144; Conferences- 35;  
New Projects: Research- Rs. 227.20 Lakh, Consultancy- Rs. 49.2 Lakh.**

#### 1. SALIENT FEATURES

During last year, the Department of Chemical Engineering made significant growth in research and publication. Department pays homage to Prof. R. Bhargava who died suddenly on April 23, 2016. One new faculty member joined the department and 2 faculty members got promoted to higher positions. 124 research papers have been published in high Impact journals and 35 research papers were presented in National and International Conferences. Placement of UG students has been impressive as almost all UG students got attractive job offers in the core as well as software companies. Department also organized three short term course during this period with large participation from Faculty members of other Academic Institutions and other officers from industries and government organizations.

#### 2. LIST OF FACULTY MEMBERS

**A.K. Dhiman**, Ph.D. (IIT Kanpur)

*Modelling & Simulation*

**Anshu Anand**, (University of Florida, USA)

*Particle Technology, Particulate and powder dynamics, Multiphase flows, Fluidization*

**Baseshwar Prasad**, Ph.D. (IIT Roorkee)

*Energy Engineering, Pollution Abatement & Biochemical Engineering*

**Bikash Mohanty**, Ph.D. (IIT Roorkee)

*Heat Transfer, Process Integration Simulation, Process Int. & Control*

**Chandrajit Balomajumder**, Ph.D. (IIT Roorkee)

*Industrial Pollution Abatement, Bio-Chemical Engineering, Simulation and Modelling*

**Gaurav**, Ph.D. (IIT Kanpur)

*Hydrodynamic Instability, Fluid Mechanics, Interfacial Phenomenon*

**N. Siva Mohan Reddy**, Ph.D. (ISC, Bangalore)

*Advanced Oxidation Process, Wastewater Treatment*

**P.P. Kundu**, Ph.D. (IIT Kharagpur) [Joined on May 03, 2016]

*Fuel cells, Waste management, Protein delivery, Membranes, Polymer, Tissue Engg*

**P. Mondal**, Ph.D. (IIT Roorkee)

*Environmental Engineering, Bio-Chemical Engineering*

**P. Biswas**, Ph.D. (IIT Kanpur)

*Heterogeneous Catalysis, Chemical Reaction Engg.*

**Prateek Jha**, Ph.D. (Northwestern University, USA)

*Molecular Simulations, Polymer Physics, Drug Delivery, Charged systems*

**R.P. Bharti**, Ph.D. (IIT Kanpur) [Promoted on April 28, 2016]

*CFD, Non-Newtonian Fluid, Flow & Heat Transfer*

**Ravindra Bhargava**, Ph.D. (IIT Roorkee) [Died on April 23, 2016]

*Process Simulation, Optimization, Design & Control*

**Shishir Sinha**, Ph.D. (IIT Kanpur)

*Polymer Surface Modification, Bio Fuels*

**Shashi**, Ph.D. (IIT Roorkee)

*Modelling & Simulation, Computer Aided Design*

**Shabina Khanam**, Ph.D. (IIT Roorkee)

*Process Integration Simulation, Process Int. & Control*

**Sumana Ghosh**, Ph.D. (IIT Kharagpur)

*Two-phase flow, Hydrodynamic Cavitation, Proton exchange membrane fuel cell*

**Tarakanath Das**, Ph.D. (IIT Kanpur)

*Heterogeneous catalysis and spectroscopy, Hydrogenation reaction*

**V.C. Srivastava**, Ph.D. (IIT Roorkee)

*Industrial Pollution Abatement*

**Vijay K. Agarwal**, Ph.D. (IIT Roorkee)

*Process Modelling & Simulation, CAD, Process Control & Heat Transfer*

**Vimal Kumar**, Ph.D. (IIT Delhi) [Promoted on April 28, 2016]

*Heat Transfer, Process Intensification, Renewable Feedstocks, CFD*

**V.C. Nathan**, Ph.D. (University of Alberta)

*Multi-Phase Flows, CFD, Finite Element Method, Transport Phenomenon*

#### iv. Emeritus Fellow

**Shri Chand**, Ph.D. (Banaras Hindu University, Varanasi) [w.e.f. on January 01, 2016]

*Catalysis, Pollution Abatement*

**Surendra Kumar**, Ph.D. (University of Hannover) [till June 30, 2016]

*Mathematical Modelling & Control, Numerical Simulation*

### 3. HONOURS AND AWARDS TO FACULTY MEMBERS (during the year 2016-2017):

<b>Dr. Vimal Chandra Srivastava</b>	<ul style="list-style-type: none"> <li>Ministry of Science &amp; Technology (MoST), Taiwan invited (with full financial support) for delivering talk during 'Asia Food-Energy-Water Nexus Scoping Workshop' held at Science &amp; Technology Building, Taipei, Taiwan during February 20-22, 2017.</li> <li>Member, Editorial Board, ISST Journal of Applied Chemistry.</li> <li>Member, American Chemical Society (ACS) (by Invitation for 2015-2018).</li> </ul>
<b>Dr. Amit Kumar Dhiman</b>	<ul style="list-style-type: none"> <li>Editorial board member, Journal of Nonlinear Dynamics, Hindawi Publishing Cooperation.</li> </ul>

### 4. DISTINGUISHED VISITORS TO THE DEPARTMENT (NATIONAL/ INTERNATIONAL)

Name	Designation & Affiliation	Purpose	Dates
Dr. S. Basu	Professor, Department of Chemical Engineering, IIT Delhi	Special Lecture	June 01, 2016
Dr. Harsh Pandey	Department of Chemical and Biological Engineering, Rensselaer Polytechnic Institute, Troy, New York	Special Lecture	July 01, 2016
Dr. Ramkrishna Sen	Professor, Department of Biotechnology, IIT Kharagpur	Special Lecture	July 04, 2016
Dr. Ajay K. Dalai	Professor and Canada Research Chair, University of Saskatchewan, Canada	Special Lecture	July 18, 2016
Dr. Harish Vashisth	Assistant Professor, Chemical Engineering and Bioengineering, University of New Hampshire, Durham, NH	Special Lecture	July 25, 2016
Shri Amit Agarwal	Vice president, Jubilant Organosys	Special Lecture	September 03, 2016
Dr. Kaustubha Mohanty	Professor, Department of Chemical Engineering, IIT Guwahati	Special Lecture	January 23, 2017
Dr. D. Das	Professor, IIT Kharagpur	Special Lecture	February 27, 2017
Dr. Gautam Deo	Professor, Department of Chemical Engineering, IIT Kanpur	Special Lecture	March 06, 2017
Shri. Gaurav Saxena	Head Technology, Olefinic Chemicals, Reliance Industries Limited	Special Lecture	March 23, 2017
Dr. D. K. Chandraker	BARC, Mumbai	Special Lecture	March 24, 2017
Dr. Sunil Dhole	Director and Co-founder, Technorbital Advanced Materials Pvt. Ltd.	Special Lecture	March 25, 2017
Dr. S. P. Singh	Director, B. L. Agro Oils Ltd., Bareilly	Special Lecture	March 26, 2017

### 5. ACADEMIC ACTIVITIES ORGANIZED BY THE DEPARTMENT

Name of the conf./ Seminar/ Symp./ Workshop	Chairman	Sponsored by	Dates
Indo-French thematic school on Water Treatment Technologies for water challenged sites in India: Opportunities for Research Based Solutions	Dr. P. Mondal	DST (CEFIPRA-IFWN)	February 25, 2017

### 6. SPONSORED RESEARCH PROJECTS:

Sl. No.	Project Status	Total No. of Projects	Amount (Rs. in lacs)
1.	Completed Projects	03	26.51
2.	Ongoing Projects	11	302.40
3.	New Projects	06	553.20

## 7. SERVICE TO INDUSTRIES

### Consultancy Projects

Sl. No.	Project Status	Total No. of Projects	Amount (Rs. in lacs)
1.	Completed Projects	-	-
2.	Ongoing Projects	-	-
3.	New Projects	06	49.20

## 8. SUMMARY OF MAJOR SPONSORED RESEARCH SCHEMES AND CONSULTANCY PROJECTS (Rs. 20 lacs) (A brief Write-up upto 100 words) (New Projects during the year 2016-17).

**Project name:** Development of Numerical models for entrainment and deposition rates to predict dry out in AHWR fuel bundle (DAE- 1028-CHD)

**Summary:** Nuclear reactor must be operated well below the critical heat flux limit to allow for the operating flexibility and uncertainty in the prediction. Critical heat flux is consequence of dryout of the liquid film in contact with the heated wall in advanced heavy water reactors (AHWR). Modeling of dryout condition accurately is essential so that the design margins could be improved thus potentially leading to an increased power density. Dryout is defined as a condition in the annular flow when there is complete removal of liquid film on the wall surface.. A hybrid multiscale model will be developed to predict dry out situation.

**Project name:** In-vitro dissolution experiments and multi scale simulations of responsive polymer-drug formulation

**Summary:** pH-responsive polymeric drug carriers have tremendous potential in the oral delivery of drugs with poor aqueous solubility. If suitably designed, they may contain drugs in the low-pH conditions of the stomach and release them in the high-pH conditions of the intestine, where the drugs are absorbed and can ultimately be transported by the systemic circulation to the infected cells/tissues of the body. We are working on a detailed experimental and computational investigation of the behavior of the polymer-drug formulations as a function of the medium pH, in mediums characteristic of different regions of the gastro-intestinal (GI) tract.

**Project name:** Catalytic oxidation of Cyclohexane using Co-Fe/Al<sub>2</sub>O<sub>3</sub> catalysts at low temperature

**Summary:** It would be interesting and worthwhile to undertake a thorough understanding of oxidation of cyclohexane to cyclohexanone/ cyclohexanol using Co-M-Fe/Al<sub>2</sub>O<sub>3</sub> (M=Cu, Mn, Ce, Cr, V) (supported/unsupported) catalyst which involves characterizations and simultaneous reactivity measurement at low temperature and high pressure to obtain fundamental information about the catalyst synthesis, reaction intermediates and the reaction. The information is basically the correlation in between the catalyst, transient species, and conversion/selectivity/yield of products. Thus, the information will hopefully assist in understanding the working catalytic phenomena, transient species formation, reaction mechanism, the future development of the catalyst, and reactor design. The oxidation reaction of cyclohexane with molecular oxygen will be performed at high pressure (1 to 13 atm) by considering 1) an autoclave (reactor) and 2) an insitu FTIR and HVC-DRM-5 cell (reactor).

**Project name:** Swachh Neer - Une vie Meilleure

**Summary:** The project titled "Swachh Neer - Une vie Meilleure, was approved by the Indo French Centre for the Promotion of Advanced Research, DST in 2016. Only two projects under this Scheme were sanctioned by CEFIPRA in India, One with us and other with IISc Bangalore. In this project four Indian organizations i.e., UPES Dehradun, IIT Roorkee, NEERI Nagpur and Venza Water Management Solutions as well as four French organizations i.e, Montpellier2 University, Université de Poitiers, Université de Rennes1 and Waste et Water SARL are involved. The project aims to combat water issues through Indo-French networking. Main objectives of this project are:

- Data collection and review for identifying water issues
- Selection of treatment technologies based on criteria required to solve identified issues
- Technology development and future action plan

Apart from the challenged sites identified by DST, an awareness drive has to be conducted in the regions in the vicinity of IIT-Roorkee and UPES-Dehradun to identify the gaps and research scope. Some specific challenged sites in France will also be considered for similar study. The project is progressing well. Indo-French workshop on water networking has been organized at UPES during 23-24 February 2017 and an Indo-French thematic school on the theme "Water Treatment Technologies for Water Challenged Sites in India: Opportunities for Research Based Solutions" has been organized at IIT Roorkee on 25.02.17.

**Project Name:** Development of Thermo Catalytic Technique for Gas Production From Hydrate Bearing Sediments



**Summary:** Methane production from hydrates can contribute to natural gas which can play a greater role in power generation and transportation because of this advantage and high resource potential. Several countries have started national gas hydrate programme for focused exploration and possible exploitation of this important natural energy resource. India has covered NGHP 02 under the leadership of ONGC. Gas hydrates are one promising answer and ONGC is putting a great effort for them.

Methane hydrates are crystalline compounds formed of water and methane at high pressure and low temperature. It is estimated that carbon bond in methane hydrates is twice the carbon content in fossil fuel reserve and hence these are supposed to be the future potential energy resource. Thermodynamically, hydrate formation is favoured at high pressure, low temperature and low salt concentration. One volume of gas hydrates releases about 160 volumes of methane and 0.8 volume of fresh water at STP. The worldwide organic carbon in the gas hydrates is estimated to be roughly about  $10000 \times 10^{15}$  grams which is almost double the carbon content in total fossil fuel (crude oil, natural gas and coal) reserves of the world. In the above project, a new technology will be explored to produce methane from hydrate economically.

## 9. SCIENTIFIC AND TECHNICAL REPORTS

### PATENT FILED

Amit Arora, Pushpendra Kumar, Asheesh Kumar, Rajnish Kumar, **Chandrajit Balomajumder** and Sukumar Lalk (2016)

Patent Filed (Application No.- 201611007370 )

"Inhibition of Gas Hydrate Formation by a Novel Green Kinetic Inhibitor".

## 10. RESEARCH PUBLICATION

Sl. No.	Details	Total Number
a.	Conference/Symp./Seminars	21
b.	International Conference	14
c.	National Journals	115
d.	International Journals	29

## 4.4 DEPARTMENT OF CHEMISTRY

**Academic Staff: 27, Students Admitted: M.Sc.: 24, M.Tech: 04, Ph.D: 07,  
Publications: Journals: 127, Conferences: 29**

### 1. SALIENT FEATURES

Department of Chemistry was established in the year 1960 and has contributed significantly to the growth of chemical sciences in the Institute. Distinguished faculty members of the department provide an environment where the students of B. Tech., M. Tech., M.Sc. and Ph.D. programs could explore and develop frontier areas of chemistry. General areas covered include physical, organic, inorganic, analytical and material chemistry. Faculty members are also involved in interdisciplinary research. The department is aiming to be one of the major centers for teaching and research in chemical sciences in India.

The department is equipped with state-of-the-art facilities like ESI-MS, 400 MHz NMR, LC-MS-MS and VSM. In addition to these facilities, various characterization and analytical facilities, like UV-Vis, UV-Vis-NIR, FT-IR, GC, GC-Mass, HPLC, AAS, elemental analyzer, flame photometer, cyclic voltammeter, Raman spectrometer, surface area analyzer, rheometer, dynamic light scattering set-up, advance electrochemical system, computational facilities and microwave synthesizer are available for academic as well as industry oriented training to the post-graduate and Ph.D. students. The department took several initiatives for the betterment of its teaching and research facilities which included an overall revamping of the syllabus of post graduate courses keeping in mind the development in the respective areas in the recent years and placement prospects for the post graduate students in international top notch academic/research institutions and industries. The faculty members themselves visited a number of institutions and participated/ delivered talks in seminar/ symposia/ conferences at various platforms. During April 2016-March 2017 faculty members published 127 research papers in refereed journals and more than 29 research papers have been presented in various conferences/ symposia. A large number of students of the department have qualified NET-CSIR-JRF, UGC- JRF, GATE and other national level examination. Several students have participated in summer projects in reputed organizations in India and in abroad.

### 2. LIST OF FACULTY MEMBERS

**A. Sharma, Ph.D., (IHBT, Palampur)**  
Organic Chemistry, Med. Chemistry

**A.K. Singh, Ph.D. (BHU)**  
Macrocyclic Chem.

**Anil Kumar, Ph.D. (Roorkee)**  
Kinetics, Photocatal: Nano Materials.

**(Ms) Bina Gupta, Ph.D. (Roorkee)**  
Solvent extraction chem.

**C.N. Ramachandran Ph.D.,(IIT Kanpur)**  
Quantum chem., Mol. Modeling

**Debasis Banerjee, Ph.D. (IIT Kanpur)**  
Org. Synthesis

**H.C. Kandpal Ph.D.,(Mainz,Germany)**  
Computational and Mat. Sc.

**K.R. Justin Thomas, Ph.D. (IIT Kanpur)**  
Synthetic Organic Chemistry

**K. Ghosh, Ph.D. (IACS, Jadavpur)**  
Inorganic Biochemistry

**K.C. Gupta, DPhil (Allahabad)**  
Phys., Polym.

**K.K. Sadhu, Ph.D. (IIT Kanpur)**  
Chem. Biology

**M. Sankar, Ph.D., (IIT Madras)**  
Porphyrinoid Chem.

**(Ms) Mala Nath, Ph.D. (Lucknow)**  
Organomet., Bio-inorg.

**M.R. Maurya, Ph.D. (Kurukshetra)**  
Coord. Chem., Catal.

**Naseem Ahmed, Ph.D. (Aligarh)**  
Organic Chemistry

**P. Mohanty, Ph.D., (IIT Kharagpur)**  
Carbon Dioxide Capture, Materials Chem.

**P. Debnath, Ph.D. (IISc Bangalore)**  
Theoretical Chem.

**Prasenjit Kar Ph.D.,(CSMCRI, Bhavnagar)**  
Org./Inorg.

**P. Jeevanandam, Ph.D. (IISc Bangalore)**  
Nanomaterials

**Ravi Bhushan, Ph.D. (Jodhpur)**  
Proteins, Liq. Chromatogr, Org.

**R.N. Goyal, Ph.D., DSc (Agra)**  
Sensors and Biosensor

**R.K. Peddinti, Ph.D., (Univ. of Hyderabad)**  
Synthetic Organic Chemistry

**R.K. Dutta, Ph.D. (UGC-DAE, Kolkata)**  
Analytical Chemistry, Materials, Nuclear

**T.K. Mandal, Ph.D. (IISc Bangalore)**  
Solid-state and material Chemistry

**U.P. Singh, Ph.D. (BHU)**  
Bio-Inorg., Coord., Chem.

#### **Emeritus Fellow**

**Kamaluddin, Ph.D. (Aligarh)**  
Phys. – Org. Chem.

#### **Visiting Professor**

**Sondhi, S.M., Ph.D. (Patiala)**  
Synth. Heterocycl. Chem.

### 3. HONOURS AND AWARDS TO FACULTY MEMBERS

Dr. K.R. J. Thomas	Recognized as Outstanding Reviewer for Materials Chemistry Frontiers in 2016 in the Editorial of the Journal Issue. (DOI: 10.1039/c7qm90012k)
Dr. P. Jeevanandam	"Outstanding Reviewer for Nanotechnology in 2016", Given by IOP Publishing, United Kingdom
Dr. M. Sankar	Reviewer Recognition award by Chemical Physics Letters (Elsevier Journal) in recognition of the review made for the journal.

### 4. DISTINGUISHED VISITORS TO THE DEPARTMENT (NATIONAL/INTERNATIONAL)

Sl. No.	Name	Designation and Affiliation	Purpose	Dates
1.	Dr. Ravindra Pandey	PDF, Department of Chemistry, University of Texas at Austin, Austin Tx, USA	Deliver a lecture	20-05-2016
2.	Dr. Sachin B. Chaudhary	PDF at University of Lyon, France	Deliver a lecture	23-08-2016
3.	Dr. P. Mallikarjan	PDF, Executive Director at Amgen Center, Thousands Oaks, California, USA	Deliver a lecture	24-10-2016
4.	Dr. Debasish Mondal	PDF at University Of Massachusetts at Amherst, USA	Deliver a lecture	27-10-2016
5.	Dr. Pradip Chakraborty	PDF at University of Geneva, Switzerland	Deliver a lecture	13-01-2017
6.	Dr. Rajesh Parishwad	Director, Royal Society of Chemistry (RSC) India Foundation, Bangalore	Deliver a lecture	23-02-2017
7.	Prof. C. P. Rao	Professor, Department of Chemistry, IIT Bombay, Powai, Mumbai-400076	Deliver a lecture	20-02- 2017

### 5. INTERNSHIPS OFFERED TO OTHER STUDENTS IN IIT – ROORKEE

Sl. No.	Name of student	Name of Supervisor	Under Graduate	Post Graduate	Name of Collaborative Institute	Period
1	Vatsala Climoti	Dr. R.K. Dutta, Dr. M. Sankar		01	SIET, Mumbai	Nov.-Dec., 2016

### 6. Sponsored Research Projects

Sl. No.	Project Status	Total No. of Projects	Amount (Rs. in lacs)
1	Completed Projects	01	28.75
2.	Ongoing Projects	16	422.78
3.	New Projects	10	269.15

### 7. SERVICE TO INDUSTRIES

#### a. Consultancy Project:

Sl. No.	Project Status	Total No. of Projects	Amount (Rs. in lacs)
1	Completed Projects	-	-
2.	Ongoing Projects	-	-
3.	New Projects	-	-

#### b. Testing Services

Sl. No.	No. of Industries Served	Total outlay (Rs. in lacs)
1.	20	8.98

### 8. SUMMARY OF MAJOR SPONSORED RESEARCH SCHEMES AND CONSULTANCY PROJECTS (Rs. 20 lacs) (A brief Write-up upto 100 words) (New Projects during the year 2016-17).

Dr. Kaushik Ghosh	Chemistry of non-innocent ligands: Synthesis of phenoxy radical and related complexes and their applications: 34.50 Lacs Galactose oxidase (GO) is a mononuclear copper enzyme that catalyzes the two-electron oxidation of a large number of primary alcohols to their corresponding aldehydes, coupled with
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	<p>the reduction of dioxygen to hydrogen peroxide. Cu (II) and tyrosyl radical, the intermediate state is extremely important for the conversion of primary alcohol to aldehyde. Complexes having ligands containing phenolato donors are extremely important for several biological activities like nuclease, protease, catacholase etc. We are exploring the non-innocent behavior of phenolato function and studying bioinorganic coordination chemistry.</p> <p><b>Synthesis and characterization of novel Ruthenium nitrosyl complexes and their biological activity studies: 21.92 Lacs</b></p> <p>There has been considerable current interest in studies on the interaction of nitric oxide (NO) with transition-metal complexes. In 1998 Nobel prize was given for the research in NO. Nitric oxide, a diatomic radical species, is an important signaling molecule in a variety of biological processes such as vasodilatation, immune response, neurotransmission, apoptosis, etc. in different cells and tissues. In biosystems, NO is synthesized by nitric oxide synthase (NOS) enzyme and several concentration-dependent activities of NO were discovered. Hence, a particular amount of and target specific delivery of nitric oxide and scavenging of nitric oxide by transition-metal complexes are important areas in chemical research. Complexes which could deliver NO upon illumination with light are important for photodynamic therapy (PDT). We are trying to synthesize such molecules which would be useful for PDT.</p>
<b>Dr. R.K. Peddinti</b>	<p>The project is aimed at the synthesis of novel bicyclo[2.2.2]octenone derivatives via Diels-Alder reaction of benzoquinone monoketals generated <i>in situ</i> by hypervalent iodine reagents mediated oxidation of the corresponding guaiacol derivatives. Another objective is to generate <i>o</i>-benzoquinone monoimides with hypervalent iodine reagents and Michael-type addition of <i>o</i>-aminophenols to produce phenoxazine derivatives. The <i>in situ</i> generated <i>o</i>-benzoquinone monoimides will also be treated with <i>o</i>-phenylenediamines and <i>o</i>-aminothiophenols to synthesize phenazine derivatives and phenthiazine derivatives. This protocol will be tested for the synthesis of various biologically active phenoxazine derivatives including bezerramycins A-C, chadranamycin D, grixazones A and B, questiomycin A, and glucosylquestiomycin. <b>23.46 Lacs</b></p>
<b>Dr. M. Sankar</b>	<p>Synthesis and characterization of a series of novel <math>\beta</math>-trisubstituted 'push-pull' porphyrins (D-I-A) are proposed for utilization in dye-sensitized solar cells (DSSCs), nonlinear optics (NLO) and anion sensing. This project aims to improve the power conversion efficiency (<math>\eta</math>) by appending efficient electron donors at <math>\beta</math>-positions. These porphyrins are expected to show better efficiency as compared to <i>meso</i>-functionalized porphyrins. Further, these push-pull porphyrins will have higher ground state dipole moments which will lead to enhanced second order nonlinear behavior. The dicyanovinyl or cyanoacetic ester/acid and 3,5-dibutyl-4-hydroxyphenyl appended porphyrin will be utilized for simultaneous CN<sup>-</sup> and F<sup>-</sup> ion sensing applications.</p>
<b>Dr. Debasis Banerjee</b>	<p><b>Enantioselective Dual-catalysis: Activation and Functionalization of unactivated sp<sup>3</sup> (C-O) bond. 48.20 Lacs</b></p> <p>Activation and functionalization of unactivated sp<sup>3</sup>(C-O) bond is a major challenge in organic synthesis and catalysis. More specifically, enantioselective version of this area is not known. The entitled project deals with transition metal catalyzed based functionalization of unactivated sp<sup>3</sup>(C-O) bond for the synthesis of various natural products and biological active molecules.</p>
<b>Dr. Prasenjit Kar</b>	<p>Small Molecules for Solution Processed Organic Solar Cell (DST) - <b>14.00 Lacs</b>  Novel molecular design for Dye Sensitized solar cell (CSIR) - <b>6.00 Lacs</b></p>

## 9. SCIENTIFIC AND TECHNICAL REPORTS

Sl. No.	Title of the Projects	Participants	Authors	Remarks
1.	Theory and Mechanism of Polymer Melt Dynamics	NIL	Dr. P. Debnath	Technical Progress Report at the end 2 <sup>nd</sup> year (1.4.2015-31.3.2016)

## 10. RESEARCH PUBLICATION

Sl. No.	Details	Total Number
a.	Conference/ Symp./ Seminars	29
b.	International Conference	-
c.	National Journals	-
d.	International Journals	127

## 4.5 DEPARTMENT OF CIVIL ENGINEERING

**Academic Staff: 48; Students Admitted: UG/INT. - 533, PG-212, Ph.D.-181;  
Publications: Books/Book Chapters: 06; Journals -149, Conferences – 86,  
Projects: Research – Rs. 37.40 lacs, Consultancy – Rs. 1021.20 lacs**

### 1. SALIENT FEATURES

Dr. J. K. Ghosh, Associate Professor developed and introduced TWO NPTEL Online Courses under MOOCs. The first course titled "GPS SURVEYING" of was held during September 05, 2016 to September 30, 2016. The online course was registered by 1967 participants from all over India as well as few from abroad. The second course titled "DIGITAL LAND SURVEYING AND MAPPING" of was held during February 21 to April 20, 2017. The online course was registered by 5273 participants from all over India as well as from abroad.

Transportation Engineering Group were made improvements in laboratory facilities. The following equipments were procured during this period for Research & Development purposes.

#### i) Automatic Compression & Flexural Testing Machine (3000 kN capacity)

The Automatic Compression & Flexural Testing Machine of 3000 kN capacity has been procured for research and development purposes. Parallel research is undergoing in both flexible as well as rigid pavements. The compressive, split tensile and flexural strength of the concrete is evaluated using this equipment. The rigid pavement design is mainly governed by the flexural strength of cement concrete, which can be analytically evaluated from characteristic compressive strength, as well as experimentally. The machine has been procured from AIMIL Ltd.

#### ii) Rice Asphalt apparatus

This apparatus procured from Cooper Technology, United Kingdom; is used to find out the Theoretical Maximum Specific Gravity of HMA mixture.

### 2. LIST OF FACULTY MEMBERS

**A.A. Kazmi**, D. Eng. (Tokyo University)  
Water & Wastewater Treatment, Water Quality Management, Solid Waste Management  
**A. Upadhyay**, Ph.D. (IIT Madras)  
Application of GA and ANN in Structural Engg., Laminated Composite Structures, Bridges  
**A.K. Jain** Ph.D. (Michigan),  
Reinforced Concrete, Structural Dynamics, Rehabilitation  
**Ajay Gairola**, Ph.D. (Roorkee)  
Hydraulics & Wind Engineering  
**A.K. Ahuja**, Ph.D. (Roorkee)  
Structural Engg.  
**Anupam Chakrabarti**, Ph.D. (IIT Kharagpur)  
Structural Engineering  
**Md. Ashraf Iqbal, M.A.**, Ph.D. (IIT Delhi)  
Impact Behaviour of Materials, Finite Element Analysis of Structural Impact  
**Bhupinder Singh**, Ph.D. (Roorkee)  
Concrete Technology  
**B.R. Gurjar**, Ph.D. (IIT Delhi)  
Air/water pollution, Environmental risk and Impact assessment, Climate change  
**C.S.P. Ojha**, Ph.D. (London)  
Environmental Hydraulics  
**Deepak Kashyap** Ph.D. (Roorkee) Head  
Ground Water  
**Gargi Singh**, Ph.D. (Virginia Tech)  
Environmental Microbiology, Water & Wastewater Treatment  
**G.D.R.N. Ransinchung**, Ph.D.  
(IIT-BHU, Varanasi), Transportation Engineering  
(Flexible and rigid pavements)

**Indrajit Ghosh**, Ph.D. (Wayne State University, USA) Traffic Operations, Road Traffic Safety and its ITS applications  
**J.K. Ghosh**, Ph.D. (Roorkee)  
GPS, Remote Sensing, Surveying (Land & Geodetic)  
**J.P. Sahoo**, (IISc. Bangalore)  
Geotechnical Engineering  
**Kaustav Chatterjee**, Ph.D. (IIT Bombay) Soil Mechanics & foundation Engineering, Sheet Piles, Caisson foundation  
**K.S. Hari Prasad**, Ph.D. (IISc. Bangalore)  
Ground Water Modelling, Parameter Estimation, Stochastic Hydrology  
**Kamal Jain**, Ph.D. (Roorkee)  
Geomatics Engineering, Analytical & Digital Photogrammetry  
**M.K. Arora**, Ph.D. (Swansea)  
Remote Sensing  
**M. Parida**, Ph.D. (Roorkee)  
Urban Transport Planning, Highway Safety, Transport Environment Interaction  
**Mahendra Singh**, Ph.D. (IIT Delhi)  
Rock Mechanics, Tunnel Engineering, Soil and Rock Slopes  
**N.K. Samadhiya**, Ph.D. (Roorkee)  
Rock Engineering & Underground Space Technology, Soil Structure Concrete Technology Interaction  
**P.K. Gupta**, Ph.D. (IIT Delhi)  
Computational Mechanics, Large Deformations, Plasticity, Impact Mechanics

**P.K. Sharma**, Ph.D. (IIT Kanpur)  
Sub-Surface Flow

**Pradeep Bhargava**, Ph.D. (Wales)  
Finite Element Applications, Structural Engg.

**P.K. Garg**, Ph.D. (Bristol)  
Surveying & GPS, Remote Sensing & GIS (on leave)

**Pradeep Kumar**, Ph.D. (Roorkee)  
Biological Methods of Waste Water Treatment

**Praveen Kumar**, Ph.D. (Roorkee)  
Rural Roads, Intelligent Transport System, Highway Materials

**Pramod Kumar**, Ph.D. (Roorkee)  
Environmental Risk Assessment, Air Pollution, Environmental System Modelling

**Priti Maheshwari**, Ph.D. (IIT Kanpur)  
Soil-Structure Interaction, Numerical Method in Geomechanics, Ground Improvement

**Rajat Rastogi**, Ph.D. (IIT Bombay)  
Non -Motorized and Motorized Modes Integration, Urban Transport Planning, Policy Analysis

**Rajib Chowdhary**, Ph.D. (IIT Madras)  
Structural Engg., Risk Analysis & Optimization, Computational Materials Science

**R. D. Garg**, Ph.D. (Roorkee)  
GPS, Remote Sensing, Surveying.

**Raja Chowdhary**, Ph.D.(Univ. of Toledo, USA)  
Algal Biofuel Sustainability Assessment

**S.K. Ghosh**, Ph.D. (Glasgow)  
Surveying & GPS, Remote Sensing & GIS

**S.S. Jain**, Ph.D. (Roorkee)  
Pavement Management System, Road Traffic Safety, Transport Environment Interaction, Intelligent Transportation Systems

**Satish Chandra**, Ph.D. (Roorkee)  
Highway Capacity, Traffic Flow Modeling, Pavement Materials

**S. Mittal**, Ph.D. (Roorkee)  
Ground Improvement, Soil Dynamics, Geotechnical Engg. Foundation Design

**Sanjay Chikermane**, Ph.D. (IIT Bombay)  
SHM, Computation, Signal Processing

**Sudipta Sarkar**, Ph.D. (IEST)  
Trace Contamination Removal Processes, Environmental Nanotechnology, Water and Waste Water Engineering

**Sonalisa Ray**, Ph.D. (IISc Bangalore)  
Fracture Mechanics, Fracture and Fatigue Analysis of Structures

**Sarit Kumar Das**, Ph.D. (IIT Kharagpur)  
Hydraulics and Water Resources Engineering, Soil Moisture, Probabilistic Methods

**Umesh Sharma**, Ph.D. (Roorkee)  
Structural Engineering

**V. A. Savant**, Ph.D. (IIT Bombay)  
**Vipul Prakash**, Ph.D. (Berkeley)  
Performance Based Engg. Structural Dynamics

**Z. Ahmad**, Ph.D. (TIET, Patiala)  
Hydraulic Engg. Computational Hydraulics, Pollutants, Pollutants Transport

#### Assistant Professors (on Contract)

**Bhanu P. Vellanki**, Ph.D. (Texas A&M Univ., USA)  
Environmental Engineering, Advanced oxidation & reduction processes

#### Emeritus Fellows

**M.N. Viladkar**, Ph.D. (Roorkee)  
Rock Engineering, Numerical Methods, Static & Dynamic Soil Structure Interaction

#### Visiting Professor

**O.P. Dubey**,

### 3. HONORS AND AWARDS TO FACULTY MEMBERS

Prof. C. S. P. Ojha	Fellow ASCE
Prof. S. S. Jain	<ul style="list-style-type: none"> <li>• Nominated as Key note speaker for Workshop on "Sustainable Urban Transportation for Patna : A Curtain Raiser" at NIT Patna</li> <li>• Member, Apex Committee of Highways Specifications &amp; Standards (HSS), IRC, New Delhi</li> <li>• Member, Apex Committee of General Specifications &amp; Standards (GSS), IRC, New Delhi</li> <li>• Co-Convenor, G-3 Committee, Reduction of Carbon Footprint in Road Constructions and Environment, IRC, New Delhi</li> <li>• Member, Road Maintenance &amp; Asset Management Committee, IRC, New Delhi</li> <li>• Member, Flexible Pavement Committee, IRC, New Delhi</li> <li>• Member, Governing Council, Institute of Urban Transport (IUT), New Delhi</li> </ul>
Prof. M. Parida	<ul style="list-style-type: none"> <li>• MoRTH Professor-Chair, Ministry of Road Transport Highways, Govt. of India, New Delhi.</li> <li>• Convener, Committee for Accreditation of New/Alternative Materials/Technologies for the year 2015-17.</li> <li>• Co-convenor, Urban Roads Committee (H-8), Indian Roads Congress, New Delhi for the year 2015-17.</li> <li>• Member, Board of Studies, Department of Transportation Planning, SPA, New Delhi.</li> </ul>

	Member, Board of Studies, Department of Physical Planning, SPA, New Delhi. • Member, BOG, KNIT, Sultanpur.
Prof. Praveen Kumar	<ul style="list-style-type: none"> <li>• Visitor's Nominee in Selection Committee of Civil Engineering Department and Applied Mechanics Department of IIT Delhi</li> <li>• Visitor's Nominee in Court of Banaras Hindu University (BHU)</li> <li>• Coordinator, Principal Technical Agency, PMGSY for Uttar Pradesh and Uttarakhand</li> <li>• Coordinator, State Technical Agency, PMGSY for Uttar Pradesh and Uttarakhand</li> <li>• Member, Board of Studies (Civil Engg), Harcourt Butler Technical Institute (HBTI), Kanpur</li> <li>• Vice Chancellor's Nominee, Selection Committee, B.I.T. Engineering College, Meerut</li> <li>• Member, National Executive Committee, National Rural Roads Development Agency (NRRDA) responsible for Pradhan Mantri Gram Sadak Yojna (PMGSY) at National level</li> </ul>
Prof. K.S. Hari Prasad	Fellow ASCE
Prof. Ajay Gairola	Member of National Environmental Appraisal Committee, New Delhi
Dr. A. A. Kazmi	<ul style="list-style-type: none"> <li>• Expert Member: Uttarakhand State Ganga Committee</li> <li>• Tag Member: MOWR, RD &amp; GR-GOJH-UNDP PROJECT "Implementation of Rural Sanitation Initiatives for Ganga Rejuvenation in Jharkhand" 2017-</li> <li>• Member, Expert Committee, Standard Formulation of Effluent of Sewage Treatment in respected to NGT Matter O.A No. 117/214 (CZ)</li> <li>• Emerald Literati Network Awards For Excellence for Highly Commended Paper in the 2016</li> </ul>
Dr. Satyendra Mittal	<ul style="list-style-type: none"> <li>• Elected member of National Executive Committee of Indian Geotechnical Society, New Delhi</li> <li>• Elected member of National Executive Committee of Indian Society of Earthquake Technology</li> <li>• Elected Vice President of Indian Geotechnical Society, Roorkee Chapter</li> </ul>
Dr. Rajat Rastogi	Chaired Technical Session in International Conference TPMDC-2016, at IIT Bombay, Dec 19-21, 2016
Dr. Mohd. Ashraf Iqbal	Managing Guest Editor, Special Issue of International Journal of Impact Engineering on Plasticity and Impact Mechanics (2017) Guest Editor, Special Issue of Thin Walled Structures on IMPLAST 2016 (2017)
Dr. Kaustav Chatterjee	Received the BEST PAPER AWARD 1st Prize at the International Geotechnical Engineering Conference on Sustainability in Geotechnical Engineering Practices and Related Urban Issues held on September 23-24, 2016 in Mumbai.
Dr. G.D. Ransinchung R.N.	Certificate of Appreciation for Significant Contribution for Renovation, Taj Mahal Premises, UP Rajkiya Nirman Nigam Ltd., 2016
Dr. Bhanu Prakash Vellanki	"Identification of Contaminated Sites and its Treatment Technologies, Interferences and Data management using GIS - Hands-on-Training " at IIT Roorkee, Nov, 17, 2016. Lecture: Remediation Techniques of Contaminated sites

#### 4. DISTINGUISHED VISITORS TO THE DEPARTMENT (NATIONAL/INTERNATIONAL)

Sl. No.	Name	Designation and Affiliation	Purpose	Dates
1.	Prof. Dafang Fu	Professor, Southeast University, China	Lectures in Teqip program-Sustainable Water management	March 28-31, 2017
2.	Prof. Rao Surampalli	President, CEO, and Chief Technology Officer, Global Institute for Energy, Environment, and Sustainability Iowa State University Shawnee, Kansas	Lectures in Teqip program-Sustainable Water management	March 28-31, 2017
3.	Dr. R. P. Singh	Professor, Southeast University, China	Lectures in Teqip program-Sustainable Water management	March 28-31, 2017
4.	Dr. Devendra Saroj	Lecturer, Water and Environmental Engineering, University of Surrey	Lectures in Teqip program-Sustainable Water management	March 28-31, 2017
5.	Prof. A.J. Adeloje	Professor, Heriot-Watt University, Edinburgh	Lectures in Indo-U.K. workshop on Sustainable Management of Water Resources in Satluj Beas Basin	Oct 20-23, 2016

6.	Prof. Ian Holman	Professor, Cranfield University	Lectures in Indo-U.K. workshop on Sustainable Management of Water Resources in Satluj Beas Basin	Oct 20-23, 2016
7.	Dr. Toby Waine	Lecturer, Cranfield University	Lectures in Indo-U.K. workshop on Sustainable Management of Water Resources in Satluj Beas Basin	Oct 20-23, 2016
8.	Dr. Lindsay Breevers	Associate Professor, Heriot-Watt University	Lectures in Indo-U.K. workshop on Sustainable Management of Water Resources in Satluj Beas Basin	Oct 20-23, 2016
9.	Dr. Andrew Orr	Regional Climate Modeller, Cambridge	Lectures in Indo-U.K. workshop on Sustainable Management of Water Resources in Satluj Beas Basin	Oct 20-23, 2016
10.	Dr. K.S. Kasiviswanathan	Research Associate, Heriot Watt University	Lectures in Indo-U.K. workshop on Sustainable Management of Water Resources in Satluj Beas Basin	Oct 20-23, 2016
11.	Dr. Andrea Mombianchi	Research Assistant, Cranfield University	Lectures in Indo-U.K. workshop on Sustainable Management of Water Resources in Satluj Beas Basin	Oct 20-23, 2016
12.	Dr. Daniel Bannister	Research Associate, British Antarctic Survey, Cambridge	Lectures in Indo-U.K. workshop on Sustainable Management of Water Resources in Satluj Beas Basin	Oct 20-23, 2016
13.	Dr. Taiichi Hayashi	Professor in Centre for Southeast Asian Studies Kyoto University, Kyoto – 606 8501 JAPAN	Attending workshop Role of Institutions in Wind Induced Disaster Risk Reduction  Attending Indo–Japan Workshop on Advances in Cloud Burst over Himalayan Region: Issues and Strategies for Sustainable Development at IIT Roorkee	1-2 Feb 2016  and 11-14 November 2016
14.	Dr. Hirohiko Ishikawa	Professor in Disaster Prevention Research Institute Kyoto University, Kyoto – 606 8501 JAPAN	Attending workshop Role of Institutions in Wind Induced Disaster Risk Reduction	1-2 Feb. 2016
15.	Dr. Toru Terao	Professor in Kagawa University Kagawa – 760 0016 JAPAN	Attending Indo–Japan Workshop on Advances in Cloud Burst over Himalayan Region: Issues and Strategies for Sustainable Development at IIT Roorkee	11-14 November 2016
16.	Dr. Ashok P. Dimri	School of Environmental Sciences, Jawaharlal Nehru University, New Delhi – 110 067, INDIA	Attending Indo–Japan Workshop on Advances in Cloud Burst over Himalayan Region: Issues and Strategies for Sustainable Development at IIT Roorkee	12-13 November 2016
17.	Ms. Jaya Singh	Scientist at National Centre for Medium Range Weather Forecasting, Noida, – 201 309, Uttar Pradesh INDIA	Attending Indo–Japan Workshop on Advances in Cloud Burst over Himalayan Region: Issues and Strategies for Sustainable Development at IIT Roorkee	12-13 November 2016
18.	Dr. Manohar Arora	Scientist at National Institute of Hydrology Roorkee – 247 667, Uttarakhand INDIA	Attending Indo–Japan Workshop on Advances in Cloud Burst over Himalayan Region: Issues and Strategies for Sustainable Development at IIT Roorkee	12-13 November 2016
19.	Dr. Kapil Kesarwani	Senior Research Fellow Wadia Institute of Himalayan Geology, Dehradun, Uttarakhand, INDIA	Attending Indo–Japan Workshop on Advances in Cloud Burst over Himalayan Region: Issues and Strategies for Sustainable Development at IIT Roorkee	12-13 November 2016
20.	Dr. R.D. Garg	Imperial College, London	London, UK. As a part of collaborative research project for technical discussions and future collaborations	June 15-24, 2016



21.	Dr. Auroop Ganguly	Assoc. Professor, Dept of Civil and Environmental Engineering, Northeastern University, Boston, Tokyo	To Give a talk on Climate change	June, 2016
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#### 5. INTERNSHIPS TO OTHER STUDENTS IN IIT – ROORKEE

Sl. No.	Name of student	Name of Supervisor	Under Graduate	Post Graduate	Name of Collaborative Institute	Period
1	Darshan Hans	Dr. Manohar Arora (NIH) and Prof. Ajay Gairola		M.Sc. (Physics)	KLDAV PG College, Roorkee	24 Feb to 24 Jul 2017
2	Arushi Sharma	Dr. Manohar Arora (NIH) and Prof. Ajay Gairola		M.Sc. (Physics)	KLDAV PG College, Roorkee	24 Feb to 24 Jul 2017
3	Arjit Bhardwaj	Dr. Umesh Kumar Sharma	B.Tech		Punjab Engineering college (Punjab)	1.4.2017 to 30.6.2017
4	Shreya Pandey	Dr. G.D. Ransinchung R.N.	B.Tech		IIT-BHU, Varanasi	May-June, 2016
5	Arijit Singh	Dr. G.D. Ransinchung R.N.	B.Tech		PEC University, Chandigarh	May-June, 2016
6	Ms. Anjali Sharma	Dr. Indrajit Ghosh	Yes		National Institute of Technology, Jalandhar	12-12- 2016 to 5-01- 2017
7	Mr. Sudhir Kumar	Dr. Indrajit Ghosh	Yes		National Institute of Technology, Agartala	16 <sup>th</sup> May to 15 <sup>th</sup> June, 2016
8	Mr. Tanoy Majumder	Dr. Indrajit Ghosh	Yes		National Institute of Technology, Agartala	16 <sup>th</sup> May to 15 <sup>th</sup> June, 2016
9	Ms. Rubul Debbarma	Dr. Indrajit Ghosh	Yes		National Institute of Technology, Agartala	16 <sup>th</sup> May to 15 <sup>th</sup> June, 2016
10	Ms. Rima Das	Dr. Indrajit Ghosh	Yes		National Institute of Technology, Agartala	16 <sup>th</sup> May to 15 <sup>th</sup> June, 2016
11	Neha	Dr. Sudipta Sarkar	UG		NIT, Raipur	Summer 2016

#### 6. ACADEMIC ACTIVITIES ORGANIZED BY THE DEPARTMENT

Name of the conf./seminar/symp./workshop	Name of the Chairman	Sponsored by	Dates
Tequip- Sustainable Water management	Prof C. S. P. Ojha	Teqip- MHRD	March 28-31, 2017
Joint Convener, National workshop on Mitigating Impact of Climate Change on Indian agriculture, IIT BHU, Varanasi	Prof C. S. P. Ojha	MICCI Indo-UK Project	July 23, 2016
Organising Secretary, Indo-U.K. workshop on Sustainable Management of Water Resources in Satluj Beas Basin	Prof C. S. P. Ojha	MICCI Indo-UK Project	Oct 20-23, 2016
Fifteen Years of PMGSY	Member -Prof S.S.Jain	National Rural Roads Development Agency, GoI, New Delhi	Aug 6-7, 2016
Conference on Numerical Modeling in Geomechanics: CoNMIg-2017, Department of Civil Engineering, IIT Roorkee, Roorkee, India.	Dr. Mahendra Singh as Vice chairman of the conference		March 03-04, 2017
Fifteen Years of PMGSY	Organising Secretary- Prof Praveen Kumar	National Rural Roads Development Agency, GoI, New Delhi	Aug 6-7, 2016
Indo-Japan Workshop on Advances in Cloud Burst over Himalayan Region: Issues and Strategies for Sustainable Development	Prof. Ajay Gairola Prof. Taiichi Hayashi Prof. Toru Terao Dr. B.R. Arora Dr. Ashok P. Dimri	IIT Roorkee	12-14 November

	Dr. Manohar Arora Ms. Jaya Singh Dr. Kapil Kesarwani		
Fifteen Years of PMGSY	Member - Dr. Satyendra Mittal	National Rural Roads Development Agency, GoI, New Delhi	Aug 6-7, 2016
8th Task Force Meeting of 'Development of Indian Highway Capacity manual'	Rajat Rastogi (Technical session Coordinator)	CRRRI-CSIR	September 9-10, 2016
National Conference on Fifteen Years of PMGSY		NRRDA, MoRD	August 6-7, 2016
TEQIP Course on Sustainable Environmental Management	Prof. CSP Ojha, Dr. R.D. Garg, Dr Pramod Kumar	Geometrics (Civil Engg Dept) IITR	March 27-31, 2017
Workshop on "Sustainable and Efficient Structures in Smart Cities" At Greater Noida Campus	Umesh Kumar Sharma	NBCC	17 <sup>th</sup> September, 2016
Numerical Methods in Geomechanics-CoNMIG-2017	PritiMaheshwari (one of the Org. Secy.)		March 3-4, 2017, Roorkee
8 <sup>th</sup> Task Force Meeting Of Development Of Indian Highway Capacity Manual (Indo-HCM)	Prof. M.Parida, Regional Local Co-ordinator	CSIR	9-10 September, 2016
National Conference on Fifteen years of PMGSY (FYPMGSY)	Prof. Praveen Kumar	NRRDA-PMGSY	6-7th August, 2016
Fifteen Years of PMGSY	Prof. Praveen Kumar	National Rural Roads Development Agency, GoI, New Delhi	Aug 6-7, 2016
Conference on Numerical Modeling in Geomechanics (CoNMIG)	Kaustav Chatterjee	IGS Roorkee Chapter, IGS	March 3-4, 2017

#### 7. SPONSORED RESEARCH PROJECTS:

Sl. No.	Projects Status	Total No. of Projects	Amount (Rs. in lacs)
1.	Completed Projects	21	682.09
2.	Ongoing Projects	24	1366.30
3.	New Projects	03	37.40

#### 8. SERVICE TO INDUSTRIES

##### a. Consultancy Project

Sl. No.	Projects Status	Total No. of Projects	Amount (Rs. in lacs)
1	Completed Projects	157	876.26
2	Ongoing Projects	75	866.38
3	New Projects	188	1021.20

##### b. Testing Services

Sl. No.	No. of Industries Served	Total outlay (Rs. in lacs)
1.	09	40.00

**9. SUMMARY OF MAJOR SPONSORED RESEARCH SCHEMES AND CONSULTANCY PROJECTS (>Rs. 20 lacs) (A brief Write-up upto 100 words) (New Projects during the year 2016-17).**

**Project Title: Development of Indian Highway Capacity Manual (Indo-HCM).**

**Funded by: CSIR-CRRI**

**Project Duration: 5 years (2012-2017)**

**P.I.: Dr. M. Parida**

This project is aimed at developing a highway capacity manual to address the diverse traffic characteristics of India. This will assist engineers and policy makers to appropriately allocate funding for the development of road sector. Manual aims to develop capacity and performance standards for inter-city highways, urban roads, signalized and unsignalized intersections, expressways and pedestrian facilities. This project is conceived by associating prominent research institutions which includes IIT Roorkee, IIT Bombay, IIT Guwahati, IIST Howrah, SPA New Delhi, SVNIT Surat and Anna University Chennai. The entire project is divided in 9 work packages (WP), each being headed by one of the previously mentioned institutions.

IIT Roorkee is in charge of 3 work packages: (1) WP-1 Capacity Estimation of Two Lane, Intermediate Lane and Single Lane Roads (2) WP-6 Capacity Estimation for Unsignalized Intersections and (3) WP-7 Capacity Estimation of Pedestrian Facilities. Since the manual is designed for traffic conditions of entire country, traffic data were collected from different parts of India by associating with other research institutions. Details of work being undertaken at IIT Roorkee are described below.

- WP-1 estimates the capacity for two-lane, intermediate lane and single lane inter-city roads. Influence of road geometry, road condition and alignment were also explored. Data were collected from 15 sections of two-lane that had 11 base sections and 8 sections of intermediate lane in which 7 were base sections. Data were also collected from 5 single lane sections, but was excluded from this package due to low operating volumes. Five MTech theses are completed and two PhD are underway from this work package. Two international publications were obtained out of this package.
- WP-6 pertains to the estimation of capacity of uncontrolled intersection. This study did not differentiate between all-way and two-way stop controlled intersections owing their operational similarities. 3 four-legged intersections and 5 three-legged intersections were chosen as base sections and data were collected through videography. One MTech is completed and one PhD is underway from this work package.
- WP-7 deals with estimating capacity for pedestrian facilities that includes sidewalks, crosswalks, etc. Data were collected at 23 sidewalk sections, 8 crosswalks, 7 stairways, 9 foot-over-bridges and 6 skywalks to study movement of pedestrians and factors influencing their behaviour.

**TITLE: Energy dissipation on block ramps" INCH, Ministry of Water Resources, New Delhi Rs. 18.74.**

**P.I. : Dr. Z. Ahmad**

**Consultancy Project On-going**

1. Physical model study of proposed 6 lane extradosed bridge over river Ganga near Kacchi dargah, Patna, Engineering Manager, EDRC Special Bridges, L&T Construction, Chennai – 600 089.
2. Preparation of DPR for barrage across Gagans river at Dwarahat, Almora. Kumaon Irrigation Division, Almora, Uttarakhand (Rs. 30 lakh, 2016).

**Consultancy Project Completed**

1. Hydrological and hydraulic study of proposed new rail bridge across river Ganga near Mokama, General Manager, Iron International Limited, Sone Bhawan First Floor, Daroga Prasad Rai Path, Patna-800001
2. Physical study of spillway of Malana-11 hydro electric project, Everest Power Pvt. Ltd., Hall A, FF, Plot No. 143-144, Udyog Vihar P-1V, Gurgaon, Haryana.
3. Checking the soundness of sub structure and foundation of the Mahatma Gandhi setu at Patna, Er. A K Pandey, SE (Bridges), S&R, Ministry of Road Transport & Highways (MORTH), Parivahan Bhawa, 1 Sansad Marg, New Delhi.

**P.I. Dr. Satyendra Mittal**

Ministry of Railways has sanctioned a Research Project entitled, "Design of Formation for speed higher than 160 kmph and upto 250 kmph" for Rs. 20 lacs. Under this project the geotechnical designs shall be developed by us for 3 types of soil strata, namely sandy sub-grade, clay sub-grade and layered sub-grade for high speed trains.

**TITLE: A Pragmatic Approach towards utilization of Reclaimed Asphalt Pavement in PQC Mix and Bituminous Mixtures**

**P.I. : Dr. G.D. Ransinchung R.N.**

This research project is in collaboration with NBCC India Ltd.; The project focuses on utilization of reclaimed asphalt pavement (RAP) which is milled off or demolished from flexible pavements, in Pavement Quality Concrete Mixes and Bituminous Mixes. This provides an economical as well as a sustainable approach towards pavement construction. It is an ongoing research project.

**TITLE: Development of Sustainable Construction Product Incorporating Zinc Waste**

**P.I. : Dr. G.D. Ransinchung R.N.**

This ongoing research project is in collaboration with Hindustan Zinc Limited. In this research the industrial by product namely the Jarosite is used in cement concrete for the development of sustainable construction product.

**P.I. Dr. Sonalisa Ray**

1. Development of Agriculture Waste-based Accelerator for Enhanced Concrete Hardening (AgWACH)
2. A Multi-scale based Fracture and Fatigue Analysis in Quasi-brittle Materials
3. Development of Sustainable Construction Products Incorporating Zinc Waste (Jarosite/Jarofix).

**Project Title: Effect of Countdown Display on Traffic Flow Characteristics and Driver Behaviour at Signalised Intersections.**

**Funded by:** Department of Science and Technology (DST), New Delhi, India

**P.I.: Dr. Indrajit Ghosh**

In India, signal countdown timers are being installed at several major intersection locations without any engineering studies related to their impacts on intersection safety and efficiency. This project found signal countdown timers influenced traffic efficiency and safety potential at signalized intersections in a mixed way. Its green component has significant positive effect on road traffic safety in terms of reduced dilemma zone along intersection approaches and red light violations during the initial red phase. However, it has no significant impact on intersection efficiency in terms of saturation flow. On the other hand, the presence of its red component was responsible for reduced SULT calculated from proposed methodology, but it resulted into higher propensity of RLVs during final 10 s of red phase. In a combined way, the presence of countdown timers does not have much influence on the intersection efficiency, but the information provided by them can affect traffic safety at the signalized intersection locations.

**P.I. Dr. Bhanu Prakash Vellanki**

"Identification and Degradation of Emerging Contaminants in India by Advanced Reduction and Advanced Oxidation Processes", NBCC, 52.88 Lakhs, April 2016-April 2019.

**P.I. Dr. Sarit Kumar Das**

Monitoring, Modelling and Forecasting of Soil Moisture at Regional Scale to Assess the Impact of Climate Change on Air Pollution Meteorology. This is a sponsored research project funded by DST, Govt. of India for 5 years with total funding of Rs. 35 lacs over 5 years. This project is initiated on September 5, 2016 as I joined at DST-INSPIRE Faculty. Presently, primary equipment are being procured and process of recruiting one research scholar for this project is underway.

**10. SCIENTIFIC AND TECHNICAL REPORTS**

Sl. No.	Title of the Projects	Participants	Authors	Remarks
1.	Design of Sewerage System, Lansdowne Cantonment	Dr. Pramod Kumar Dr. S.K. Ghosh	Dr. Pramod Kumar Dr. S.K. Ghosh	-
2.	EIA of M/S Model Exims (P) Ltd. Tannery Unit Kanpur	Dr. Pramod Kumar Dr. Shishir Sinha	Dr. Pramod Kumar Dr. Shishir Sinha, ChED Dr. Ashutosh Tandon, Kanpur	-

3.	Effect of Countdown Display on Traffic Flow Characteristics and Driver Behaviour at Signalised Intersections	Dr. Indrajit Ghosh	Dr. Indrajit Ghosh	Project Completion Report
4.	Development of performance parameters for two-lane roads under mixed traffic condition	Dr. Indrajit Ghosh	Dr. Indrajit Ghosh	Project Completion Report

#### 11. RESEARCH PUBLICATION

Sl. No.	Details	Total Number
a.	Conference/Symp./Seminars	51
b.	International Conference	35
c.	National Journals	128
d.	International Journals	21

## 4.6 COMPUTER SCIENCE & ENGINEERING

**Academic Staff: 12 Students Admitted: UG – 77, M.Tech. – 40, Ph.D - 11**  
**Publications in: Books/Book Chapter-02, Journals-49, Conference Papers-30,**  
**Projects: Research Rs. 359.13 Lacs**

### 1. SALIENT FEATURES

The Department of Computer Science & Engineering is one of the major departments of the Institute in terms of the number of students and number of programmes. It offers a wide spectrum of academic programmes at undergraduate and postgraduate levels. Undergraduate programmes lead to B.Tech in Computer Science and Engineering. Postgraduate programmes lead to M.Tech and PhD in Computer Science and Engineering. There are more than 40 full time research students working in data mining, cloud computing, distributed computing, wireless networks, internet-of-things, image and video processing, cryptology, computer vision, automated planning, machine learning, big multimedia data analytics, semantic web services, software engineering, pattern recognition, algorithmic microfluidics, CAD for VLSI, high-performance computing and network security.

### 2. LIST OF FACULTY MEMBERS

**Biplab Banerjee**, PhD (IIT Mumbai, India)  
Computer Vision, Machine Learning, Action Recognition, Part based Object Recognition, Multi-Temporal Remote Sensing Image Analysis

**Dhaval Patel**, Ph.D. (NUS, Singapore) (upto 27-12-2016) Big Data Analysis, Map Reduce Programming, Database and Data Mining, Spatio-Temporal Data Analysis, Geo-Visualization

**Durga Toshniwal**, Ph.D. (IIT Roorkee, India) Data Mining and Warehousing, Databases, Machine Learning

**Manoj Misra**, Ph.D. (Univ. of Newcastle, UK) Distributed Computing, Performance Evaluation

**Partha Pratim Roy**, Ph.D. (Autonomous University of Barcelona, Spain) Pattern Recognition, Multilingual Text Recognition, Biometrics, Identification and Verification of Signature, Fingerprint, etc., Computer Vision, Image Segmentation, Machine Learning, Hidden Markov Model

**R. Balasubramanian**, Ph.D. (IIT Madras, India) Computer Vision-Optical Flow Problems, Fractional Transform Theory, Wavelet Analysis, Image and Video Processing, Multimedia Security: Digital Image Watermarking and Encryption, Biometrics, Content Based Image and Video Retrieval, Hyper spectral and Microwave Imaging, Visualization, Volume Graphics

**Rajdeep Niyogi**, Ph.D. (IIT Kharagpur, India) Automated Planning, Distributed Systems, Formal Methods

**Ranita Biswas**, PhD (IIT Kharagpur, India)  
Digital Geometry, Computer Graphics, Mathematical Imaging, Discrete Geometry, Algorithms, Image Processing

**Sateesh Kumar Peddoju**, Ph.D. (Osmania University, India) Cloud Computing, Grid Computing, Mobile Communications, Mobile Ad-hoc Networks

**Sandeep Kumar**, Ph.D. (IIT BHU, India)  
Semantic Web, Web Services, Multi-Agent Systems, Software Engineering

**Subhankar Misra**, PhD (University of Florida) Interdependent Critical Infrastructures, Smart Grid, Internet of Things, Networks, Complex Networks, Online Social Networks, Ad hoc networks, Sensor networks

**Sudip Roy**, Ph.D. (IIT Kharagpur, India)  
Algorithmic Microfluidics, EDA for Emerging Technologies, High-Performance Computing, Parallel Computing, CAD for VLSI, High-Level Synthesis and Physical Design

**Sugata Gangopadhyay**, Ph.D. (IIT Kharagpur, India) Cryptology, Cryptographic Boolean functions; Stream Cipher Cryptanalysis

**Vaskar Raychoudhury**, Ph.D. (on leave) (Hong Kong Polytechnic University, HK) Distributed, Mobile and Pervasive Computing, Computer Networks, Wireless Sensor Networks, Mobile and Online Social Networks, Internet of Things.

### 3. HONOURS AND AWARDS TO FACULTY MEMBERS

Sl. No.	Name of Faculty	Award
1.	Dr. Sandeep Kumar	<ol style="list-style-type: none"> <li>Dr. Sandeep Kumar is nominated by MHRD for PRSG committee of a mega project titled "Talk to Teacher", which is handled by IIT Bombay and IIT Kharagpur with project cost of 192.02 Crore Dr. Sandeep Kumar participated in the pedagogical project under NMEICT for course development on 'Principles of Programming Languages' in the role of reviewer of the contents developed.</li> <li>Dr. Sandeep Kumar worked as reviewer to IEEE Software.</li> <li>Dr. Sandeep Kumar has been invited to work as Special Advisor to McGraw Hill Education, New York, USA.</li> <li>Dr. Sandeep Kumar worked as General co-chair for in IEEE Sponsored 11<sup>th</sup> International Conference on Industrial and Information Systems, 2016.</li> <li>Dr. Sandeep Kumar has been invited to work as Track-Chair for 4<sup>th</sup> IEEE UPCON, 2017.</li> </ol>
2.	Dr. Sugata Gangopadhyay	Outstanding Teacher Award. IIT Roorkee
3.	Dr. R. Balasubramanian	One of the jury members of 6th IDRBT Doctoral Colloquium held in Institute for Development and Research in Banking Technology (IDRBT), Hyderabad during 8-9, December 2016. High quality papers from ISI Kolkata, IISc Bangalore, IIT Kharagpur, IIT Madras, IIT Hyderabad, IIT Guwahati, IIIT Hyderabad, IIIT Bangalore and IIM Lucknow were presented and top 3 papers have got the cash prizes.
4.	Dr. Sudip Roy	Early Career Research Award from SERB, DST, Govt. of India

### 4. DISTINGUISHED VISITORS TO THE DEPARTMENT (NATIONAL/INTERNATIONAL)

Sl. No.	Name	Designation and Affiliation	Purpose	Dates
1.	Dr. Kanta Matsuura	Professor, Assistant Director General, Director of Computer Center, Director of Media Center, Institute of Industrial Science, The University of Tokyo	India - Japan Workshop on Cryptographic Techniques for Cyber Security	12- 14 February 2017
2.	Dr. Pradeep K Atrey	Associate Professor at the State University of New York (SUNY), Albany, NY, USA	For delivering a set of lectures in the area of Information Security	26-29, July 2016
3.	Dr. V. C. V. Rao	Associate Director, C-DAC, Bangalore	To deliver a lecture in Cognizance2017 and Inaugurate OpenPOWER System	24-25 March, 2017
4.	Mr. Ganesan Narayanasamy	OpenPOWER Leader, IBM, Bangalore	OpenPOWER System Inauguration and meeting	24-25 March, 2017
5.	Ms. Vijay Laxmi	Sr. IT Architect, Biogen, USA	To deliver a lecture in NetSec v2.0	18 December, 2017
6.	Dr. Rajesh Pillai	Scientist G, DRDO, Delhi	To deliver the Keynote Talk in NetSec v2.0 during Valedictory of the course	18 December, 2017

Sl. No.	Name	Designation and Affiliation	Purpose	Dates
7.	Mr. Abhishek Kumar	Manager, Security Operations, Microsoft, Hyderabad	To deliver a lecture in NetSec v2.0	December 17, 2016
8.	Mr. Hari Kishan	Engineer, Network and Infrastructure Services, Microsoft, Hyderabad	To deliver a lecture in NetSec v2.0	December 17, 2016
9.	Dr. A.V. Subramanyam	Assistant Professor, IIIT, Delhi	To deliver a lecture in NetSec v2.0	December 17, 2016
10.	Dr. Ananda Swarup Das	IBM Research Labs, Delhi	To deliver a lecture in NetSec v2.0	December 16, 2016
11.	Dr. Mayank Dave	Professor, NIT, Kurukshetra	To deliver a lecture in NetSec v2.0	December 16, 2016
12.	Dr. Arti Noor	Joint Director, C-DAC, Noida	To deliver the Keynote Talk in NetSec v2.0 during Inauguration of the course	December 14, 2016

#### 5. INTERNSHIPS TO OTHER STUDENTS IN IIT ROORKEE

Sl. No.	Name of Student	Name of the Supervisor	Under Graduate	Post Graduate	Name of the Institute	Period
1.	Sanyam Agarwal	Dr. Sandeep Kumar	B Tech CSE		JSS, Noida	May – July 2016
2.	Shubhangee Nath	Dr. Sudip Roy	B Tech CSE		National Institute of Technology (NIT) Patna	May 15, 2016 to July 15, 2016
3.	Apurve Dave	Dr. Sudip Roy	B Tech CSE		Indian Institute of Technology (IIT) - BHU	May 15, 2016 to July 15, 2016
4.	Shubham Raj	Dr. Sudip Roy	B Tech CSE		Indian Institute of Technology (IIT) Roorkee	Nov 20, 2016 to Jan 4, 2017
5.	Kamal Kant	Dr. Sudip Roy	B Tech CSE		Indian Institute of Technology (IIT) Roorkee	Nov 20, 2016 to Jan 4, 2017
6.	Nitin Gaurav Singh	Dr. Sudip Roy	B Tech CSE		Indian Institute of Technology (IIT) Roorkee	Nov 20, 2016 to Jan 4, 2017
7.	Mahendra Dakshana	Dr. Sudip Roy	B Tech CSE		Indian Institute of Technology (IIT) Roorkee	Nov 20, 2016 to Jan 4, 2017
8.	Purushottam Abhisheikh	Dr. Sudip Roy	B Tech CSE		Indian Institute of Technology (IIT) Roorkee	Nov 20, 2016 to Jan 4, 2017
9.	Prashant Meena	Dr. Sudip Roy	B Tech CSE		Indian Institute of Technology (IIT) Roorkee	Nov 20, 2016 to Jan 4, 2017
10.	Brajesh Kumar	Dr. Sudip Roy	B Tech CSE		Indian Institute of Technology (IIT) Roorkee	Nov 20, 2016 to Jan 4, 2017
11.	Prabhas Kumar Singh	Dr. Sudip Roy	B Tech CSE		National Institute of Technology (NIT) Srinagar, Jammu & Kashmir	Nov 20, 2016 to Feb 28, 2017
12.	Amitesh Singh Baghel	Dr. Sudip Roy	B Tech CSE		Shri Vaishnav Institute of Technology, Bhopal, Madhya Pradesh	June, 2016 to Aug, 2016



## 6. ACADEMIC ACTIVITIES ORGANIZED BY THE DEPARTMENT

Sl. No.	Name of the conf./seminar/ symp./workshop	Name of the Chairman	Sponsored by	Dates
1.	A one week short term course on "Developments and Challenges in Fault, Reliability and Safety Analysis of Software Systems for Smart Cities", 2016.	Dr. Sandeep Kumar Prof. Manoj Misra	QIP, IIT Roorkee	28th Nov- 2nd Dec 2016.
2.	IEEE sponsored 11th International Conference on Industrial and Information Systems (ICIIS), 2016.	Dr. Sandeep Kumar (General Co-Chair) Prof. D. Singh (General Chair)	Technically sponsored by IEEE	Dec. 3-4, 2016
3.	A one week short term course on "Advances in Information Security and Cryptology", 2016.	Dr. Sandeep Kumar Dr. Sugata Gangopadhyay	ISEA- Phase II Project sponsored by DEITY	14 <sup>th</sup> Dec.- 18 <sup>th</sup> Dec., 2016
4.	A one week short term course on "Recent Trends in Network Security", 2016	Dr. Manoj Misra Dr. P. Sateesh Kumar	ISEA- Phase II Project sponsored by DEITY	14th Dec- 18th Dec 2016
5.	India - Japan Workshop on Cryptographic Techniques for Cyber Security	Dr. Sugata Gangopadhyay	Department of Computer Science and Engineering IIT Roorkee	13 - 14 February 2017

## 7. SPONSORED RESEARCH PROJECTS:

Sl. No.	Projects Status	Total No. of Projects	Amount (Rs. in lacs)
1.	Completed Projects	01	9.80
2.	Ongoing Projects	08	167.69
3.	New Projects	08	181.63

## 8. SUMMARY OF MAJOR SPONSORED RESEARCH SCHEMES AND CONSULTANCY PROJECTS (Rs. 20 lacs) (A brief Write-up upto 100 words) (New Projects during the year 2016-17).

### Dr. Manoj Misra

Project title Information Security Education and awareness (ISEA) project phase –II. This Project is funded by Ministry of Information technology, Govt. of India Rs. 137.70 lacs. The objective of the project is to enhance education in the area of information & network security.

### Dr. Sandeep Kumar

As Co-PI in a project titled "An Application of Drone with Satellite Data for Precision Agriculture Monitoring and Yield Prediction". This project is sanctioned by ICAR, New Delhi of the amount Rs. 48.35 Lakhs. Major objective to be handled by us is to use learning models for yield prediction, which is further helpful in precision agriculture.

### Dr. R. Balasubramanian

As Co-PI in a project titled "Multimodal biometric based person authentication and identification System". This project is sanctioned by DST, New Delhi of the amount Rs. 23.5266 Lakhs.

### Dr. Sudip Roy

As PI in a project titled "Automated Sample Preparation, Real-life Bioprotocol Implementation and Synthetic Biology using Microfluidic Lab-on-a-Chips (LoCs)". This project is sanctioned by SERB, DST, Govt. of India of the amount approx. 44 Lakhs. Medical diagnostic systems used in biomedical industries involve cumbersome laboratory test procedures while implementing a bioprotocol. These test procedures not only take much time to execute, but sometimes also require huge amount of reagent fluids which are very expensive. During past few years, several research groups have developed many algorithms for on-chip and automated sample preparation (dilution and mixing) using DMF and CMF biochips. However, still there are many scopes to explore design automation techniques for different sample preparation problems considering the optimal on-chip storage management while scheduling the

process with optimization of time and minimization of reactant usage. Practically, the existing algorithms have not been implemented yet for sample preparation of real-time bioassay execution. In order to adopt the design automation of sample preparation for real-life bioprotocol implementation, it is important to have reliable sample preparation for both volumetric-level and concentration-level. Development of efficient algorithms for solving combinatorial optimization problems in automated sample preparation with high reliability in erroneous environment. Other objectives are to implement real-life biochemical protocols with full-automation and genetic logic circuits for synthetic biology using DMF biochip prototype kits. This project focuses on the real-life bioprotocol and genetic logic circuit realization using microfluidics.

#### 9. RESEARCH PUBLICATION

Sl. No.	Details	Total Number
a	Conference/Symp./Seminars	03
b	International Conference	27
c	National Journals	00
d	International Journals	49

## 4.7 DEPARTMENT OF EARTHQUAKE ENGINEERING

*Academic Staff: 21; Students Admitted : PG-45, Ph.D.-07;  
Publications: Journals -38, Conferences -27,  
Project Research: Rs. 1622.20 Consultancy: Rs. 980.10*

### 1. SALIENT FEATURES

Department of Earthquake Engineering at the Indian Institute of Technology Roorkee (erstwhile University of Roorkee) was established in 1960 as School of Research and Training in Earthquake Engineering. Four major areas of earthquake engineering viz., Structural Dynamics, Soil Dynamics, Engineering Seismology and Seismotectonics, and Instrumentation have been nurtured for the last fifty years. The department provides Master's degree in three specializations namely, Structural Dynamics, Soil Dynamics, and Seismic Vulnerability and Risk Assessment. The major functions of the Department include teaching and research, and rendering expert advice to various organizations in the area of earthquake resistant design of structures and systems, such as dams, bridges, power plants, etc. The Department has played a key role at the national level in the formulation of Indian Standard Codes of Practice for earthquake resistant design of Structures.

Several major facilities have been developed in the Department to conduct experiments related to earthquake engineering. Some of the major facilities include: a low cost railway wagon shock table for dynamic testing of structural models, a computer controlled shake table to stimulate strong ground motion, a quasi static testing laboratory having servo-controlled dynamic actuator systems and servo-controlled compression testing machine, a soil dynamics laboratory equipped with liquefaction table, cyclic triaxial testing system, and resonant column apparatus, a seismological observatory having state of the art broadband seismograph to record earthquake ground motion, a strong motion network of 300 digital accelerographs deployed in the Himalayan region to measure strong ground motion due to moderate and major earthquakes and a state-of-the-art 12-station telemetered network to monitor local seismicity in the environs of Tehri Dam.

### 2. LIST OF FACULTY MEMBERS

**(Ms.) Amita Sinval**, Ph. D. (IITR)  
(till 30-06-2016), Engineering Seismology &  
Seismotectonics  
**Ashok Kumar**, Ph.D. (IITR)  
Instrumentation  
**A.D. Pandey**, ME(IITR)  
Structural Dynamics  
**B. K. Maheshwari**, Ph. D. (Japan)  
Soil Dynamics  
**Daya Shankar**, Ph.D. (BHU)  
Seismology  
**J. P. Narayan**, Ph. D. (BHU)  
Engineering Seismology & Seismotectonics  
**Josodhir Das**, Ph.D. (IITR)  
Seismotectonics and Remote Sensing  
**Kirat Pal**, Ph. D. (IITR)  
Instrumentation  
**M. Shrikhande**, Ph. D. (IIT K)  
Structural Dynamics  
**M. L. Sharma**, Ph. D. (IITR)  
Engineering Seismology & Seismotectonics  
**Pankaj Agarwal**, Ph. D. (IITR)  
Structural Dynamics  
**Ravi Shankar Jakka**, Ph.D. (IITD)  
Soil Dynamics  
**Ramanand Dubey**, Ph.D.(IIR)  
Structural Dynamics  
**S.C. Gupta**, Ph.D. (IITR)  
Seismology and Seismotectonics

**Yogendra Singh**, Ph. D. (IITD)  
Structural Earthquake Engineering, Performance  
Based Design, Seismic Risk Assessment

#### **Emeritus Professor**

**Arya. A. S.**, Ph.D. (Illinois)  
Structural Dynamics

#### **Emeritus Fellow**

**Ashwani Kumar**, Ph.D. (IITR)  
Engineering Seismology & Seismotectonics  
**D. K. Paul**, Ph. D. (Swansea)  
Soil Dynamics, Earthquake Risk Mitigation,  
Structural Earthquake Engineering  
**H. R. Wason**, Ph. D. (KU)  
Engineering Seismology & Seismotectonics

#### **Visiting Faculty**

**Shyamal Mukerjee**, Ph.D.(IITR)  
Soil Dynamics

#### **Honorary Fellow**

**I. D. Gupta**, Ph.D. (Pune)  
Seismic Hazard Assessment, Engineering  
Seismology

### 3. HONOURS AND AWARDS TO FACULTY MEMBERS

Sl. No.	Name of Faculty	Award
1.	Dr. Ashwani Kumar	Nominated as External Expert Member of the PG board in Geophysics of Kurukshetra University for a period of 2 year from 18 November, 2016.
2.	Dr. B.K. Maheshari	Visited Japan as a part of High Level Policy Dialogue on Cooperation in Education, led by Shri V.S. Oberoi, Secretary, MHRD, Govt. of India during July 6-9, 2016.
		Attended a meeting as a member of CED39 (Earthquake Engineering Section) of Bureau of Indian Standards (BIS) at New Delhi on February 27, 2017
		Visited IIT Kharagpur to examine one Ph.D. Thesis in Dept. of Geology and Geophysics on July 4, 2016.
		Invited to deliver a Key Note Lecture entitled "Geotechnical Issues and Foundation Design of Tall Buildings" in Conference Planning and Design of Tall Buildings Including Earthquake and Wind Effects Organized by Indian Association of Structural Engineers at New Delhi on December 7, 2016
		Delivered an invited key note lecture entitled "Recent Advances in Non Linear Soil- Site Interaction for Earthquake loads" in a conference held at GNEC, IIT Roorkee on August 5, 2016
		Invited to deliver a Special Presentation Lecture entitled "Recent Advances in Nonlinear Soil-Structure Interaction for Earthquake Loads" in 6th International Conference on Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics held at Extension Centre, IIT Roorkee at Greater Noida on August 5, 2016.
3.	Dr. M.L. Sharma	Chaired a session TS 6: Emergency action plan for dams towards disaster resilience, Third National Dam Safety Conference, February, 18 – 19, 2017, organized by CWC, UJVNL and IITR, MAC Auditorium, Roorkee.
		Presented a technical talk on Trends in Uttarakhand and its implications in future seismicity, in Workshop on Earthquake Risk Management, Disaster Mitigation and Management Centre, Department of Disaster Management, Government of Uttarakhand, Dehradun, Jan 20, 2017.
		Represented as National Delegate from India in Executive committee meeting of International Association of Earthquake Engineering in Santiago, Chile, Jan 09-14, 2017.
		Chaired a committee on strong motion instrumentation, BBMB, Punjab, May 19-20, 2016.
4.	Dr. Manish Shrikhande	Invited for talk on "Earthquake Engineering Fundamentals" in the Training Programme for CPWD engineers conducted at Department of Civil Engineering, Amity University Noida on September 26, 2016.
		Invited for talk on "Reliability Levels Implied in IS-1893(2002)" at the Department of Civil Engineering, Aligarh Muslim University on October 26, 2016.
5.	Dr. Yogendra Singh	Member, Technology Sub-Mission on Sustainable Technological Solutions for Faster & Cost Effective Construction of Houses Suiting to Geo-Climatic and Hazard Conditions of the Country, Housing for All Mission, Ministry of Housing and Urban Poverty Alleviation, Govt. of India.
6.	Dr. Pankaj Agarwal	Young Concrete Engineer Award 2016-17 to Mr. Amit Goyal, Research Scholar of Prof. Pankaj Agarwal, Department of Earthquake Engineering, IIT Roorkee for his part of Ph. D work entitled "Earthquake Resistant Interlinked Block Masonry System With Visco-Elastic Energy Dissipator Links" by Indian Concrete Institute, Chandigarh Center (Chandigarh, Punjab, Haryana, J&K, HP) on 4th March, 2017.
		Delivered a keynote lecture on the topic "Earthquake Resistant Construction based on low cost Damping Devices" in the Technical Seminar in Dehradun for Engineers, Architects & academicians in collaboration with The Institute of Engineers (Indian), Uttarakhand Architect Association and Uttaranchal Engineers and Draftsmen Associations on behalf of IEI, UAA, UEDA & UltraTech Cement, 27 <sup>th</sup> March 2017.

Sl. No.	Name of Faculty	Award
7.	Dr. Pankaj Agarwal	Invited to lecture in TEQIP Short Term Course on Structural Elements Subjected to Extreme Loadings, organized by Department of Civil engineering, IIT Roorkee, March 20-24, 2017. Attended a meeting to Review & Development of Standardized Information, Education & Communication (IEC) Material for Earthquake Safety and Preparedness at NDMA Bhawan, New Delhi, 21 <sup>st</sup> March, 2017. Delivered a key note lecture on the topic "Earthquake Resistant Construction by using Visco-elastic Link Elements" in All India Seminar on "Advances in Technology to Mitigate the Effect of Natural Hazards (ATMNH-2017)" during March 2-3, 2017 at College of Technology, G. B. Pant University of Agriculture & Technology, Pantnagar (Uttarakhand).

#### 4. DISTINGUISHED VISITORS TO THE DEPARTMENT (NATIONAL/INTERNATIONAL):

Sl. No.	Name	Designation and Affiliation	Purpose	Dates
1.	Prof Durgesh C Rai	Professor, Department of Civil Engineering, Indian Institute of Technology Kanpur	Technical talk on Experimental Simulation of Engineering Measures for Earthquake Preparedness: IIT Kanpur Experience	August 12, 2016
2.	Dr Eduardo Reinoso	Instituto de Geofisica, UNAM, Mexico,	Guest Lecture on CAPRA-Probabilistic Risk Assessment Software Platform	September 28, 2016
3.	Dr. P. D. Mathur (DHI),	Mexico	Visited Department	September 28, 2016
4.	Dr. Manzul Hazarika (AIT)	Mexico	Visited Department	September 28, 2016
5.	Dr. Alejandro Aguado (ERN)	Mexico	Visited Department	September 28, 2016
6.	Dr. Carlos Avelar (ERN)	Mexico	Visited Department	September 28, 2016
7.	Dr. Michael Meadows (ERN)	Mexico	Visited Department	September 28, 2016
8.	Prof. Sri Krishna Singh	Professor, Instituto de Geofisica, UNAM, Mexico	Guest Lecture on "Strong Motion in the Indo-Gangetic Plains during the 2015 Nepal Earthquake Sequence and its Estimation during Future Earthquakes"	September 28, 2016
9.	Prof. Shamsheer Prakash	Emeritus Professor, Civil Engineering Department, MST Rolla, Missouri, USA	Visiting Professor	Nov. 1-9, 2016
10.	Dr Pankaj Pankaj	Director Edinburgh India Institute, Dean International (South Asia), The University of Edinburgh	Exploring research collaborations	February 15, 2017
11.	Prof. M P Singh	Preston Wade Professor Emeritus, Department of Biomedical Engineering and Mechanics, Virginia Tech, Blacksburg, USA	Guest Lecture	March 16, 2017

#### 5. ACADEMIC ACTIVITIES ORGANIZED BY THE DEPARTMENT

Sl. No.	Name of Conf./ Seminar / Symp. /Workshop	Name of the Chairman	Sponsored by	Dates
1.	Program for Uttarakhand Engineers for Retrofitting Methodology	Dr. M. L. Sharma and Dr. Manish Shrikhande	Govt. of Uttarakhand	April 5-25, 2016
2.	Vibration Mitigation Techniques: Theory and applications	Dr. Yogendra Singh (Co-Coordinator)	IIT Roorkee	June 27- July 1, 2016

3.	6 <sup>th</sup> International Conference on Recent advances in Geotechnical Earthquake Engineering and Soil Dynamics	Dr. H.R. Wason- Chairman, Dr. M. L. Sharma and Dr. Yogendra Singh- Co-chairman.	HP ISPL Gurgaon; SERB, DST; ARB, Mumbai; INSA, New Delhi etc	August 3-6, 2016
4.	Workshop on Probabilistic Safety Assessment of Nuclear Power Plants, at NPCIL Mumbai	Dr. Yogendra Singh and Dr. ML Sharma	NPCIL, Mumbai	August 22-23, 2016
5.	Indo-Norwegian Training Programme on Seismic Design of Multistorey Buildings: IS 1893 vs Eurocode 8, India Habitat Centre, New Delhi.	Dr. Yogendra Singh	NORSAR Norway and BMTPC, New Delhi	December 8-10, 2016

#### 6. Sponsored Research Projects:

Sl. No.	Project Status	Total No. of Projects	Amounts (Rs. in lacs)
1	Completed Projects	01	239.72
2	Ongoing Projects	04	698.53
3	New Projects	03	683.95

#### 7. Service to Industries

##### Consultancy Project

Sl. No.	Project Status	Total No. of Projects	Amount (Rs. in Lacs)
1	Completed Projects	02	13.80
2	Ongoing Projects	40	476.25
3	New Projects	42	490.05

#### 8. Summary of Major Sponsored Research Schemes and Consultancy Projects (>Rs. 20 lacs) (A brief Write-up upto 100 words) (New Projects during the year 2016-17)

##### DEVELOPMENT OF PSEUDO-DYNAMIC TEST FACILITY AT DEPARTMENT OF EARTHQUAKE ENGINEERING, IIT ROORKEE

A new large scale Pseudo-Dynamic/Cyclic Tests Facility with total overlay of Rs 11.00 Crores has been development. An additional grant of Rs. 4.00 Crores has been received from the Department of Science and Technology under the FIST programme to augment this facility. This facility has been designed to take up tests on full-scale structural models under simulated earthquake excitation. The facility is very useful for calibration/verification and updating the numerical models and to evaluate efficacy of a new/innovative design concepts for enhancing the seismic resilience. The facility consists of (a) Servo-Hydraulic System (Actuators (2 @  $\pm 500\text{kN}/250\text{mm}$  2 @  $\pm 250\text{kN}/500\text{mm}$ , Hydraulic Power Unit (400 l/min at 210 bar), Digital Compact Eight Channel Controller, Software with other related items) (b) Strong Floor (12 m x 10m), Reaction Wall (2 Nos of 9m x 9m) and Reaction Frame (6m x 9m with 100 tonne capacity under any combination of loads i.e. axial, flexure shear and torsion), (c) with the 25 tonne overhead crane facility. The test hall of facility also encompasses quasi-static testing of structural components and computerized servo-hydraulic compression and flexure testing machine.



## 9. SCIENTIFIC AND TECHNICAL REPORTS

Title of the Projects	Participants	Authors	Remarks
Site specific earthquake design parameter for Durgapur T P P West Bengal	Earthquake Engineering Department Faculty	Earthquake Engineering Department Faculty	
Report on Processing and Interpretation of seismological data collected from January to December 2015 related to the project "Seismological Network Around Tehri region" submitted on April 2017.	Dr. M.L. Sharma Dr. Ashwani Kumar Dr. S.C. Gupta Dr. J.P. Narayan Dr. A.K. Jindal Dr. Sanjay Jain Dr. Arup Sen	Dr. M.L. Sharma Dr. Ashwani Kumar Dr. S.C. Gupta Dr. J.P. Narayan Dr. A.K. Jindal Dr. Sanjay Jain Dr. Arup Sen	
Study of local seismicity in the environs of Koldam site, Himachal Pradesh. A report prepared based on the data collected from May 2013 to April 2014 submitted on Jan., 2017.	Dr. M.L. Sharma Dr. Ashwani Kumar Dr. S.C. Gupta	Dr. M.L. Sharma Dr. Ashwani Kumar Dr. S.C. Gupta Dr. A.K. Jindal Dr. Sanjay Jain Dr. Arup Sen	
Report on Processing and Interpretation of seismological data collected from January to December 2014 related to the project "Seismological Network Around Tehri region submitted on June 2016	Dr. M.L. Sharma Dr. Ashwani Kumar Dr. S.C. Gupta Dr. J.P. Narayan Dr. A.K. Jindal Dr. Sanjay Jain Dr. Arup Sen	Dr. M.L. Sharma Dr. Ashwani Kumar Dr. S.C. Gupta Dr. J.P. Narayan Dr. A.K. Jindal Dr. Sanjay Jain Dr. Arup Sen	
Assessment of vibrations measurements on various buildings, submitted to DMRC Corporation Ltd., New Delhi	Dr. Y. Singh Dr. M.L. Sharma Dr. M. Shrikhande Dr. S.C. Gupta Dr. R.N. Dubey Dr. Arup Sen	Dr. Y. Singh Dr. M.L. Sharma Dr. M. Shrikhande Dr. S.C. Gupta Dr. R.N. Dubey Dr. Arup Sen	
Site specific earthquake design parameter for Kitar pur Bridge	Earthquake Engineering Department Faculty	Earthquake Engineering Department Faculty	
Site specific earthquake design parameter for sonkash H E P Bhutan	Earthquake Engineering Department Faculty	Earthquake Engineering Department Faculty	

Site specific earthquake design parameter for Bursar H E project site , Jammu & Kashmir	Earthquake Engineering Department Faculty	Earthquake Engineering Department Faculty	
Criteria for the dynamic analysis of steel railway bridges	Earthquake Engineering Department Faculty	Earthquake Engineering Department Faculty	
Seismic stability analysals of bhakra dam	Earthquake Engineering Department Faculty	Earthquake Engineering Department Faculty	
Seismic design parameter for Buxer T P P, Bihar	Earthquake Engineering Department Faculty	Earthquake Engineering Department Faculty	
Seismological network around tehri region * preliminary seismological bulletin for the period jan 2016 march 2016	Earthquake Engineering Department Faculty	Earthquake Engineering Department Faculty	
Seismological network around tehri region * preliminary seismological bulletin for the period April 2016 June 2016	Earthquake Engineering Department Faculty	Earthquake Engineering Department Faculty	
Site specific design earthquake parameter for lipher karrall H E P , Nepal	Earthquake Engineering Department Faculty	Earthquake Engineering Department Faculty	
Site specific design earthquake parameter for Marsianyndi, H E P , Nepal	Earthquake Engineering Department Faculty	Earthquake Engineering Department Faculty	
Site specific design earthquake parameter for Chattru H E P, Himachal Pradesh	Earthquake Engineering Department Faculty	Earthquake Engineering Department Faculty	
Site specific design earthquake parameter for baryaiyaon Refinery project, Assam	Earthquake Engineering Department Faculty	Earthquake Engineering Department Faculty	
Seismological network around tehri region * report on primary and inter potation of seismological data collected from January 2015 December 2015	Earthquake Engineering Department Faculty	Earthquake Engineering Department Faculty	
Seismological network around tehri region * preliminary seismological bulletin for the period July 2016 September 2016	Earthquake Engineering Department Faculty	Earthquake Engineering Department Faculty	
Site specific earthquake design parameter for Trincoonalli TTP Project in Sri Lanka	Earthquake Engineering Department Faculty	Earthquake Engineering Department Faculty	
Structural Stability Assessment and Development of Design Guidelines for Expeded Polystyvem Core Panel System towards safe and Affordoble Hungrry	Earthquake Engineering Department Faculty	Earthquake Engineering Department Faculty	
Site specific earthquake design parameter for OUT H E Project site , Arunachal Pradesh	Earthquake Engineering Department Faculty	Earthquake Engineering Department Faculty	
Site specific earthquake design parameter for Zunqki H E Project Nagaland	Earthquake Engineering Department Faculty	Earthquake Engineering Department Faculty	
Site specific earthquake design parameter for Tizu H E Project Nagaland	Earthquake Engineering Department Faculty	Earthquake Engineering Department Faculty	
Site Specific Seismic Design Parameters Study for Pamai (3x12.5MW) Hydro Electric Project in Jammu & Kashmir.	Earthquake Engineering Department Faculty	Earthquake Engineering Department Faculty	
Site Specific Design Earthquake Parameters Study for Nakthan Hydro Electric Project (520MW) in Distt. Kullu, Himachal Pradesh*.	Earthquake Engineering Department Faculty	Earthquake Engineering Department Faculty	



Site Specific Seismic Design Parameters Study for Durgapur Power Plant Project - III (2x20MW) at Durgapur Steel Plant Premises in West Bengal.	Earthquake Engineering Department Faculty	Earthquake Engineering Department Faculty	
Special Investigation for Evaluation of the Seismic Forces as per the IRG-6 on major Bridges of Kiratpur Near Chowk section of NH-21 in Himachal Pradesh.	Earthquake Engineering Department Faculty	Earthquake Engineering Department Faculty	
Site Specific Design Earthquake Parameters Study for Bunkha H.E. Project in Bhutan	Earthquake Engineering Department Faculty	Earthquake Engineering Department Faculty	
Site Specific Seismic Design Parameters Study for Sankosh Hydro Electric Project, Bhutan	Earthquake Engineering Department Faculty	Earthquake Engineering Department Faculty	
Site Specific Seismic Design Parameters Study for Harduaganj Thermal Power Plant Project (1x660 MW) at district Aligarh, Uttar Pradesh	Earthquake Engineering Department Faculty	Earthquake Engineering Department Faculty	
Site Specific Design Earthquake Parameters Study for Kwar Hydro Electric Project in J&K-Reg. additional Probabilistic Seismic Hazard Assessment (PSHA) Study	Earthquake Engineering Department Faculty	Earthquake Engineering Department Faculty	
Site Specific Design Earthquake Parameters Studies for Umngot Hydro Electric Project in East Khasi Hills, District, Meghalaya, reg. updation	Earthquake Engineering Department Faculty	Earthquake Engineering Department Faculty	
Site Specific Design Earthquake Parameters Study for Bunkha H.E. Project in Bhutan	Earthquake Engineering Department Faculty	Earthquake Engineering Department Faculty	
Site Specific Seismic Design Earthquake Parameters for Luhri HEP, Himachal Pradesh reg. updation	Earthquake Engineering Department Faculty	Earthquake Engineering Department Faculty	
Site Specific Seismic Design Earthquake Parameters for Kirthai-I at Gulabgarh, District Kishtwar (J&K)	Earthquake Engineering Department Faculty	Earthquake Engineering Department Faculty	
Site Specific Seismic Design Parameters Study for Hiramandalam reservoir of B.R.R Vamsadhara project of Phase-II of Stage-II in Srikakulam Dist of Andhra Pradesh.	Earthquake Engineering Department Faculty	Earthquake Engineering Department Faculty	
Site-Specific Design Earthquake Parameter Studies for Telangana Stage -I Thermal Power Plant Project, Karimnagar, Andhra Pradesh	Earthquake Engineering Department Faculty	Earthquake Engineering Department Faculty	
Site Specific Design Earthquake Parameter Study for Lower Kalnai HEP, District Doda, Jammu & Kashmir	Earthquake Engineering Department Faculty	Earthquake Engineering Department Faculty	
Site Specific Design Earthquake Parameters Study for Upper Marsyangdi Hydro Electric Project in Nepal -Reg. additional Probabilistic Seismic Hazard Assessment (PSHA) Study	Earthquake Engineering Department Faculty	Earthquake Engineering Department Faculty	
Site Specific Design Earthquake Parameters Study for Upper Karnali Hydro Electric Project in Nepal -Reg. additional Probabilistic Seismic Hazard Assessment (PSHA) Study.	Earthquake Engineering Department Faculty	Earthquake Engineering Department Faculty	
Site Specific Design Earthquake Parameters Study for Chhatri HEP in Distt Lahaul & Spiti in Himachal Pradesh-reg. updation	Earthquake Engineering Department Faculty	Earthquake Engineering Department Faculty	

Site Specific Seismic Design Parameters Study for New Project from Indian Oil Corporation Limited, Bongaigaon Refinery, Dist. Chirang in Assam	Earthquake Engineering Department Faculty	Earthquake Engineering Department Faculty	
Site Specific Seismic Design Earthquake Parameters Study for Oju Hydro Electric Project (about 1878MW), Arunachal Pradesh	Earthquake Engineering Department Faculty	Earthquake Engineering Department Faculty	
Site Specific Seismic Design Parameters Study for Vrindavan Chandrodaya Mandir at Vrindavan, District Mathura Uttar Pradesh	Earthquake Engineering Department Faculty	Earthquake Engineering Department Faculty	
Site Specific Design Earthquake Parameters for Lohri Stage – 1 H.E Project Site, Himachal Pradesh	Earthquake Engineering Department Faculty	Earthquake Engineering Department Faculty	
Site Specific Design Earthquake Parameters for 93 Mw. New Ganderbal H.E Project Site, Jammu & Kashmir	Earthquake Engineering Department Faculty	Earthquake Engineering Department Faculty	
Site Specific Design Earthquake Parameters for UMNGOI H.E.P. Site, Meghalya	Earthquake Engineering Department Faculty	Earthquake Engineering Department Faculty	
Site Specific Design Earthquake Parameters for Kirthai-1 H.E Project Site, Jammu & Kashmir	Earthquake Engineering Department Faculty	Earthquake Engineering Department Faculty	
Site Specific Design Earthquake Parameters for Phangchu H.E Project, Arunachal Pradesh.	Earthquake Engineering Department Faculty	Earthquake Engineering Department Faculty	
Site Specific Design Earthquake Parameters for New Melling Tawang H.E Project, Arunachal Pradesh	Earthquake Engineering Department Faculty	Earthquake Engineering Department Faculty	
Site Specific Design Earthquake Parameters for RHO Twang Basin H.E.P, Arunachal Pradesh	Earthquake Engineering Department Faculty	Earthquake Engineering Department Faculty	
Site Specific Design Earthquake Parameters for MAGO- CHU H.E Twang, Arunachal Pradesh	Earthquake Engineering Department Faculty	Earthquake Engineering Department Faculty	
Site Specific Design Earthquake Parameters for Nakthan H.E.P, Himachal Pradesh	Earthquake Engineering Department Faculty	Earthquake Engineering Department Faculty	
Site Specific Design Earthquake Parameters for Sankosh H.E.P in Bhutan.	Earthquake Engineering Department Faculty	Earthquake Engineering Department Faculty	
Site Specific Design Earthquake Parameters for Kwar H.E. P Jammu & Kashmir	Earthquake Engineering Department Faculty	Earthquake Engineering Department Faculty	
Site Specific Design Earthquake Parameters for UMNGOI H.E.P. Site, Meghalya	Earthquake Engineering Department Faculty	Earthquake Engineering Department Faculty	
Site Specific Design Earthquake Parameters for Bunkha H.E.P. in Bhutan	Earthquake Engineering Department Faculty	Earthquake Engineering Department Faculty	
Site Specific Design Earthquake Parameters for Lohri Stage-1 H.E.P in Himachal Pradesh	Earthquake Engineering Department Faculty	Earthquake Engineering Department Faculty	
Site Specific Design Earthquake Parameters for Hiramandlom Reservoir Site of B.R.R Vamsadhara Project Phase – II Srinakulam (A.P)	Earthquake Engineering Department Faculty	Earthquake Engineering Department Faculty	
Site Specific Design Earthquake Parameters for Phangchung H.E.P in Arunachal Pradesh	Earthquake Engineering Department Faculty	Earthquake Engineering Department Faculty	

Site Specific Design Earthquake Parameters for 93 Mw New Ganderbal H.E.P, Jammu & Kashmir	Earthquake Engineering Department Faculty	Earthquake Engineering Department Faculty	
Site Specific Design Earthquake Parameters for Pamal H.E.P Site, Jammu & Kashmir	Earthquake Engineering Department Faculty	Earthquake Engineering Department Faculty	
Site Specific Design Earthquake Parameters for Nakthan H.E.P	Earthquake Engineering Department Faculty	Earthquake Engineering Department Faculty	
Site Specific Design Earthquake Parameters Study for Bursan H.E Project, Jammu & Kashmir	Earthquake Engineering Department Faculty	Earthquake Engineering Department Faculty	
New Melling H.E.P RHO NYOKCHAPONG- CHU MAGO- CHU	Earthquake Engineering Department Faculty	Earthquake Engineering Department Faculty	

#### 11. RESEARCH PUBLICATION

Sl. No.	Details	Total Number
a	Conference/Symp./Seminars	07
b	International Conference	20
c	National Journals	04
d	International Journals	34

## 4.8 DEPARTMENT OF EARTH SCIENCES

**Academic Staff : 25; Students Admitted : Int. M.Tech. U.G. – 58, PG -15, Ph.D.-28;  
Publications: Books/Book Chapters: 02 Journals - 25, Conferences – 37,  
Projects: Research: 106.03 Lacs Consultancy Project : 43.9 lacs**

### 1. — SALIENT FEATURES

The Department of Earth Sciences (formerly the Department of Geology and Geophysics), was established in 1960. During the span of last five and half decades the department has become one of the leading centers of research, undergraduate and post graduate teaching and industrial consultancy in the field of Earth Sciences.

The geological studies in the institute date back to the middle of the last century. During this period Colonel Sir ProbyCautley, who was responsible for establishing the Thomason Engineering College, was elected as a Fellow of the Royal Society, London, for his pioneering work on the vertebrate fossils of the Shivalik Ranges. Later Henry Benedict Medlicot, who was also nominated as the Fellow of the Royal Society in 1877, occupied the Chair in Geology and Experimental Sciences at Thomason College, Roorkee. Presently, the Department runs three courses viz. **M.Sc. in Applied Geology** (admission through JAM) of two years duration, **Integrated M.Tech in Geological Technology** and **Integrated M.Tech. in Geophysical Technology** (admission through JEE) of five years duration. Research work leading to Ph.D degree in several interdisciplinary areas and research and consultancy programmes constitute an integral part of the departmental activities. The faculties are engaged in a number of research projects sponsored by the Govt. of India agencies like Ministry of Earth Sciences, CSIR, DST, ONGC, BRNS etc., and the consultancy projects sponsored by various Industries and government agencies. The Department has **Hamrock Society** consist of all faculty and students as members, which steers the Co-curriculum and promotes the educational aspects of Earth Sciences in the country.

### 2. LIST OF FACULTY MEMBERS

**Amit K. Sen**, Ph.D. (ISM)

Mineral Exploration, Economic Geology,  
Igneous Petrology Geochemistry

**Anand Joshi**, Ph.D. (Roorkee)

Seismology and Seismotectonics,  
Seismic hazard

**Arun K. Saraf**, Ph.D. (Dundee, U.K.)

Digital Image Processing, Geographic  
Information Systems, Remote Sensing

**Ajanta Goswami**, Ph.D. (IIT Roorkee)

Remote Sensing Geomorphology, Glaciology

**Ashutosh Chamoli**, Ph.D. (NGRI, Hyderabad)

**A.S. Maurya**, Ph.D. (Allahabad)

Micropaleontology, Palaeoenogaphy, Isotope  
Hydrology

**B. Bhattacharya**, Ph.D. (University of

Calcutta) Sedimentology, Ichnology,  
Sequence Stratigraphy, Coal Geology, Basin  
Analysis

**D.C. Srivastava**, Ph.D. (ISM)

Structural Geology

**Dillip K. Mukhopadhyay**, Ph.D.

(IIT Kharagpur) Structural Geology, Metamorphic  
Petrology

**Govind, J. Chakrapani**, Ph.D. (JNU) (on lien)

Environmental Geosciences, Environmental  
Geology, Low Temperature Geochemistry

**Mohd. Israil**, Ph.D.

(Roorkee) Geoelectromagnetism, Forward &  
Inverse Modelling

**Kamal**, Ph.D. (Canada)

Seismology & Seismotectonics, Signal  
Processing, Fractals

**L. Saha**, Ph.D., (IIT Khargpur)

Magnetism, Geoelectromagnetism,  
Inversion of Potential Field, Geohydrology,  
Groundwater and Sedimentology

**Nachiketa Rai**,

**Pallavi Chatopadhyay**, Ph.D. (NGRI,  
Hyderabad), Hydrogeology, Well Logging,  
Electrical Method

**Pitambar Pati**, Ph.D. (IIT Roorkee)

Sedimentology, Basin Analysis,  
Geomorphology, Tectonics, Petroleum  
Geology, Quaternary Geology

**Ravi Sharma**, Ph.D., (Colorado School of

Mines, USA), Petrophysics, Rock Physics,  
Siesmic Amplitude Analysis, Petroleum  
Engineering

**R. Krishnamurthy**, Ph.D. (IIT Bombay)

Economic Geology, Ore Geology

**Sandeep Singh**, Ph.D. (Roorkee)

Himalayan Tectonics, Igneous Petrology,  
Geochronology

**(Ms.) Sagarika Mukhopadhyay**, Ph.D.

(Roorkee) Exploration Geophysics, Seismology  
& Seismotectonics

**Sarada P. Pradhan**, Ph.D. (IIT Bombay)

Rock Mechanics, Engineering Geology

**Sunil Bajpai**, Ph.D. (on lien to BISP,

Lucknow upto 2018) (Punjab) Vertebrate  
Palaeontology,

Biostratigraphy

**Emeritus Fellow**

**Pravin K. Gupta**, Ph.D. (Roorkee)

Theoretical Geophysics

**Rambhatla G.S. Sastry**, Ph.D. (Moscow)

Exploration Geophysics, Geophysical Inversion

**Rathinam Anbalagan**, Ph.D. (Kumaun)

Engineering Geology, Rock Mechanics

### 3. HONOURS AND AWARDS TO FACULTY MEMBERS

Sl. No.	Name of Faculty	Award
1.	Prof. D.C. Srivastava	Chairman, Research Advisory Committee (RAC) of Wadia Institute of Himalayan Geology, Dehradun
		Member, Governing Body, Wadia Institute of Himalayan Geology, Dehradun
		Coordinator, NAAC Committee
		Member, BOS, Dept. of Geology, Kashmir University, Sri Nagar
		Chairman (2015-2017), Sectional Committee of Indian National Science Academy, New Delhi
		Expert member, Review Committee of Institute of Seismological Research, Ahmedabad.
		Expert member, Standing Committee for Emeritus Scientist and One Time Grant Research, CSIR, New Delhi
		Editor, Journal of Earth System Science
2.	Prof. A.K. Saraf	Member of the Geoscience Advisory Council, Ministry of Mines (Govt. of India), New Delhi
		Associate Editor, International Journal of Remote Sensing
3.	Prof. Sagarika Mukhopadhyay	Member of the Editorial Board of the "Journal of the Geological Society of India"
4.	Dr. A.S. Maurya	Member, Board of Studies, C. C. S. University Meerut, Meerut
5.	Dr. Ravi Sharma	Associate Editor, Journal of Applied Geophysics

### 4. DISTINGUISHED VISITORS TO THE DEPARTMENT (NATIONAL/ INTERNATIONAL)

Sl. No.	Name	Designation and affiliation	Purpose	Dates
1.	Prof. V. K. Gaur	CMMACS, Bangalore	Lecture	27/02/2017
2.	Dr. Amrit Raj	MaaYogashram, Badrinath Road TaporanRishikesh	Lecture	25/01/2017
3.	Prof. Boris Rezmik	Institute of Applied Geophysics, KIT, Germany	Lecture	20/01/2017
4.	Dr. Amar Agarwal	Institute of Geophysics National University of Mexico	Lecture	19/01/2017
5.	Dr. Anil V. Kulkarni	Distinguishing Visiting Scientist, Divecha centre for climate change, IIScBangalore	Lecture	21/10/2016
6.	Prof. Talat Ahmad	Vice- Chancellor JamiaMilliaIslamia University, New Delhi	Lecture	01/10/2016
7.	Prof. R.M. Manickavasagam	Professor (Retd.) IIT Roorkee	Lecture	29/09/2016
8.	Dr. Satyam Priyadarshy	Chief Data Scientist, Landmark-Halliburton Houston, USA	Lecture	30/08/2016
9.	Dr. Manoranjan Mohanty	Director SERC Division, DST New Delhi	Lecture	22/06/2016
10.	Dr. Vijay Prasad Dimri	Director GERMI INSA Director at NGRI	Lecture	07/04/2016
11.	Prof. Biswajit Mishra	Professor, Dept. of Geology and Geophysics, IIT Kharagpur	Lecture	16/03/2016
12.	Dr. Chirag Tyagi	Geophysicist, Schlumberger Geosolutions, U.K.	Lecture	01/03/2016
13.	Dr. L. Mansinha	Emeritus Professor, Dept. of Earth Sciences Western University, London, Ontario, Canada	Lecture	22/02/2016
14.	Dr. Gopal Dhawan	Chairman-cum-Managing Director Mineral Exploration corporation Limited	Lecture	16/02/2016

#### 5. ACADEMIC ACTIVITIES ORGANIZED BY THE DEPARTMENT:

Name of the Conf./Seminar/ Symp./Workshop	Name of the Chairman	Sponsored by	Dates
GIAN course entitled "Sensitive High Resolution Ion MicroProbe (SHRIMP) applications of isotope geochemistry in Earth System Science"	Prof. Sandeep Singh	MHRD, Govt under GIAN Initiative	Sept 04 to 09, 2017
Short term course entitled "Geoinformatics in Earthquake Studies" sponsored by Min. of Earth Sciences, New Delhi	Dr. Arun K. Saraf and Dr. J. D. Das	Continuing Education Centre, IIT Roorkee	01-05th November 2016
NPTEL online course entitled "Introduction to Geographic Information Systems"	Dr. Arun K. Saraf	ETC, IIT Roorkee	Autumn Semester, 2016-17
NPTEL online course entitled "Introduction to Remote Sensing"	Dr. Arun K. Saraf	ETC, IIT Roorkee	Spring Semester, 2016-17
Field workshop – cum -orientation course on 'High resolution damage zone mapping along Rishikesh-Kedarnath section, Uttarakhand', IIT Roorkee	D.C. Srivastava – Coordinator S.P.Pradhan – Co-coordinator	DST New Delhi	27 <sup>th</sup> -28 <sup>th</sup> /10/2016

#### 6. SPONSORED RESEARCH PROJECTS

Sl. No.	Project Status	Total No. of Projects	Amount (Rs. In lacs)
1.	Completed Projects	05	83.68
2.	Ongoing Projects	10	252.92
3.	New Projects	08	712.38

#### 7. SERVICE TO INDUSTRIES

##### Consultancy Project

Sl. No.	Project Status	Total No. of Projects	Amount (Rs. In lacs)
1	Completed Projects	05	10.00
2.	Ongoing Projects	03	03.00
3.	New Projects	01	05.00

#### 8. RESEARCH PUBLICATION

Sl. No.	Details	Total Number
a.	NATIONAL CONFERENCE/SYMP./SEMINARS	12
b.	INTERNATIONAL CONFERENCE	25
c.	NATIONAL JOURNALS	10
d.	INTERNATIONAL JOURNALS	15

## 4.9 DEPARTMENT OF ELECTRICAL ENGINEERING

**Academic Staff: 34, Student Admitted: UG 120, PG: 66, Ph.D.: 17**  
**Publication in: Book/Books Chapters: 01, Journals 40, Conferences: 29**

### 1. SALIENT FEATURES

Three new faculty joined the Department during the year 2016-17. One faculty member superannuated. Two project laboratories were set up. Four (04) courses were organized by the department. Two faculty members received five awards in various research fields. Six distinguished visitors visited the department.

### 2. LIST OF FACULTY MEMBERS

**(Ms) Ambalika Sharma, Ph. D**  
(Annamalai Univ.)  
Instrumentation and Signal Processing  
**Anubrata Dey, Ph.D. I.I.Sc. Bangalore**  
Electric Drives and Power Electronics  
**Avik Bhattacharya, Ph.D. IIT Kharagpur**  
Power Electronics, Power Quality, Facts  
**B. Das, Ph.D. (IIT Kanpur)**  
Power System Engineering  
**Barjeev Tyagi, Ph.D. (IIT Kanpur)**  
System and Control  
**C.P. Gupta, Ph.D. (IIT Kanpur)**  
Power System Engineering  
**Dheeraj Kumar Khatod, Ph.D.**  
Power System Engineering  
**Eugene Fernandez, Ph.D (Roorkee)**  
Power System Engineering  
**G.N. Pillai, Ph.D (IIT Kanpur)**  
System and Control  
**Ganesh Babu Kumbhar, Ph.D. (IIT Bombay)**  
Power System Engineering  
**Girish K. Singh, Ph.D., (BHU)**  
Electric Drives and Power Electronics  
**(Ms.) Indra Gupta, Ph.D. (Roorkee)**  
System and Control  
**M. K. Pathak, Ph.D. (IIT Delhi)**  
Electric Drives and Power Electronics  
**Manoj Tripathi, Ph.D. (Roorkee)**  
Instrumentation & Signal Processing  
**N.P. Padhy, Ph.D. (Anna Univ.)**  
Power System Engineering  
**(Ms.) P. Sumathi, Ph.D. (IIT Madras)**  
Instrumentation and Signal Processing  
**Pramod Agarwal, Ph.D (Roorkee)**  
Electric Drives and Power Electronics

**(Ms.) Premalata Jena, Ph.D,**  
Power System Engineering  
**R.S. Anand, Ph.D. (Roorkee)**  
Instrumentation & Signal Processing  
**R.P. Maheshwari, Ph.D. (Roorkee)**  
Instrumentation & Signal Processing  
**Rajendra Prasad, Ph.D. (Roorkee)**  
System Engineering and Operation Research  
**Bhavesh R. Bhalja, Ph.D., IITR**  
Power System Engineering  
**S.P. Singh, Ph.D. (Roorkee)**  
Electric Drives and Power Electronics  
**Satya P. Srivastava, Ph.D. (Roorkee)**  
Electric Drives and Power Electronics  
**S.G. Choudhuri, Ph.D. (IIT Delhi)**  
Electric Drives and Power Electronics  
**(Ms.) S. Das, Ph.D. (IIT Kharagpur)**  
Electric Drives and Power Electronics  
**S. Jeevanand, Ph.D.**  
IIT Delhi, Electric Drives and Power Electronic  
**Sohom Chakrabarty, Ph.D.**  
IIT Bombay, System & control  
**Vishal Kumar, Ph.D. (IIT Roorkee)**  
System & Control  
**Vinay Pant, Ph.D. (Roorkee)**  
Power System Engineering  
**Yogesh Vijay Hote, Ph.D. (Delhi)**  
System & Control  
**F.O.M. Joseph, Ph.D.**  
Instrumentation & Signal Processing  
**Professor Emeritus**  
**Satya P. Gupta, Ph.D. (Roorkee)**  
Electric Drives and Power Electronics  
**Guest Faculty**  
**Rajendra Pratap, Ph.D.**

### 3. HONOURS AND AWARDS TO FACULTY MEMBERS

Sl. No.	Name of Faculty	Award
1.	Dr. Bhavesh R. Bhalja	"Dr. Bhavesh R. Bhalja has been awarded by PanditMadan Mohan Malviya Memorial Prize by Institution of Engineers, India in December 2016."
2.	Dr. Sunit Ghatak Choudhuri	1. First Outstanding Oral Presentation for the paper titled "Model Reference Adaptive System using Rotor Flux and Back Emf Techniques for Speed Estimation of an Induction Motor operated in Vector Control Mode: A Comparative Study," 3rd IEEE UP Section International Conference on Electrical, Computer and Electronics Engineering held at Indian Institute

		of Technology (BHU) Varanasi, U.P., India during 09 th -11 th December, 2016.
		2. Certificate of Appreciation Awarded by Journal of Institution of Engineers (India): Series B, for the evaluation of "Artificial Neural Network based CukControlled Closed Loop Excitation Systemfor Synchronous Generator with Improved Dynamic Response", Feb 24, 2017.
		3. Certificate of Appreciation Awarded by Journal of Institution of Engineers (India): Series B, for the evaluation of "Speed Control of DC Series Motor Supplied by PV System via Firefly Algorithm", Feb. 24, 2017.
		4. Certificate of Appreciation Awarded by Journal of Institution of Engineers (India): Series B, for the evaluation of "Capacitance and Inductance based Rotor Ground Fault Location Method for Synchronous Machines", Feb. 24, 2017.

#### 4. DISTINGUISHED VISITORS TO THE DEPARTMENT (NATIONAL/INTERNATIONAL)

Sl. No.	Name	Designation and Affiliation	Purpose	Dates
1.	Dr. M.N. Dinesh Dr. Sreedevi Dr. Padmuja Dr. Kariappa	Faculty of Deptt. of Electrical & Electronics, R.V.College of Engg., Bengaluru	To Enhance the knowledge & setting up new Lab. in their Instt.	Jan. 24-25, 2017
2.	Dr. Jaspreet Singh Chahal	Asstt. Professor, Technical University, Kurukshetra	To visit the Laboratory	March 06, 2017
3.	Dr. A. K. Pradhan	Professor, Deptt. of Electrical Engg. Kharagapur	To deliver special lecture	March 27, 2017

#### 5. INTERNSHIPS OFFERED TO OTHER STUDENTS IN IIT – ROORKEE

Sl. No.	Name of student	Name of Supervisor	Under Graduate	Post Graduate	Name of Institute	Period
1.	Navin Kumar	Dr. R. Prasad	UG		NIT Patna	15.5.16 to 15.7.16
2.	Ankesh Kumar	Dr. N. P. Padhy	UG		NIT Patna	-do-
3.	Akansha Singhal	Dr. Barjeev Tyagi	UG		GBPUAT Pantnagar	-do-
4.	Vanshika Jindal	Dr. S.G. Choudhary	UG		Bnasthali Vidyapeeth	-do-
5.	UrvashiPande	Dr. Y. V. Hote	UG		GBPUAT Pantnagar	-do-
6.	Pranab Kr. Dhal	Dr. AnubrataDey	UG		NIT Rourkela	-do-
7.	Tushar Bhatia	Dr. G. N. Pillai	UG		NIT Kurukshetra	-do-
8.	Himanshu Mishra	Dr. Pramod Agarwal	UG		NIT Patna	-do-
9.	Apoorv Agarwal	Dr. S.P. Srivastava	UG		PDPU Gandhinagar	-do-
10.	Akshay Kumar Khaiwal	Dr. G. K. Singh	UG		BVU, Pune	-do-
11.	Yamini Srivastava	Dr. P. Sumathi	UG		SMVDU, Katra	-do-

#### 6. ACADEMIC ACTIVITIES ORGANIZED BY THE DEPARTMENT

Name of the conf./seminar/symp./workshop	Name of the Chairman	Sponsored by	Dates
Protection and Monitoring of Power System Network in Smart Environment	Dr. Bhavesh R. Bhalja Dr. B. Das		27-06- 2016 to 01-07- 2016
Biomedical Image Analysis	Prof. Vinod Kumar Dr. P. Sumathi	GIAN	9-13, Jan 2017
QIP Short Term Course on HVDC for Bulk Power Transmission and Grid-Integration of Renewable Energy Sources.	Dr. C. P. Gupta Dr. Ganesh Kumbhar	QIP, MHRD	Feb. 27 to March 3, 2017
Wide Area Power System Monitoring, protection and Control	Dr. BarjeevTyagi Dr. Vishal Kumar	QIP, MHRD	12.12.2016 to 16.12.2016



**7. SPONSORED RESEARCH PROJECTS:**

Sl. No.	Project Status	Total No. of Projects	Amount(Rs. in lacs.
1.	Completed Projects	02	10.18
2.	On Going Projects	02	69.17
3.	New Projects	06	74.77

**8. RESEARCH PUBLICATION**

Sl. No.	Details	Total Number
a.	Conference/Symp./Seminars	12
b.	International Conference	17
c.	National Journals	07
d.	International Journals	33

## 4.10 DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

**Academic Staff: 20, Students Admitted: UG/INT. M.Tech/M.Sc 75, PG 110, Ph.D 93**  
**Publications in , Book/Books Chapters.01, Journals. 17, Conferences 14**  
**Projects: Research (Rs. in Lacs) 1608.7 Consultancy (Rs. in Lacs) 9.5**

### 1. SALIENT FEATURES

The Department of Electronics & Communication Engineering is one of the major department of the Institute in terms of the number of students and number of programmes. It offers a wide spectrum of academic programmes at undergraduate and postgraduate level. Undergraduate programmes lead to B.Tech. in Electronics and Communication Engineering. Postgraduate programmes offered by the department are Communication Systems, RF and Microwave Engineering, System Modeling and Control, and Microelectronics & VLSI. In addition, the department offers two Integrated Dual Degree (IDD) programmes, leading to B.Tech. (Electronics & Communication) & M.Tech. (Wireless Communication). There are more than 90 full time research students working in various disciplines.

The department has successfully completed a large number of sponsored research projects funded by various agencies such as DIT, DST, MHRD, DOE, DRDO, PRL, Naval Research and Army Technology Board. Moreover, Department is currently running academic and research focused programmes such as SMDP-C2SD and Electronics and Information Communication Technology Academy, which is an initiative of Department of Electronics & Information Technology (DeitY) Ministry of Communications and IT, Govt. of India for faculty development.

### 2. LIST OF FACULTY MEMBERS

**Patnaik, Amalendu**, Ph.D. (Berhampur University) Antennas, Evolutionary methods for Antenna Design, Antenna Signal Processing

**Tyagi, Anshul** Ph.D. (IIT Delhi) Wireless Communications, Error Control Coding, UWB Communications.

**Datta, Arnab**, Ph.D. (IIT Mumbai) Electrical characterization and modeling semiconductor devices, MEMS, semiconductor photonic device.

**Anand, B.**, Ph.D. (IIT Bombay) Device Circuit Co-design, Delay and Power Models for VLSI, Small Dimension Effect.

**Kaushik, B.K.** Ph.D. (IIT Roorkee) Carbon nanotube based transistors and Interconnects organic, Thin Film Transistor Modeling.

**Das, Bishnu Prasad**, Ph.D. (IISc, Bangalore) On-chip variability characterization, DFM-aware regular standard cell library design, resilient circuit design, Hardware security, Low power circuit design.

**Kumar, Brijesh**, (University of Minnesota, twin cities) Optoelectronics, Quantum Dot-Light Emitting Devices, High efficiency solar cells.

**Ghosh, D.**, Ph.D. (IISc Bangalore), Head, Communication Systems, Image and Video Processing, Computer Vision

**Singh, Dharmendra**, Ph.D. (IT-BHU) Polarimetric & Interferometric Applications of Radar, Optical & Microwave Remote Sensing

**Rawat, Karun**, Ph.D. (University of Calgary) Doherty PA, pulse gate modulation, High Efficient PA modes, Transceiver Design, Chip Design:, CMOS and GaN MMIC based power amplifiers design, mixed signal design, Modelling:, RF Power Amplifier Design with

Embedding Device Model, RF Circuits:, Multi-port Networks, Modulator, RF Analog Processing, mixers, LNA.

**Kartikeyan, M.V.**, Ph.D. (IT-BHU) Millimeter Wave Engineering, Microstrip Antennas, Soft Computing Techniques

**Nigam, Madhav J.**, Ph.D. (Roorkee) Digital Image Processing, Guidance and Control in Navigational Systems

**Rawat, Meenakshi**, Ph.D. (University of Calgary) Digital and RF predistortion for power amplifiers, Software defined radio solutions for multiband and MIMO transmission, RF/digital Signal processing, Digital signal processing for filterless transmitter and receivers.

**Pathak, Nagendra P.** Ph.D. (IIT Delhi) Dielectric Waveguides, Microwave & mm-wave ICs, Adaptable RFICs

**Panigrahi, Rajib K.** Ph.D (IIT Guwahati) Information extraction from radar images, Radar signal processing, target detection and estimation, Radar based remote sensing.

**Manhas, Sanjeev**, Ph.D (Leicester UK) Nanoscale MOSFET modeling, MOS Device Reliability, Semiconductor Devices

**Dasgupta, Sudeb**, Ph.D. (BHU), Varanasi) Adiabatic Logic for Portable Applications, FINFET, PDSOI, FDSOI

**Pradhan, Pyari Mohan**, Ph.D. (Indian Institute of Technology Bhubaneswar) Wireless Communication, Cognitive Radio, Time-Frequency Representation, S-transform, Texture analysis, Wireless Sensor Network, Distributed Data Estimation

**Kumar, Vijay**, Ph.D. (Roorkee) Fuzzy Control, Control Systems.

**Pankajakshan, Vinod** Ph.D. (IIT Guwahati) Signal Processing, Digital Water Marking, Image Forensics.

### 3. DISTINGUISHED VISITORS TO THE DEPARTMENT (NATIONAL/INTERNATIONAL)

Name	Designation and Affiliation	Purpose	Dates
Dr. Amit Kumar Mishra	Associate Professor at University of Cape Town	Invited Talk	04.01.2017

### 4. SPONSORED RESEARCH PROJECTS:

Sl. No.	Project Status	Total No. of Projects	Amount (Rs. In Lacs)
1.	COMPLETED PROJECTS	00	0
2.	ONGOING PROJECTS	13	371.61
3.	NEW PROJECTS	12	1237.1

### 5. SERVICE TO INDUSTRIES

#### CONSULTANCY PROJECT

Sl. No.	Project Status	Total No. of Projects	Amount (Rs. In Lacs)
1.	COMPLETED PROJECTS	00	0.0
2.	ONGOING PROJECTS	01	9.5
3.	NEW PROJECTS	00	0.0

### 6. SUMMARY OF MAJOR SPONSORED RESEARCH SCHEMES AND CONSULTANCY PROJECTS (Rs. 20 LACS) (A BRIEF WRITE-UP UPTO 100 WORDS) (NEW PROJECTS DURING THE YEAR 2016-17)

#### Hybrid (RF/Digital) Pre-Distortion Linearizer Design for 13.75-14.5 GHz High Power Travelling Wave Tube Amplifier:

The objective of this proposal is to carry out investigations leading to the design of pre-distortion linearizer module for travelling wave tube amplifier. Specific studies will target characterization of TWTA nonlinearity, conceptualization of hybrid pre-distortion scheme for linearization, algorithms for digital implementation and system level digital and RF integration challenges. Proposed field of utilizing hybrid (digital/analog) technique brings forward new applications of digital signal processing concepts while interacting with the state-of-the-art and advanced RF and microwave design applications. Currently, most of the research in India is an individual effort towards either RF and microwave hardware design field or simulation based spectrally efficient techniques for communication field. This proposal brings these two fields together to investigate the interaction and open new doors for improvement.

#### Development of tools for hybrid-Pol SAR data analysis and applications:

The project will investigate the potential and efficacy of hybrid-polarimetric (Pol) SAR sensors. In this project work, algorithms for the analysis of hybrid-Pol data will be developed. Information extraction through decomposition of hybrid-Pol covariance matrix will be investigated. Also this project will investigate the Stokes parameter based information extraction techniques. Secondly, as hybrid-Pol data do not occupy a Euclidean space, its analysis in non-Euclidean geometry would be of major concern of this project. Third, information extraction from the hybrid-Pol images as per the remote sensing applications will be considered. Particularly, new algorithms for vegetation biomass retrieval by using hybrid-Pol data will be developed. These algorithms will be implemented on hybrid-Pol data to evaluate their performances.

#### Development of Polarimetric SAR tools for urban applications:

A tremendous increase in population density across major cities in India leads to many environmental and socioeconomic problems such as traffic jams, sewage control, and water supply. With continuous increase in urban population density, frequent urban planning and enhancement in infrastructures are highly essential. This research proposal deals with remote sensing of urban areas by pol SAR. The aims of this research proposal are three fold. First objective deals with developments of tools for classification of urban area using pol SAR image. At present none of the algorithms are successful in identifying the complex urban areas. So at first, this research proposal will look into developing new model-based and entropy-based algorithms to classify the urban areas accurately. SAR urban data is generally effected by orientation of building with respect to radar's line of sight. This leads to generation of the cross-polarization scattering from oriented man-made structures which is incorrectly classify under volume scattering

category. Hence algorithms will be developed for minimization of the orientation angle dependency to reduce the scattering mechanism ambiguity. The second objective deals with extraction of edges from pol SAR images. The edge detection in urban areas can be used to build the edge maps of manmade structures. The edge detection algorithms shall be developed to differentiate between closely spaced distinct structures in urban areas. With significant increase in SAR resolution, the concept of fully developed speckle noise may not be applicable. In such high resolution cases, the speckle noise statistics should be changed. The performance of SAR speckle filtering is seen to be limited by presence of edges in the SAR images. Hence this research proposal will develop adaptive de-speckling techniques based on edge map. The third deals with mapping of urban density using pol SAR images. Back-scattered signal from urban area highly depends on height of building, separation between buildings and orientation of buildings. After deorientation process, the back-scattered signal becomes a function of building height and buildings separation. Hence using pol SAR images, it is possible to obtain urban density mapping. However, as discussed in literature survey section, only one algorithm is reported so far on urban density estimation using pol SAR images. This proposal will thoroughly investigate urban density extraction from pol SAR images.

**Software defined techniques for hardware limitations in spectrum and power efficient 4G/5G communication:**

While looking forward to 5G communication, many countries, including India, are still using 2G and 3G along with 4G. However, multichannel transmission topologies such as multiband operation (for supporting different generations) and MIMO transmission (throughput-enhancing applications) have hardware limitations where linear and nonlinear crosstalk between channels adds to signal corruption. Practically, actual signal quality becomes very poor and does not benefit from many popular methods such as MIMO, carrier aggregation and multiband operations. Originating from this research gap between proposition of spectral and power efficient techniques and their practical realization, this proposal project proposes software-defined solutions for power efficient operation of transmitter/receiver system for 4G/5G communication.

**7. SCIENTIFIC AND TECHNICAL REPORTS**

Title of the Projects	Participants	Authors	Remarks
Development of tools for hybrid-PolSAR data analysis and applications	Dr. R. K. Panigrahi	Mr. Ajeet Kumar(JRF), Dr. R. K. Panigrahi(PI)	Annual Progress report
Hybrid (RF/ Digital) pre-distortion linearizer design for 13.75-14.5 GHz high power travelling wave tube amplifier	Dr. Meenakshi Rawat	Dr. Meenakshi Rawat Mr. Girish Tripathi	Annual Progress report

**8. RESEARCH PUBLICATION**

Sl. No.	Details	Total Number
a.	Conference/Symp./ Seminars	06
b.	International Conference	08
c.	National Journals	01
d.	International Journals	16

## 4.11 DEPARTMENT OF HUMANITIES & SOCIAL SCIENCES

**Academic Staff: 17, Students Admitted: Ph.D:**

**Publications in: Book/Books Chapters: 07, Journals: 32, Conferences: 15**

### 1. SALIENT FEATURES

The Department of Humanities & Social Sciences contributes significantly in teaching and research by teaching a number of core and elective courses to students of all branches of B.Tech., and B.Arch. It also offers a specialized course on Technical Communication for PG and Ph.D students besides running an evening course on German Language. The Department has Ph.D. programs in the disciplines of Economics, English, Psychology, Sociology and Fine Arts and encourages students to undertake interdisciplinary research. The Department has a State of the Art Language Lab with a seating capacity of 55 students and advanced language learning software to train students in LSRW; a Psychology Lab which contains tests and research material in the area of Organizational Behavior; as well as an Economic Data Base containing Data about various macro-economic indicators of the economy that help the researchers in various fields. The Department also has a Computer Laboratory and a customized Research Scholar Cubicle which help students in their research. In the year under review the department has organised a number of seminars and workshops.

### 2. LIST OF FACULTY MEMBERS

**Anindya Jayanta Mishra, Ph.D.** (IIT Kanpur) Social Gerontology, Sociology of Health, Sociology of Industry

**Binod Mishra, (Ph.D., LNMU, Bihar)** Professional and Technical communication, ELT, Indian English & Modern Literatures

**Dinesh K. Nauriyal, (Ph.D. Garhwal)** Economics (General), Demography, International Economics, Development Economics, Economic Appraisal of the Projects

**Dipti Nayak, Ph.D (IIT Delhi)** Environmental Economics, Development Economics, Conservation issues, Protected areas, People-park relationship, Valuation of ecosystem services

**Falguni Pattnaik, Ph.D. (IIT Kharagpur)** Labour Market Dynamics, Labour Economics

**Nagendra Kumar, Ph.D. (BHU)** Modern Literature, Technical Communication, Contemporary Fiction, Critical Theories, Literature of Indian Diaspora

**Pashupati Jha, (Ph.D. IIT Delhi)** Modern British Literature, American Literature, Indian English Literature and Professional Communication

**Pooja Garg, Ph.D. (IIT Roorkee)** Organisational Behaviour, Human Resource Management

**Pratap Mohanty, Ph.D (JNU, New Delhi)** Innovation and Development, ICT, Digital Divide, e-governance, Rural Innovation, missing middle, Microeconomics,

International Trade, Macroeconomics, Development Eco, Public policy and governance

**Rachita Gulati, Ph.D. (GNDU, Punjab)** Productivity & Efficiency

**Rahul Krishna Gairola, (Ph.D., University of Washington, USA)**

Postcolonial Digital Humanities, Ethnic U.S. Studies, Critical Theory, Cultural Studies, Critical Theory, South Asian Studies, Comparative Literature, Identity Intersectionality, & Anthropomorphism

**Ram Manohar Singh, Ph.D (IIT Bombay)** Psychology, Personality & individual differences, Organizational Behavior

**Rashmi Gaur, (D. Phil. Allahabad)** Professional Communication, Fiction, Gender/Culture Studies, Critical Theories

**Renu Rastogi, – (Ph.D. IIT Kanpur)** Organizational Behaviour, Counselling & Women's Studies

**Smita Jha, Ph.D. (Bihar), PGDTE (Hyderabad)**

ELT, Linguistics, Technical Communication, Indian English & Modern Literatures

**Sukh Pal Singh, (Ph.D. Meerut)** Head of Department

Economics (General), Rural Development, Agricultural Economics, Labour Economics, Irrigation & Water Resource Economics

**Subir Sen, Ph.D. (ISEC, Bangalore)** Applied Econometrics, Economics of Risk and Uncertainty

### 3. HONOURS AND AWARDS TO FACULTY MEMBERS

Sl. No.	Name of Faculty	Award
1.	Dr. PoojaGarg	Awarded <u>Postdoctoral Fellowship</u> , in the department of Creative HRD, School of Social Sciences, at Incheon National University from December 01, 2016 -February 28, 2017.
2.	Dr. A. Goswami, & R. Gulati	Best Paper Award for the paper, The 'persistence effect' of credit risk in the Indian banking industry: An empirical analysis, 3 <sup>rd</sup> Management Doctoral Colloquium and VGSOM Research Scholars Day Conference, IIT Kharagpur, India, February 8-9, 2017.
3.	Dr. PashupatiJha	"Lifetime Achievement Award for contributions to English Studies in India", Awarded by All India English Teachers Association at The 61st All India English Teachers Conference, Nagpur, 20-22 January, 2017.

### 4. SPONSORED RESEARCH PROJECTS:

Sl. No.	Project Status	Total No. of Projects	Amount (Rs. in lacs)
1.	Completed Projects	01	10.00
2.	Ongoing Projects	04	37.14
3.	New Projects	02	22.36

### 5. SUMMARY OF MAJOR SPONSORED RESEARCH SCHEMES AND CONSULTANCY PROJECTS (Rs.20 lacs) (A brief Write-up upto 100 words) (New Projects during the year 2016-17).

- Missing Middle in Indian Enterprises: Study on the Problems and Prospects of MSMEs in Uttarakhand' as sole PI, Sponsored SRIC of IITR under FIG of Rs 9.98 Lacs for 2 years w.e.f. April 18, 2017.
- 'Assessment of Convergence Activities under MGNREGA in Uttarakhand' as Co-PI, sponsored by NIRD&PR of Rs.11.3 Lacs for 9 months w.e.f. January 2017.

### 6. RESEARCH PUBLICATION

Sl. No.	Details	Total Number
a.	Conference/Symp./ Seminars	08
b.	International Conference	07
c.	National Journals	23
d.	International Journals	09

## 4.12 DEPARTMENT OF HYDROLOGY

**Academic Staff: 07, Students Admitted: PG -38, Ph.D -18**  
**Publications in Books/Book Chapters: 07, Journals-07, Conferences-09,**  
**Projects: Research Rs. 323.26 Lakh, Consultancy – Rs. 52.51 lakh,**

### 1. SALIENT FEATURES

Like previous years, the 45<sup>th</sup> International P.G. Diploma/M.Tech. Hydrology course commenced from July 2016 with 17 nos. of participants including 04 sponsored candidates from abroad. The M. Tech. final year programme also continued with 19 students. At present 23 students are pursuing their doctoral research in the Department.

### 2. LIST OF FACULTY MEMBERS

**Brijesh K. Yadav**, Ph.D. (IIT Delhi)  
 Groundwater Hydrology, Contaminant Transport Modeling, Remediation Technologies, Multiphase flow

**D.S. Arya**, Ph.D. (Pondicherry)  
 Head (since Feb. 01, 2015)  
 Hydroinformatics, Surface Water Modelling, Climate Change Impacts, GIS and Remote Sensing Application

**Himanshu Joshi**, Ph.D. (IIT Roorkee)  
 Environmental Hydrology

**M.K. Jain**, Ph.D. (IIT Roorkee) Watershed Hydrology, Modeling of Hydrologic and Hydraulic Systems

**M. Perumal**, Ph.D. (IIT Roorkee)  
 Surface Water Hydrology

**N.K. Goel**, Ph.D. (IIT Roorkee)  
 Stochastic Hydrology

**Sumit Sen**, Ph.D. (Auburn University, Alabama, USA) Watershed Monitoring, Modeling and Management; Experimental Hydrology

### 3. HONORS AND AWARDS TO FACULTY MEMBERS

<b>Dr. M.K. Jain</b>	Editor, Hydrology Journal, IAH Kathpalia Award for M.Tech. thesis
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### 4. DISTINGUISHED VISITORS TO THE DEPARTMENT (NATIONAL /INTERNATIONAL)

Sl. No.	Name	Designation & Affiliation	Purpose	Dates
1.	Dr Mayur Pal	Team Lead, North Oil Company, Qatar	To deliver lectures in Brainstorming session on "Reactive Transport Modelling for Discrete Fracture Network in Porous Media".	April 12, 2017
			As international resources person to GIAN training workshop on "Integrated Modeling of Subsurface flow and solute transport in porous media: challenges and opportunities".	Jan. 02-14, 2017
2.	Dr Julien Lerat	Senior Hydrologist, Bureau of Meteorology, Australia	Demonstration of the Bureau of Meteorology water forecasting website	March 10, 2017
3.	Dr David Robertson	Senior Research Scientist, CSIRO, Australia	Research in water forecasting in Australia	March 10, 2017
4.	Dr Narendra K Tuteja	Manager, Extended Hydrological Prediction, Bureau of Meteorology, Australia	Transitioning research to operational water forecasting services – opportunities and challenges	March 10, 2017
5.	Dr Debabrata Sahoo	Senior Engineer	GIAN Course, international Expert	Feb. 27-March 06, 2017

6.	Dr. Anurag Mishra	Senior Project Engineer; Aqua Terra Consultant, a RESPEC division, California, USA	Hydrological Modeling and Time Series Analysis lectures for M. Tech and PhD students	Jan. 27-28, 2017
7.	Prof Abinash Agrawal	Professor, Wright state university, USA	As International resources person to GIAN training workshop on "Remediation and Management of Polluted Groundwater Sites"	May16-24, 2016

#### 5. ACADEMIC ACTIVITIES ORGANIZED BY THE DEPARTMENT

Sl. No.	Name of the conf./ seminar/ symp./workshop	Name of the Chairman	Sponsored by	Dates
1.	3 <sup>rd</sup> Dam Safety Conference held at IIT Roorkee	Prof & Head with all faculty members	DRIP, MoWR	Feb.18-19, 2017
2.	River Basin Planning Using HEC Software	Dr D S Arya	National Hydrology Project, MoWR	May 16-21, 2016
3.	River Basin Planning Using HEC Software	Dr D S Arya	National Hydrology Project, MoWR	July 11-16, 2016
4.	River Basin Planning Using HEC Software	Dr D S Arya	National Hydrology Project, MoWR	Sept 5-10, 2016
5.	River Basin Planning Using HEC Software	Dr D S Arya	National Hydrology Project, MoWR	Oct 17-22, 2016
6.	Two week GIAN training workshop on "Remediation and Management of Polluted Groundwater Sites".	Dr. Brijesh K Yadav	MHRD	16-24 May, 2016
7.	Five days training on "Identification of Contaminated sites and Its treatment technologies, Interferences and data Management using GIS Hands on training".	Dr. Brijesh K Yadav	CPCB	14-18 Nov. 2016
8.	Two week GIAN training workshop on "Integrated Modeling of Subsurface flow and solute transport in porous media: challenges and opportunities".	Dr. Brijesh K Yadav	MHRD	02-14 Jan, 2017
9.	Nine-day GIAN training workshop on "HSPF/BASINS training".	Dr. Sumit Sen	MHRD	6-14 June, 2016
10.	GIAN Training workshop on "Urban Stormwater Management- Science, Policy, and Engineering Training for Smart Cities"	Dr. Sumit Sen	MHRD	27 Feb. – 6 March, 2017

#### 6. SPONSORED RESEARCH PROJECTS:

Sl. No.	Project Status	Total No. of Projects	Amount (Rs. In lacs)
1.	Completed Projects	02	140.98
2.	Ongoing Projects	04	162.48
3.	New Projects	01	19.80

#### 7. SERVICE TO INDUSTRIES

##### Consultancy Project

Sl. No.	Project Status	Total No. of Projects	Amount (Rs. In lacs)
1	Completed Projects	02	23.99
2.	Ongoing Projects	04	24.77
3.	New Projects	01	3.75



## 8. SUMMARY OF MAJOR SPONSORED RESEARCH SCHEMES AND CONSULTANCY PROJECTS (Rs. 20 lacs.) (A brief Write-up upto 100 words) (New Projects during 2016-17)

### **Himanshu Joshi- In situ Arsenic sequestration using engineered nanomaterials, Sponsored by Ministry of Science and Technology (DST), New Delhi, 30.37 Lakh, 2016-2017**

The research is proposed in exploring the development of engineered nanomaterials for the sequestration of arsenic from groundwater and further, to investigate their efficacy as in situ remediation materials (Direct Injection and Permeable reactive materials) under different environmental variables. The objectives are as follows:

1. Synthesis of iron based nanomaterials using conventional methods and organic (including agricultural) waste.
2. Laboratory scale assessment of in situ remediation technologies for arsenic sequestration by using Direct Injection and Permeable Reactive Barrier (PRB) methods.
3. Experimental investigation and modelling of the process kinetics and performance efficiency of arsenic sequestration.

### **Himanshu Joshi- Indo-Australian Collaborative research project on "Development of Innovative Spentwash Treatment Systems and Resource Recovery Options for Distillery Applications" Sponsored by Ministry of Science and Technology (DST) New Delhi & DISR Australia , 67.98 Lakh, 2013-2017**

This project proposes to develop an innovative solution to minimize the environmental impact associated with the discharge of waste from the production of ethanol from molasses. Our objective is to turn distillery waste into a resource by developing a treatment train that allows the recovery of valuable nutrients, the generation of renewable energy and the production of high quality water.

1. Assess impact of fouling and high viscosity on NF membrane.
2. Assessment of impact of organics on potash recovery.
3. Assessment and optimization of membrane concentrate for bio-composting/combustion.

### **Brijesh K. Yadav- Reactive Transport Modelling for Discrete Fracture Network (DFN) in Porous Media:**

Subsurface geological formations are often very complex due to presence of heterogeneity and fault/fracture networks. Analysing of fluid flow through such geologically media is required to model multi-physics processes like environmental flow, CO<sub>2</sub> sequestration, Oil and Gas flows etc. Precise and efficient modelling of such complex fractured networks requires fractures to be represented as lower dimensional objects which require efficient gridding and better numerical discretization. Main focus of this project is to develop a RTM capability for DFN single-phase flow simulator with direct application for fracture modelling at the discrete fracture network scale.

## 9. RESEARCH PUBLICATION

Sl. No.	Details	Total Number
a	Conference/Symp./Seminars	08
b	International Conference	01
c	National Journals	01
d	International Journals	06

## 4.13 DEPARTMENT OF MANAGEMENT STUDIES

**Academic Staff: 14, Students Admitted: PG(MBA) -84 ,  
Publications in: Journals – 33, Conferences-07**

### 1. SALIENT FEATURES

- DoMS, IIT Roorkee is ranked at 8<sup>th</sup> position in the list of Management Institutes released under NIRF framework 2017 by MHRD, Govt. of India.
- DoMS, IIT Roorkee is ranked at 2<sup>nd</sup> position in the country on the basis of research output in Management Institutes category under NIRF framework 2017 by MHRD, Govt. of India.
- As per available data highest package offered to students in Executive placements for the batch of 2017 was 14.50 lacs and average package was 9.18 lacs (INR).

### 2. LIST OF FACULTY MEMBERS

**A. Ramesh, Ph.D**

Operations Management

**A.K. Sharma, Ph.D.**

Financial Management & Accounting

**Gaurav Dixit, Ph.D.**

Information Technology Management

**J.K. Nayak, Ph.D.**

Marketing Management

**J.P. Singh, Ph.D.**

Mathematical Finance, Chaos & Fuzzy

Mathematics

**M.K. Barua, Ph.D.**

Operations Management

**M.K. Rao, Ph.D.**

Human Resource Management & CSR

**Rajat Agrawal, Ph.D.**

Operations Management

**R.L. Dhar, Ph.D.**

Human Resource Management,

**S. Rangnekar, Ph.D.**

Human Resource, Organization Behaviour &  
Knowledge Management

**Sujata Kar, Ph.D.**

Economics

**Usha Lenka, Ph.D.**

Human Resource Management

**Vinay Sharma, Ph.D.**

Strategic Management, Marketing & Advertising  
Management

**Z. Rahman, Ph.D., Head**

Marketing Management

**Professor Emeritus**

**V.K. Nangia, Ph.D.**

General Management, Finance & Rural  
Governance

**Adjunct Professor**

**Shri Dharamveer, (Retd.) IAS**

**P.K. Kapur, (Retd.) IFS**

**IPR Chair Professor**

**P.K. Ghosh,**

### 3 HONOURS AND AWARDS TO FACULTY MEMBERS

Dr. Santosh Rangnekar	44 <sup>th</sup> position in top 100 researchers from IITs in India on the basis of citations per paper as per report of CII on the basis of Indian Citation Index (ICI). Visiting Professor for teaching Asian Business course at Hanyang University Korea from November 15 to December 15, 2016.
Dr. M.K. Barua	Visiting Professor at IIM Rohtak and IIM Sirmour for teaching various courses in area of Operations Management and Supply Chain Management during June 2016 to January 2017.
Dr. Anil Kumar Sharma	Received Best Paper Award at NIDA International Business Conference at NIDA Business School, Bangkok, Thailand.
Dr. Rajat Agrawal	Awarded ICCR Chair Professorship.

**4 DISTINGUISHED VISITORS TO THE DEPARTMENT (NATIONAL/ INTERNATIONAL)**

Sl. No.	Name	Designation, Affiliation	Purpose	Date
1.	N. Ravishankar	Adjunct. Faculty		
2.	Nitin Kochhar	Vice President, Shopclues	Avenir'16	Sept. 3, 2016
3.	Saile Lalit	Assist. Vice President of Operations Oku Tech Pvt. Ltd.	Avenir'16	Sept. 3, 2016
4.	Mrinalini Khusape	Head - Sales Steering SKODA India	Avenir'16	Sept. 3, 2016
5.	Karanjit Singh	CEO (India) , Kelton Tech Solutions Limited	Avenir'16	Sept. 3, 2016
6.	Nikhil Choudary	Commissioner of Income Tax (Appeals), DehradunIT Deptt.	Avenir'16	Sept. 3, 2016
7.	Jitendra P.S. Solanki	FounderJS Financial Advisors	Avenir'16	Sept. 4, 2016
8.	Kishore Uppalapati	Consulting Delivery Manager – ERP for EMEA & AsiaMicrosoft	Avenir'16	Sept. 4, 2016
9.	Jitender Panihar	Head- HRHealthKart	Avenir'16	Sept. 4, 2016
10.	Kaushalendra and Abhishek Singh	FounderBEA Bihar	Avenir'16	Sept. 4, 2016
11.	Budhidita Roy	Vice President Zee Entertainment Enterprises	Avenir'16	Sept. 4, 2016
12.	Kdambi Srinivasan	Assist. Director, Benchmark	Six Sigma Certification	30-Sep-16 to 2-Oct-16
13.	Rajat Jain	Regional Manager, Dell	Guest Lecture	October 1, 2016
14.	Gaurav Saini	HR Thought Leader -Director- People Practice & Head L&D Happiest Minds Technologies	Guest Lecture	October 7, 2016
15.	Shahnawaz Khan	Lead TrainerDigital Vidya	Guest Lecture	Oct. 8, 2016
16.	Madhuchhanda Nayak	Asstt. General Manager, SBI	Guest Lecture	February 4, 2017
17.	Jatinder Malhotra	Senior Consultant EY	Guest Lecture	February 4, 2017
18.	Gaurav Dadhich	Product managerCraftsvilla	Guest Lecture	8th February 2017
19.	Harshit Sarna	AGM-MarketingIdea Cellular Ltd.	Guest Lecture	24th February 2017
20.	Ruma Bhatheja	Head - Human Resources Knowledgetics	Confluencia'17	March 4, 2017
21.	Mayank Arora	Vice President – Human Resources Mrs. Bector's Food Specialities Ltd. (Cremica Foods)	Confluencia'17	March 4, 2017
22.	Gaurav Malhotra	Managing Director and Chief Executive Officer, Medicover Healthcare	Confluencia'17	March 4, 2017
23.	Neeraj Kaushal	Associate Vice President Royal Bank of Scotland.	Confluencia'17	March 4, 2017
24.	Dr. Kushal Sanghvi	Business Head, Reliance Entertainment and Digital	Confluencia'17	March 4, 2017
25.	Atul Dwary	Dy. Vice President, Axis Bank	Confluencia'17	March 5, 2017
26.	S K Sharma	Former Chairman & MD Bharat Electronics Limited.	Confluencia'17	March 5, 2017
27.	Animesh Kumar	HR Business Partner & ER Manager Cisco	Confluencia'17	March 5, 2017
28.	Ashok Kumar Jain	Vice President –Operations Jubilant Life Science Ltd	Confluencia'17	March 5, 2017
29.	Karan Kumar	Asst. Manager- HRITC Ltd	Confluencia'17	March 5, 2017
30.	Dharam. Vir	Ex-Chief Secretary, Haryana Government	Guest Lecture	April 7, 2017
31.	Shahnaz Imam	Brand and Digital Head Cisco Systems, India and SAARC	Guest Lecture	April 16, 2017

## 5. ACADEMIC ACTIVITIES ORGANIZED BY THE DEPARTMENT

Sl. No.	Name of Course	Name of the organizers	Sponsored by	Date
1.	International Conference on Global Trends in Business and Sustainability Research	Chairman- Dr Z Rahman Org. Secy. Dr Rajat Agrawal	Conference Fee	December 2-4, 2016
2.	STC on Data Analysis for Research & Publication	Dr J K Nayak	Participation Fee	June 2016
3.	STC on Data Analysis for Research & Publication	Dr J K Nayak	Participation Fee	December 2016

## 6. SPONSORED RESEARCH PROJECTS:

Sl. No.	Project Status	Total No. of Projects	Amount (Rs. in lacs)
1.	Completed Projects	01	48.30
2.	Ongoing Projects	01	13.30
3.	New Projects	-	-

## 7. SUMMARY OF MAJOR SPONSORED RESEARCH SCHEMES AND CONSULTANCY PROJECTS (Rs. 20 lacs) (A brief Write-up upto 100 words) (New Projects during the year 2016-17).

- (i) UJVNL Orientation program on HYDROPOWER DEVELOPMENT AND GENERAL MANAGEMENT FOR ASSISTANT ENGINEERS was organized by Department of Management Studies. Prof. S. Rangnekar was PI and Professor Deepak Khare and Professor BK Gandhi were Co-PIs. The total financial outlay of the project was worth Rs 48 lacs 30 thousand only. The duration of program was 6 weeks from March 7-April 14, 2017. Total 45 Assistant engineers from UJVNL, Dehradun participated. The focus of the program was to provide techno –managerial skills.
- (ii) **Project (Ongoing)**  
**Received a project titled "A Study On The Causes That Lead To Work Related Stress Amongst The Police Officers And The Impact Of It On Their Health: A Study Of Uttarakhand Region, India"**, worth 13.30 lakhs from Indian Council for Medical Research (ICMR)\*.  
 Police is considered as manifestation of government in uniform. A normal civilian consider police as a single key for multiple solutions. Therefore, policing is one of the most stressful jobs in India. In view of the above, the study is aimed to understand the causes of stress amongst the police officials, evaluate the police officials' experiences with relation to the support received by them and assess the implications of work related stress on the psychological health of the officials.

## 8. RESEARCH PUBLICATION

Sl. No.	Details	Total Number
a	Conference/Symp./Seminars	04
b	International Conference	03
c	National Journals	00
d	International Journals	33

#### 4.14 DEPARTMENT OF MATHEMATICS

**Academic Staff: - 27 Students Admitted: UG/INT. M.Tech/M.Sc: 31; PG...30; Ph.: 16**

**Publications in: Book/Books Chapters: 06, Journals: 84, Conferences: 05,**

**Projects: Research (Rs. in Lacs) 93.85, Consultancy (Rs. in lacs) : Nil**

##### 1. SALIENT FEATURES

The Department of Mathematics has enhanced the computational facilities in the recently established computer lab for research students from the grant received under FIST program of DST. The Department received many distinguished visitors for research collaborations in various research areas. A grand conference has been organized by the department in December in the area of pure mathematics, where several national and international renowned mathematician visit the department. The students who completed their doctoral degrees are placed in various institutes of repute and few of them joined postdoctoral fellowship in India and abroad. The placement for five years integrated M.Sc. in Applied Mathematics was quite enthusiastic. Several new sponsored research projects were sanctioned in this year.

##### 2. LIST OF FACULTY MEMBERS

**Aditi Gangopadhyay**, Ph.D.(IIT Kharagpur)  
Statistics, Psychometry, Statistical Simulation, Ranking & Selection, Statistical Inference

**Ameeya Kumar Nayak**, Ph.D. (IIT Kharagpur) Computational Fluid Dynamics

**Ankik Kumar Giri**, Ph.D. (Germany)  
Co-agulation-Fragmentation Modules, Stochastic PDE & Inverse Problems

**Chaman Kumar**, Ph.D. (Univ of Edinburgh)  
Probability and Stochastic Analysis, Numerics of SDEs, Financial Mathematics

**D.N. Pandey**, Ph.D. (IIT Kanpur)  
Differential Equations, Control Theory

**Kusum Deep**, Ph.D. (University of Roorkee)  
Optimization Techniques, Parallel Computing and Computer Software

**Madhu Jain**, Ph.D. (Agra University)  
Computer Communications Networks, Performance Prediction of Wireless Systems, Networking, Operations Research, Stochastic Processes, Queuing Theory, Inventory Models

**Maheshanand**, Ph.D.(Jamia Millia Islamia)  
Coding Theory, Cryptography

**N. Sukavanam**, Ph.D. (IISc Bangalore)  
Robotics Control Theory and Integral Operators

**P. Bera**, Ph.D. (IIT Kanpur) Computational Fluid Dynamics

**P.N. Agrawal**, Ph.D., (IIT Kanpur)  
Approximation Theory, Numerical Methods and Complex Analysis

**Pratibha**, Ph.D. (Western Ontario Univ. Canada) Symbolic Computation and Computational Fluid Dynamics

**Ram Jiwari**, Ph.D. (I.I.T. Roorkee)  
Numerical Analysis & Simulations of PDE, Wavelets Analysis

**Rama Bhargava**, Ph.D. (University of Roorkee) Fluid Dynamics & Numerical Analysis

**Roshan Lal** Ph.D.( Univ. of Roorkee)  
Elasticity Vibrations and Numerical Methods

**Ram Krishan Pandey**, (IIT Delhi)  
Number Theory (Additive & Combination)

**R.C. Mittal**, Ph.D. (IIT Delhi)  
Numerical Analysis, Computer Software and Programming Languages

**Sandip Banerjee**, Ph.D. (Calcutta Univ.)  
Mathematical Biology

**Sanjeev Kumar**, Ph.D. (IIT Roorkee)  
Computer Vision, Computational Geometry, Machine Learning

**Shiv Kumar Gupta**, Ph.D. (IIT Roorkee)  
Operations Research

**S.P. Sharma**, Ph.D. (Univ. of Roorkee)  
Relativity, Reliability Theory, Cosmology, Graph Theory & Discrete Structures

**S.P. Yadav**, Ph.D. (BHU Varanasi)  
Operations Research, Optimal Control Theory and Numerical Analysis

**Sunita Gakkhar**, Ph.D.(IIT Kanpur)  
Bio-Mathematics, Fluid Dynamics, Mathematical Modelling of Environmental & Ecological Systems, Computer Applications, Industrial Mathematics and Programming Languages

**Swaminathan Anbhu**, Ph.D. (Madras University) Computational Complex Analysis, Special Functions

**Tanuja Srivastava**, Ph.D. (IIT Kanpur)  
Statistics, Computerized Tomography, Statistical Models in Networking.

**Uday Singh**, Ph.D.(CCS Univ. Meerut)  
Fourier Approximation, Summability Theory

**V.K. Katlyar**, Ph.D. (IIT Kanpur)  
Fluid Dynamics, Industrial Mathematics and Bio-Mathematics

### 3. DISTINGUISHED VISITORS TO THE DEPARTMENT (NATIONAL/INTERNATIONAL)

Name	Designation and Affiliation	Purpose	Dates
Hidekatsu Yamazaki Hikaru Honma (PostDoc)	Professor, Department of Ocean Sciences, Tokyo University of Marine Science and Technology, Japan.	Invited speaker for Workshop titled Micro-scale variability and planktonic ecosystem models.	January 20, 2017.
Sandip Mondal	Public Health Foundation of India, Delhi.	Invited speaker for Workshop titled Micro-scale variability and planktonic ecosystem models.	January 20, 2017.
G.D. Veerappa	Dean & Professor, TIFR CAM, Bangalore	Invited for ICMAA 2016 and research collaborations	Nov 28-Dec 02, 2016
Jacek Banasiak	Professor and DST/NRF SARCHI Chair in Mathematical Models and Methods in Biosciences and Bioengineering	Invited for ICMAA 2016 and research collaborations	Nov 28-Dec. 04, 2016
Margareta Heilmann	University of Wuppertal, Germany	Research collaborations	June 20-July 18, 2016
Ana Maria Acu	Lucian Blaga University of Sibiu, Romania	Research collaborations	Nov. 20-23, 2016
Prof. Georges Grekos	Jean Monnet University Saint-Etienne, France	Project visit	14-26 Jan. 2017
Prof. R. Balasubramanian	IMSc Chennai	Conference Chief guest and Lecture	Nov 28-Dec. 04, 2016
Prof. S. Ponnusamy	ISI Chennai	Invited for ICMAA 2016	Nov 28-Dec. 04, 2016

### 4. ACADEMIC ACTIVITIES ORGANIZED BY THE DEPARTMENT

Sl. No.	Name of the conf./ seminar/ symp./ workshop	Name of the Chairman	Sponsored by	Dates
1.	Workshop on Optimization Techniques for Solving Industrial Problems (OTSIP-16)	Madhu Jain (Coordinator)	Mathematical Colloquium, IIT Roorkee	15 October, 2016
2.	Workshop on Modeling, Optimization and Simulation of Stochastic Systems (MOSSS-16)	Madhu Jain (Coordinator)	Mathematical Colloquium, IIT Roorkee	26 November 2016
3.	One day workshop titled Micro-scale variability and planktonic ecosystem models.	Sandip Banerjee	Registration fee	January 20, 2017
4.	International Conference on Mathematical Analysis and Applications (ICMAA)-2017.	Dr. A. Swaminathan, Convener Dr. Uaday Singh, Co-Convener	NBHM, DST, ISAAC, CSIR	November 28-December 02, 2016
5.	Workshop on "High Performance Scientific Computing"	Ankik Kumar Giri	INTEL & Calligo Technologies Pvt. Ltd.	August 26-27, 2016
6.	A one day national workshop on Mathematical aspects of fluid flow problems in Engineering Applications	Prof. Rama Bhargava and Dr. A. K. Nayak	Department of Mathematics, IIT Roorkee	18th Feb. 2017

### 5. SPONSORED RESEARCH PROJECTS:

Sl. No.	Project Status	Total no. of Projects	Amount (in Lakhs) (Rs.)
1	Completed	00	00
2	Ongoing	05	71.02
3	New projects	02	22.83

**6. Research Publication**

<b>Sl. No.</b>	<b>Details</b>	<b>Total Number</b>
1.	Conference/Symposia/ Seminar	00
2.	International Conference	05
3.	National Journal	01
4.	International Journals	83

#### 4.15 DEPARTMENT OF MECHANICAL AND INDUSTRIAL ENGINEERING

**Academic Staff: 43 Students Admitted: UG- 140 (ME-100, PI-40), PG- 71 & Ph.D- 46  
Publications in: Book/Books Chapters- 02, Journals-78, Conferences- 70  
Projects: Research (Rs. in Lacs) 785.928, Consultancy (Rs. in lacs) 81.896**

##### 1. SALIENT FEATURES

The Mechanical Engineering department came into existence in the year 1946 and the first batch of fifteen students received their Bachelor's degree in 1949. The department started its second undergraduate program of Production & Industrial Engineering in 1973. In the year 1982, the welding research lab was established under Indo-German collaboration program. Further, in the year 1990-1991 the department was recognized as the Center of Advanced Studies (CAS) by the U.G.C in two areas namely Computer Aided Engineering and Industrial Noise Pollution and its control. Presently, the Department of Mechanical and Industrial engineering offers two undergraduate and five post graduate courses.

The expertise by the faculty members of the department developed through research is being effectively utilized by providing solution to industrial problems in the form of design, analysis, testing and training through numerous industrial consultancy projects from reputed private and government organizations. The department conducts National and International conferences to provide an insight of latest research trends in the field of Mechanical and Industrial engineering. The undergraduate students of the department are actively involved in student initiative activities like development of all-terrain vehicle, formula racing cars, wheel chair for disabled and elderly, robots etc. These developed products are showcased at various national and international forums.

##### DEVELOPMENT OF NEW COURSES/ LABORATORIES/ EQUIPMENT

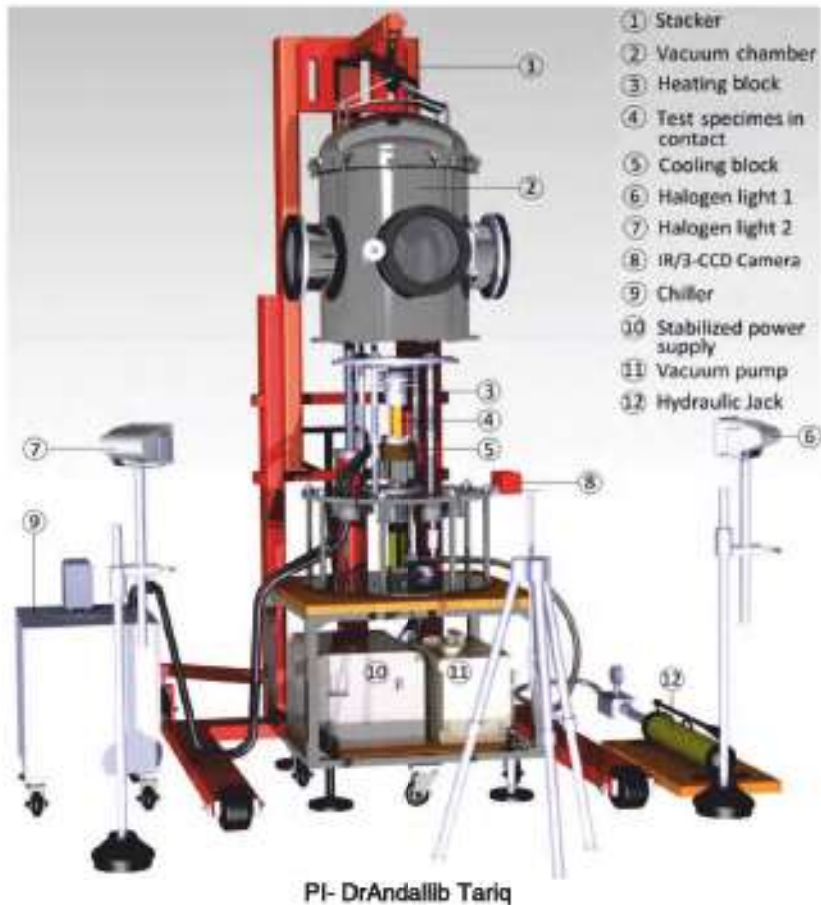
A unique facility for gas turbine blade cooling has been developed at MIED in collaboration with the GTRE, DRDO, India. Present research facility is based upon the liquid crystal thermography, which is successful in mapping the heat transfer distribution efficiently of the test surfaces.



Gas Turbine Blade Cooling Research Laboratory at MIED (PI Dr. Andallib Tariq)



A unique experimental facility to estimate the TCC at cryo temperature has been set at MIED, IITR



## 2. LIST OF FACULTY MEMBERS

**Abinash Swain, Ph.D.** (IISc Bagalore)

Product Design and Development, CAD/CAM, Computer Aided Prototyping, Virtual Product Development, Virtual reality, Product Lifecycle Management (PLM)

**Akhilesh Gupta, Ph.D.** (Roorkee)

Thermal Engineering, Heat Transfer, Solar Energy, Refrigeration & Air Conditioning

**A.K. Sharma, Ph.D.** (IIT Madras)

Advance Manufacturing, Microwave Material Processing, Surface Engineering

**Akshay Divedi, Ph.D.** (IIT Roorkee)

Metal Matrix Composites, Quality Function Deployment, Advanced Manufacturing Processes

**Andallib Tariq, Ph.D.** (IIT Kanpur) Heat Transfer, Thermal Contact Conductance, Flow Control, Turbulence, Proper Orthogonal Decomposition (POD), Micro-fluidics, Optical Techniques.

**Ankit Bansal, Ph.D.** (The Pennsylvania State University)

Radiative heat transfer, Hypersonic Flow, Flow radiation interaction, spectral modeling of gases.

**Anil Kumar, Ph.D.** (Roorkee) Thermal Engineering, Heat Transfer, Refrigeration & Air-Conditioning

**Anil Kumar, Ph.D.** (University of Trento, ITALY) Machine Design, Vibration, System Identification, Vibration Mitigation, Piping Systems

**Arup Kumar Das, Ph.D.** (IIT Kharagpur) Two phase flow, Microfluidics, Boiling and condensation, Augmentation of boiling heat transfer coefficient.

**Avinash Parashar, Ph.D.** (University of Alberta) Material Science, Nanotechnology, Composites, Nanocomposites, Atomistic Modeling, Finite element modeling, Molecular dynamics

**B.K. Gandhi, Ph.D.** (IIT Delhi) Slurry erosion and cavitation wear. Flow measurement, Hydraulic Turbines & Pumps, Performance Testing of SHP stations

**B.K. Mishra, Ph.D.** (IT, BHU)

Composite materials, Fracture mechanics, Wave propagation

**D.B. Karunakar**, Ph.D. (IIT Kharagpur)  
Manufacturing Science, Metal Casting, FEM in Manufacturing, CAD/CAM

**Dhish K. Saxena**, Ph.D. (IIT Kanpur)  
Engineering Design, Evolutionary Multi-objective Optimization, Multi-Criteria Decision Making, Machine Learning, C.A.D.

**D.K. Dwivedi**, Ph.D. (Jaipur)  
Welding metallurgy, Surface modification, Fracture & fatigue properties, Weld-bonding & Friction stir welding, Structure-property-relationship

**Dinesh Kumar**, Ph.D. (Roorkee) (Head)  
Supply chain management, Industrial Engineering, Maintenance Engineering, Process Planning & Optimization, Modeling and Simulation

**Inderdeep Singh**, (IIT Delhi) Development and Characterization of composites, Machining of composites, Green composites

**Indra Vir Singh**, Ph.D. (BITS Pilani) FEM, X-FEM, Meshfree Methods, Fracture, Composites, FGM, Nano and Bio-Materials, Multiscale Simulations

**K. Murugesan**, (IIT Madras) Finite element modeling of systems with heat and mass transfer, Hydrogen energy, PEM Fuel cell

**Kaushik Pal**, Ph.D. (IIT Kharagpur)  
Advanced Composites, Non-conventional machining, Welding of Polymers, Fracture and fatigue mechanism, Nanofillers, Coating, Wear and Abrasion, Bio polymers.

**K.M. Singh**, Ph.D. (IIT Kanpur) DNS/LES of turbulent flows, Parallel algorithms, Modeling, simulation and CAD of energy systems

**M.M. Joglekar**, Ph.D. (IIT Bombay)  
Mechanics of MicroElectroMechanical Systems (MEMS), Capacity fade modeling of lithium-ion batteries, Mathematical modeling and simulation

**Manish Mishra**, Ph.D. (IIT Kharagpur)  
Thermal and Fluids Engineering, Heat exchangers, Renewable Energy, Soft computing tool applied to Thermal Engineering

**M. M. Mahapatra**, Ph.D. (IIT Kharagpur) (on LIEN) Welding distortion & residual stress control, Modeling, Line heating, laser cladding and joining, Improved Al alloys

**Navneet Arora**, Ph.D. (Kurukshetra)  
Welding Engineering, Reliability Engineering

**P.K. Jha**, Ph.D. (IIT Kharagpur)  
Modeling of steelmaking processes, Continuous casting, Process modeling, Foundry Engineering

**P. K. Sahoo**, Ph.D. (IIT Kharagpur)  
Refrigeration & Air-conditioning, Thermodynamics, Building Energy Simulation, Liquid Desiccant Air Conditioning

**P.K. Jain**, Ph.D. (Roorkee) (on LIEN)  
CAD/CAM/CIM/DFM, Operations Management

**P. M. Pathak**, Ph.D. (IIT Kharagpur)  
Robotics, Dynamics, Control, Bond Graph Modeling

**Pradeep Kumar**, Ph.D. (Roorkee) Industrial Engineering, Supply Chain Management, Quality Engineering, Advanced Manufacturing Processes, Metal Casting

**Ravi Kumar**, Ph.D. (Roorkee) Refrigeration & Air-Conditioning, Two-Phase Flow & Heat Transfer, Instrumentation & Measurement

**Mullk, R.S.**, Ph.D. (IIT Delhi)  
Non-conventional machining, abrasive based finishing processes, micro-machining, Rapid Prototyping

**Siladitya Pal**, Ph.D. (Michigan) Finite Element Modeling, Multi-scale/ Multi-physics Modeling, Fracture Mechanics, Mechanics of Energy Storage and Soft Materials, Biomechanics.

**Sanjay Upadhyay**, Ph.D. (Roorkee) Non-linear Dynamics, Vibration, Smart material and structures

**Satish C. Sharma**, Ph.D. (Roorkee)  
Machine Design, Tribology, Instrumentation & Measurement, Vibration and Controls.

**S.P. Harsha**, Ph.D. (BITS Pilani) Nonlinear Dynamics & Chaos, Unmanned Surface/Air Vehicles, Rotor Vibrations & Control

**Sudhakar Subudhi**, Ph.D. (IISc Bangalore)  
Heat transfer, Ventilation, Energy systems, Natural convection, Natural Ventilation, Non-conventional energy systems

**Sushanta Dutta**, Ph.D. (IIT Kanpur) Active and Passive control of flow field, Optical measurement techniques, Turbulence measurements and wake dynamics

**V.H. Saran**, Ph.D. (Roorkee) Machine design, Low frequency vibration comfort

#### **Emeritus Professor/ Fellow**

**C.P. Gupta, Ph.D. (Wisconsin)**

### **3. HONOURS AND AWARDS TO FACULTY MEMBERS**

#### **Sharma, Apurbakumar**

Two Indian patents have been filed:

- A Device of in-situ microwave casting of metals and alloys. (Application No.: 201611037834,
- A Flexible Device for Multiple Ultrasonic Machining Operations. (Application No.: 201611041640, December 06, 2016).

#### 4. ACADEMIC ACTIVITIES ORGANIZED BY THE DEPARTMENT

Sl. No.	Name of the conf./seminar/symp./workshop	Name of the Organizing Chairman/ Convener/Secretary/Jt. Secy.	Sponsored by	Dates
1.	Vibration mitigation techniques: theory & application	Dr Anil Kumar	QIP	27 June 2016- 01 July 2016
2.	Advances in fluid flow control and measurement techniques	Dr. Sushanta Dutta Dr. B K Gandhi	QIP, MHRD	5-9 <sup>th</sup> Dec., 2016

#### 5. SPONSORED RESEARCH PROJECTS

Sl. No.	Project Status	Total No. of Projects	Amount (Rs. in lacs)
1.	Completed Projects	07	191.16
2.	Ongoing Projects	08	236.20
3.	New Projects	07	601.59

#### 6. SERVICE TO INDUSTRIES Consultancy PROJECTS

Sl. No.	Project Status	Total No. of Projects	Amount (Rs. in lacs)
1.	Completed Projects	02	18.54
2.	Ongoing Projects	00	00
3.	New Projects	00	00

#### 7. SUMMARY OF MAJOR SPONSORED RESEARCH SCHEMES AND CONSULTANCY PROJECTS (Rs. 20 lacs) (A brief Write-up upto 100 words) (New Projects during the year 2016-17).

##### 1. Experimental Investigation of 700 MWe Specific Full Length Channel Deformation (Sagging) Behaviour under Heat-up Condition: PI Ravi Kumar

In a 700 MWe Pressurized Heavy Water Reactor (PHWR), Loss of Coolant Accident (LOCA) with the simultaneous failure of Emergency Core Cooling System (ECCS) would eventually lead to core voiding. This scenario may lead to Pressure Tube (PT) deformation at high temperature and contact with the Calandria Tube (CT). The core heat would then dissipate to the moderator on PT-CT contact area. It is important to estimate thermo-mechanical deformation pattern for pressure tube as well as heat transfer aspect during PT-CT contact and the boiling of coolant over calandria tube. This information shall be helpful to predict the heat transfer from fuel bundle to moderator under this situation.

An experimental programme has been planned to access the channel heat-up specific to 700 MWe Indian PHWR. The experimental set-up shall consist of simulation of a single reactor channel (6.3 m length) of a typical 700 MWe Indian PHWR, submerged in water. The decay heat will be simulated by resistance heating of pressure tube using 490 kW (70VDC/7000A) Rectifier.

##### 2. Experiments in Design Fire Environment Facility Relevant to NPPS, PI: Akhilesh Gupta

The objective of the project is to understand and develop design fire environment in an enclosure of heat flux (over and above temperature) relevant to NPPs. Different combustibles with varying distribution in horizontal and vertical configuration will be studied. The key component of these experiments will be an enhanced understanding of the fire-induced design fire environment for a foreseeable fire scenario in order to develop a mathematical/experimental basis of fire impact near flame and far flame region so as to evolve a Design basis fire (DBF). Few experiments will also be carried out for spill plume behavior which affect secondary fire generation in fire influence based approach used in NPPs. A set of experiments will be carried out to cater to demand to localized heat flux based Fire hazard analysis (FHA) approach developed at BARC which is being used for mandatory FHA for BARC reprocessing facilities, New Research Facilities, Research reactors, PFBR, 700 IPHWR etc.

##### 3. Channel heat-up Study under Slumped Fuel Condition for PHWR: PI Ravi Kumar

The objective of the project is to establish a test facility to carry out an experimental investigations for the channel heat-up under slumped fuel condition of 37 fuel element specific to 700 MWe PHWR. The heat transfer, hydrogen generation, contact conductance and oxidation pattern shall be determined for the

complex configuration under low steam flow conditions. The data generated during the investigation shall be used to validate the severe accident analysis BARC's computer code PRABHAVINI, adapted international code ASTEC and NPCIL's licensing code ATMIKA/CONTACT. The experimental set-up consists of simulation of a part of single reactor channel (1m length) of a typical 700 MWe Indian PHWR, submerged in water. The decay heat will be simulated by resistance heating of the 37 pin fuel bundle simulator with zircalo-4 clad. Experiments will be performed under both oxidizing and non-oxidizing condition. The effect of sagging on the temperatures of fuel bundle will also be studied changing the position of PT with respect to CT.

**4. High temperature Thermal contact conductance (TCC) measurement for PT-CT contact: PI Dr Andalib Tariq**

The objective of the project is to carryout experimental investigations, and creates a reliable and accurate experimental database for TCC between the interface of Pressure Tube (PT) and Calandria Tube (CT). These zirconium alloys, routinely used in Pressurised Heavy Water Reactor (PHWR) for manufacturing coolant channels. These tubes may come into contact during a severe accident scenario due to thermo mechanical deformation of PT (sagging or ballooning) and establish a firm contact with CT. An evaluation of TCC helps to determine the heat flow from fuel to PT and further from PT to CT. A realistic fuel temperature evaluation helps to determine the hydrogen generation and fission gas release. A correlation will be developed from the generated data base. The correlation will be used in safety analysis codes for safety evaluation. BARC's integrated severe accident code PRABHAVINI, international code ASTEC adapted for PHWRs and NPCIL's licensing code will get benefitted from this assessment.

**5. Detailed Heat Transfer Invest. Inside Rectangular Duet with Matrix Cooling using Liquid Crystal Thermography: PI- Dr Andalib Tariq**

In the present research plan, a systematic study has been performed to assess the potential benefit of matrix cooling with varying range of geometrical parameters. In this regard, a novel optical based temperature-mapping technique entitled, the "liquid crystal thermography (LCT)" over the uniquely designed matrix surfaces inside a rectangular duct. Subsequently, it is planned to trace the footprints of surface heat transfer enhancement by evaluating the convective heat transfer coefficients over the heated surfaces covered with the layers of matrix geometries, has been obtained while solving the conduction scheme based on the temperature patterns. Finally, the effect of different matrix configurations and its performance has been evaluated based on the associated pressure penalty data, and the heat transfer measurements. One of the aim of the present research investigation is to systematically study the thermal performance variation of matrix cooling channel under different structural parameters; and for this here a quadratic response surface model is applied in order to find the optimal parameters combination. The experimental results which are used to find the optimal condition of matrix cooling channel in terms of rib angle ( $\alpha$ ), number of sub channels (N) and Reynolds number (Re), which will certainly enhance the scope and utility of this project. Eventually, the optimum value of geometrical parameter is found for the range of flow conditions under considerations, and suitable correlations are developed for estimating the Nusselt number, friction factor for the matrix channels as well as against the smooth duct.

**8. RESEARCH PUBLICATION**

Sl. No.	Details	Total Number
a	Conference/Symp./Seminars	46
b	International Conference	24
c	National Journals	67
d	International Journals	11

## 4.16 DEPARTMENT OF METALLURGICAL AND MATERIALS ENGINEERING

**Academic Staff: - 22 Students Admitted: UG/INT. M.Tech/M.Sc...100; PG...30; Ph.D...14**  
**Publications in: Book/Books Chapters 01 Journals: 73, Conferences: 45**  
**Projects: Research (Rs. in Lacs) 484.00 Consultancy (Rs. In Lacs) 6.00**

### 1. LIST OF FACULTY MEMBERS

**Anjan Sil**, Ph.D. (BHU Varanasi)  
*Electro-Ceramic Materials*

**B.S.S. Daniel**, Ph.D. (IIT Kanpur)  
*Composite and Metallurgical Thermodynamics*

**Depruba Lahiri**, Ph.D.(Florida International University,USA) *Biomaterials, Tribology, nanocomposites, Energy Materials*

**Devendra Puri**, Ph.D. (Roorkee)  
*Extractive Metallurgy & Waste Utilisation*

**Devendra Singh**, Ph.D. (IIT Kanpur)  
*Powder Metallurgy*

**G.P. Chaudhari**, Ph.D. (Alabama, USA)  
*Physical Metallurgy*

**Indranil Lahiri**, Ph.D.(Florida International University,USA)*Nanomaterials*

**K.S. Suresh**, Ph.D. (IISc Bangalore)  
*Crystallography texture, Shape Memory alloys, Electron Microscopy*

**Mukesh Bhardwaj**, Ph.D. (IIT Kanpur)  
*Extractive Metallurgy, Corrosion, Electrocatalysis*

**Manoj B.V.Kumar**, Ph.D. (IIT Kanpur)  
*Ceramics, Tribology*

**Nikhil Dhawan**, Ph.D. (University of Utah, USA) *Mineral Processing, Extractive Metallurgy, Waste Utilization*

**Prakriti K. Ghosh**, Ph.D. (Roorkee)  
*Joining of Materials*

**R. Jayaganthan**, Ph.D. (IISc Bangalore)  
*Nano Materials, Corrosion Engg.*

**Sai, Meka Ramudu**, Ph.D. (University of Stuttgart, Germany) *Internal precipitation in solids*

**Sadan Ghosh**, Ph.D. (Karlsruhe Institute of Technology, Germany, *Physical Metallurgy*

**Sourav Das**, Ph.D. (IIT Kharagpur)  
*Steel Physical Metallurgy, Alloy design, Structure-property Correlation*

**Sharvan Kumar**, ME (Roorkee)  
*Physical & Industrial Metallurgy*

**Suhrit Mula**, Ph.D.(IIT Kharagpur)  
*Nanomaterials, Powder Metallurgy*

**Sumeer K. Nath**, Ph.D. (Roorkee)  
*Head, Materials Design & Development & Tribology*

**Ujjwal Prakash**, Ph.D. (Sheffield, UK)  
*Physical Metallurgy*

**Vivek Pancholi**, Ph.D. (IIT Bombay)  
*Physical Metallurgy*

**Vikram Dabhade**, Ph.D. (IIT Bombay)  
*Powder Metallurgy*

### 2. HONORS AND AWARDS TO FACULTY MEMBERS

1. Dr. V. Dhabade received PMAI Young Promising Professional Award, presented by the Powder Metallurgy Association of India (PMAI) at the International conference on Powder Metallurgy, New Delhi, 20-22 February 2016 (citation plus Rs.25000)
2. Prof. AnjanSil has been nominated for visit to Germany under INSA Bilateral exchange programme 2017.
3. Dr. Nikhil Dhawan, selected as Member Ayurvedic Pharmacopoeia Committee (APC), Ministry of AYUSH, March 27-29, 2016.

### 3. DISTINGUISHED VISITORS TO THE DEPARTMENT (NATIONAL/INTERNATIONAL)

Name	Designation and Affiliation	Purpose	Dates
Dr. Kevin M Knowles	University Senior Lecturer, University of Cambridge, Department of Materials Science and Metallurgy United Kingdom	Visited IIT Roorkee as an International expert to deliver lectures in the GIAN programme.	3-10 Dec. 2016
Dr. Prasanta Kumar Biswas	Ex-Chief Scientist, CSIR-CGCRI, Kolkata	To deliver an invited lecture.	26 Sept. 2016
Mr. S Narahari Prasad	AGM – R&D, MIDHANI, Hyderabad	To meet faculty members for possible project collaboration	16 Nov 2016

#### 4. INTERNSHIPS TO OTHER STUDENTS IN IIT – ROORKEE

Sl. No.	Name of student	Name of Supervisor	Under Graduate	Post Graduate	Name of Institute	Period
1.	Anshuman Goyal, Seth Riddheish Anil Kumar	Vocational training	B.Tech.	Centre For Social Responsibility & Leadership	8 weeks	Anshuman Goyal, Seth Riddheish Anil Kumar
2.	Apurva Singhal	Vocational training	B.Tech.	Innoplexus Data Science	8 weeks	Apurva Singhal
3.	Aviral Srivastava, Shubham Jain, Vertika Bansal	Vocational training	B.Tech.	Sjain Ventures limited (marketing)	8 weeks	Aviral Srivastava, Shubham Jain, Vertika Bansal
4.	K N Sasidhar, Suvam Das	Vocational training	B.Tech.	Tata Steel Ltd	8 weeks	K N Sasidhar, Suvam Das
5.	Nitin Kant, Rishabh Parihar, Siddharth Pandey	Vocational training	B.Tech.	Vardhman Special Steels Ltd	8 weeks	Nitin Kant, Rishabh Parihar, Siddharth Pandey
6.	Pratyush Kumar, Sandeep Singh	Vocational training	B.Tech.	Jindal Stainless Ltd	8 weeks	Pratyush Kumar, Sandeep Singh
7.	Rohit	Vocational training	B.Tech.	Practo	8 weeks	Rohit
8.	Siddhant Tripathy	Vocational training	B.Tech.	Reliance Industries Ltd.	8 weeks	Siddhant Tripathy
9.	Ujjwal Kumar Gupta	Vocational training	B.Tech.	Kisco Castings India Ltd	8 weeks	Ujjwal Kumar Gupta
10.	Vijay Kumar Verma, Shubham Gupta	Vocational training	B.Tech.	Jindal Stainless Ltd	8 weeks	Vijay Kumar Verma, Shubham Gupta
11.	Vipra Ritvik Ravindra	Vocational training	B.Tech.	Fuzzylogix	8 weeks	Vipra Ritvik Ravindra

#### 5. ACADEMIC ACTIVITIES ORGANIZED BY THE DEPARTMENT

Name of the conf/seminar/symp/workshop	Name of the Chairman	Sponsored by	Dates
QIP Short term course: Materials and Processes for High Temperature Applications	Coordinators: Dr. B. V. Manoj Kumar & Dr. V. V. Dabhade	AICTE	June 06-10, 2016
GIAN course: Microstructural engineering and properties of advanced ceramics" November 15-21, 2016, IIT Roorkee	Coordinators: Dr. B. V. Manoj Kumar	MHRD	Nov. 15-21, 2016
GIAN Programme	Prof. AnjanSil (Course Coordinator)	MHRD, Govt of India	5-10 Dec. 2016
AICTE Sponsored Short Term Course "Relevance of nanotechnology to the rechargeable battery technology	Dr. Yogesh Sharma & Prof. AnjanSil (Course Coordinator)	AICTE through QIP Centre IIT Roorkee	18 – 22 July 2016
Metallurgical Engineering 1969 Batch Reunion, IIT Roorkee	Department	Department of Metallurgical and Materials Engineering and Institute Alumni Affairs & International Relations.	14 – 16 October 2016

## 6. SPONSORED RESEARCH PROJECTS:

Sl. No.	Project Status	Total No. of Projects	Amount (Rs. In lacs)
1.	Completed Projects	2	15
2.	Ongoing Projects	11	364
3.	New Projects	03	105

## 7. SERVICE TO INDUSTRIES

### a. Consultancy Project

Sl. No.	Project Status	Total No. of Projects	Amount (Rs. In lacs)
1	Completed Projects	2	6
2.	Ongoing Projects	00	00
3.	New Projects	00	00

### b. Testing Services

Sl. No.	No. of Industries Served	Total outlay (Rs. In lacs)
1	12	16.47

## 8. SUMMARY OF MAJOR SPONSORED RESEARCH SCHEMES AND CONSULTANCY PROJECTS (Rs. 20 lacs) (A brief Write-up up to 100 words) (New Projects during the year 2016-17).

- Surface Modified Metallic Orthopedic Implant for Sustained Drug Release (PI) - DST, TSDP (through the call on AMT)
- Developing Hybrid Multiscale Carbon Filler Reinforced Epoxy Composite for Structural Application (PI) - BRNS (DAE)
- Developing Polymer Based Scaffold with Electrical and Topographical Cue for Neural Tissue Engineering (PI) - ICMR
- Early career research award funded by DST-SERB on "Strain evolution during thermo-mechanical loading of a crack in a microstructure engineered NiTi based shape memory alloy using Digital Image Correlation and Electron Back Scatter Diffraction". Fracture behavior analysis of NiTi shape memory alloys at macro scale using digital image correlation and micro scale using high resolution electron back scattered diffraction will be carried out.
- Extraction of potash values from silicate rocks, Ministry of Mines.
- Early career research award funded by DST-SERB on "Investigation of reduction and microwave roasting for banded iron ores.

## 9. SCIENTIFIC AND TECHNICAL REPORTS

Title of the Projects	Participants	Authors	Remarks
Porous copper electrodeposits with large electrochemically active surface area as a substrate for electrocatalytic materials	Science and Engineering Research Board, Department of Science and Technology, Govt. of India And IIT-Roorkee	Dr. Mukesh Bhardwaj	Project completion report

## 10. RESEARCH PUBLICATION

Sl. No.	Details	Total Number
a	Conference/Symp./Seminars	–
b	International Conference	45
c	National Journals	–
d	International Journals	73

## 4.17 DEPARTMENT OF PAPER TECHNOLOGY

*Academic Staff: 25; Students Admitted: UG- 75, PG- 37, Ph.D.. - 106;  
Publications: Books/Book Chapters: 03, Journals: 52, Conferences : 38,  
Projects Research – Rs. 1208.83 lacs*

### 1. SALIENT FEATURES

The Saharanpur Campus has three departments viz. Department of Paper Technology, Department of Polymer & Process Engineering and Department of Applied Sciences & Engineering.

#### Department of Paper Technology

The Department of Paper Technology (DPT) is the oldest Department of the Saharanpur Campus which offers Two Year M.Tech. Paper Technology program in Pulp & Paper Technology. The Department has a well developed academic and research infrastructure. Its faculty is engaged in teaching, research and industrial consultancy. The courses aim to cater to the needs of Paper Industries across the country.

#### Department of Polymer and Process Engineering

Department of Polymer & Process Engineering (DPPE) is a new department in Saharanpur Campus. The Department offers academic courses leading to B.Tech. in Polymer Science & Technology, and a Dual Degree Program of B.Tech. in Process Engineering with MBA. The Department also performs fundamental and applied research in the areas of Polymer Science and Technology, Process Engineering and Management. The courses aim to cater to the needs of the vastly developing and much demanded **Polymer and Process** industries across the globe.

#### Department of Applied Sciences and Engineering

The Department of Applied Science and Engineering comprises multi-disciplinary faculty members mainly related to the disciplines like Physics, Chemistry, Mathematics, Humanities (English Literature), Electrical / Electronic Engineering to cater the academic requirements of multi-disciplinary students of the Campus. Our faculty members and scholars are actively engaged in the most promising doctoral and post-doctoral researches with an access to state of art educational/Research laboratories for both, Basic as well as Applied Science and Engineering.

#### Packaging Technology Program

The Centre of Excellence in Packaging Technology was started in 2014 with the intake of 20 students per year in Two year Master of Technology in Saharanpur Campus. The Centre is being supported by leading experts from outside institutions in academics and research such as Michigan University, Pepsico, USA and Packaging Institutions and Industries in India. The course is aimed to cater to the needs of highly demanding **Packaging Industries** across the globe.

### GENERAL INFRASTRUCTURE

1. All the above Departments have procured state- of-the-art research and laboratory equipment worth several crores including FIST project sponsored by DST, New Delhi. Most of the instruments have been installed and they are being extensively used for academic research purpose. The list includes: UV-vis., FTIR, Dynamic Light Scattering (DLS), Gel Permeation Chromatography, Zeta Size Analyser, AFM, Glove Box, Galvanostat, Hot Stage Polarizing Microscope, FE-SEM, Micro/Nano Grinder, Twin Screw Extruder, Micro Injection Molding, Rheometer, Injection Molding Machine, Hot Press, Rubber Injection Moulding Machine and other wide range of laboratory equipment for paper, polymer, process and materials science programs.
2. Synthetic Basketball and Lawn Tennis Courts with befitted flood lights have already been commissioned. Main Ground has also been encircled with fencing all around as per the plan of (E&W Department).
3. A Multi Story Faculty Residential Complex (TRIVENI APARTMENTS) has been allotted to the faculty members. Twenty one flats have been occupied by faculty members including one Assistant Registrar.
4. Air Conditioning of New Technology Block (7-Story Building) is in perfect order.
5. Old Library building has been made functional after minor repair and white wash barring the use of its first floor due to weak load bearing structural strength. New furniture has been made available through MGLCL, IITR. Major structural modifications and AC fittings are yet to be initiated in the Auditorium and Guest Houses of Saharanpur Campus.



6. Necessary Physiotherapy Equipment for Dispensary has been purchased and functional. One Physiotherapist on contract was appointed to help the students and residents of the SRE Campus.

## 2. LIST OF FACULTY MEMBERS

### A. Bandyopadhyay

Ph.D. (IACS Calcutta), Polymer Chemistry, Polymers for Smart Materials, Organic-Metallic Hybrid Polymer

### Abhijit Maiti

Ph.D. (IIT Kharagpur), Chemical Technology, Membrane Technology

### A.K. Singh

Ph.D. (IIT Roorkee), Corrosion Engineering, Material Science, Paper Properties

### (Mrs.) Ashu Khanna

Ph.D. (Gurukul Kangri, Harwar), MBA Finance

### Asish Kadam,

Ph.D. (France), Packaging Technology

### (Mrs.) Chhaya Sharma,

Ph.D. (IIT Roorkee), Environment, Biotechnology, Pulp & Paper and Industrial Chemistry

### Dharm Dutt,

Ph.D. (IIT Roorkee), Stock Preparations, Speciality Paper, Waste Minimization, Fiber Morphology and Biotechnology in Pulp and Paper

### Gaurav Manik

Ph.D. (IIT Bombay), Chemical Engineering, Polymer Adhesives, Modeling and Simulation

### U.K. Ghosh,

Ph.D. (BHU), Chemical Engineering, Transport Process & Environmental Biotechnology

### (Ms.) Millie Pant,

Ph.D. (IIT Roorkee) Soft Computing Numerical Optimization/Parallel Computing

### N.C. Mishra,

Ph.D. (Max-Planck Institute of Colloids and Interface, Germany) Chemical Engineering, Interface Science, Nano-biotechnology, Tissue Engineering,

### Pradip Kumar Maji,

Ph.D. (IIT Kharagpur), Polymer Technology

### Rajan Arora,

Ph.D. (IIT Bombay), Applied Mathematics (Fluid Mechanics)

### Ram Kumar,

ME (Roorkee), Chemical Recovery, Environmental and Energy Management

### Sanjay Palsule,

Ph.D. (Hans-watt Univ. Edinburg-UK), Polymer Science and Technology-Advance Polymer Blend and Polymer Composites

### Sanjit Kr. Mishra,

Ph.D. (BHU, Varanasi), Indian Writing in English

### S.C. Sharma,

Ph.D. (IIT Roorkee, Communication, WL & Mobile Computing, Cloud Computing and Computer Control

### S.P. Singh,

Ph.D. (IIT Roorkee), Printability Physics, Process Design and development

### Sujay Chattopadhyay,

Ph.D. (IISc Bangalore), Chemical Engineering, Polymeric Membranes

### Sham Sunder Ravindernath,

Ph.D. (Akron, USA), Polymer Technology

### Mahara, Tripti

Ph.D. (IIT Kanpur), ERP, Supply Chain Management, E-Commerce

### Y.S. Negi, Head

Ph.D. (IIT Delhi) Polymer Science and Engineering (synthesis, characterization and applications) Biodegradable Polymers, Cellulosic Nanomaterials for Drug Delivery System, Organic Liquid Crystalline Materials, Composites and Polymers for Micro/Optoelectronics, Recycling of Polymers & Polymer Fibers, Food Packaging Materials

### Adjunct Faculty

#### Anurag Kulsreshtha,

Packaging Technology Program

### DST Inspire Faculty

#### Garima Agarwal,

Department of Polymer & Process Engineering

## 3. HONOURS AND AWARDS TO FACULTY MEMBERS

<b>Dr. Y.S. Negi</b>	Editorial Board Member-J. Materials Physics and Chemistry, USA.
	Editorial Board Member-J. Nanobiotechnology, Romania.
	Member-GC Meeting and (Member-Recruitment of Director/Scientist F/G) CPPRI at Ministry of Commerce and Industry, Udyog Bhawan, New Delhi.
	Member-Selection Board Meeting of Lecturer/Assistant Professor UPSC, Gurukul Kangri, Haridwar (UK).
	Member-24 <sup>th</sup> Meeting of Plastics Packaging Sectional Committee, PCD-21, at Bureau of Indian Standards, Manak Bhawan, Bahadur Shah Zafar Marg, New Delhi.
	Member-Research Policy Committee (RPC), Indian Council of Forestry Research & Education (ICFRE), Dehradun.

	External Member –Departmental Promotion Committee (Administrative Position), CPPRI, Saharanpur.
	External Member –Departmental Promotion Committee (Scientists/Scientific Staff), CPPRI, Saharanpur.
	Chief Guest-Hindi Work Shop held at Saharanpur Campus, 21 Jan., 2016
	Member-Advisory Committee Poly Tech-2017, Pune
	Member-Expert Committee for SMILE projects IITR.
	Member-Selection Committee Meeting for Promotion of Faculty of University School of Basic and Applied Sciences , GGS Indraprastha University, Dwarka, New Delhi
<b>Dr. Dharm Dutt.</b>	Nominated as Project Evaluator by Forest Research Institute (FRI) Dehradun.
	Member of reviewing committee of FRI Dehradun constituted by UGC, New Delhi
	Nominated as Project Evaluator by Ministry of Environment and Forest (Demonstration Projects)
	Technical advisor of Sudhir Papers, Bangalore,
	Member of the committees: NCERT, New Delhi; IGNOU, New Delhi; Employment News, New Delhi
	Member of selection committee of Central Pulp and Paper Research Institute, Saharanpur
	Member of Peer and Core committee of Central Pollution Control Board, Delhi
	Reviewers of Journal Bio Resources, Industrial Crops and Products, Bio Resource Technology, Cellulose Chemistry and Technology
	Honorary Board of Director of M/s Khatema Fibers Ltd.
	Honorary Board of Director of M/s East and West Products Ltd.
<b>Dr. Pradip K. Maji</b>	Associate Editor, MOJ Polymer

#### 4. DISTINGUISHED VISITORS TO THE DEPARTMENT (NATIONAL/ INTERNATIONAL)

Name	Designation and Affiliation	Purpose	Date
Mr. Manish Kumar	Associate Director, Dr Reddy's Laboratory, Hyderabad	Guest Speaker	10 <sup>th</sup> Oct-16
Mr. Arun Pandey	President (Affiliatus Gravures, Noida)	Guest Speaker	14 <sup>th</sup> Oct-16
Dr. Alok Kulshreshtha	Assistant General Manager, Aikem Laboratories Ltd, Mumbai	Guest Speaker	25 <sup>th</sup> Oct-16
Dr. V.K. Gupta	Sr. Vice President Reliance R & D	Guest Speaker	
Dr. S.S. Kashyap	General Manager-DIT R & D	Guest Speaker	

#### 5. SPONSORED RESEARCH PROJECTS

Sl. No.	Project Status	Total No. of Projects	Amount (Rs. in lacs)
1.	Completed Projects	01	4.00
2.	Ongoing Projects	02	394.20
3.	New Projects	08	675.94

#### 6. SERVICE TO INDUSTRIES

##### Consultancy Project

Sl. No.	Project Status	Total No. of Projects	Amount (Rs. in lacs)
1.	Completed Projects	00	00
2.	Ongoing Projects	05	75.08
3.	New Projects	00	00

## 7. SUMMARY OF MAJOR SPONSORED RESEARCH SCHEMES AND CONSULTANCY PROJECTS (Rs. 20 lacs) (A brief Write-up upto 100 words) (New Projects during the year 2016-17).

Summary (Project by Dr. Abhijit Maiti): Population in the urban area is increasing rapidly; the decentralized drinking water generation system is in great demand. Water supply from centralized systems sometime needs additional household purification units to make the water drinkable. Water scarcity is a global issue and problem will increase many folds in near future. Physical performance of two coupled technologies like multistage distillation (MED) and solar PV-cell electricity generation unit would be implemented to produce drinking water. This coupled technology would be designed to produce drinking water from contaminated ground/surface water by arsenic and fluoride ions and water from other water bodies, e.g. river, rain harvested water, and sea. It has some advantages over the well developed technology like PV-electrical generation coupled reverse osmosis (RO) system, such as cost involved in the installment, operation and maintenance is minimum, and independency on feed water quality. The proposed MED system is aimed to produce 1.5-2.0m<sup>3</sup> drinking water/day.

**Project Title: "Development of sealants for self-repairing and puncture resistant tires with enhanced time performance and cost effectiveness"**

PROJECT SUMMARY: With increasing number of automobile vehicles during past few decades, a concern for safety issues as well as travelling comfort has encouraged researchers to find a useful instant solution to the problem of tire puncture. As a result effective non-puncture technologies need to be developed. The sealant needs to work effectively both in hot and cold climates to cover entire range of temperature operations spanning across countries like India, and also to demonstrate an instant sealing capacity for large sized holes in diverse range of vehicles-car, truck, large defence vehicles, etc. An ethylene glycol matrix with several additives based composition is planned to be formulated, characterized and tested to finally screen an optimized formulation that shall meet all the performance characteristics mentioned.

## 8. RESEARCH PUBLICATION

Sl. No.	Details	Total Number
a	Conference/Symp./Seminars	20
b	International Conference	18
c	National Journals	43
d	International Journals	09

## 4.18 DEPARTMENT OF PHYSICS

**Academic Staff: 35; Students Admitted: UG- 29, PG: (M.Tech) 10, (M.Sc.) 25, Ph.D.:15; Publications: Journals: 85, Conferences: 51; New Projects: Research- Rs. 467.48 Lacs**

### 1. SALIENT FEATURES

- (i) New program for Integrated M.Sc. and M.Tech. (Photonics) have been introduced.
- (ii) New laboratory of Microprocessor has been set up by Dr. Rajesh Kumar. Dr. Ajay Wasan converted old optics laboratory to applied optics laboratory by adding two and three slit interference experiments, single slit diffraction, Michelson Interferometer as well as optical activity setup.
- (iii) The department inducted two new faculty members mainly for undergraduate program in Engineering Physics (EP).

### 2. LIST OF FACULTY MEMBERS

**Aalok Misra**, Ph.D. (Rochester University, USA) High Energy Physics: String Theory, Gauge Field Theories, Meson-Baryon Low Energy Effective Field Theories

**Ajay**, Ph.D. (GB Pant University, Pantnagar) Correlated low dimensional systems, electronic, magnetic and transport properties, electronic transport in layered graphene nanostructures, electronic properties of low dimensional nano systems, theoretical aspects of high temperature superconductivity

**Ajay Wasan**, Ph.D. (IIT Kanpur) Atomic spectroscopy, Quantum Optics, Bose-Einstein condensation, Quantum computing

**Ajay Y. Deo**, Ph.D. (Mumbai University) Experimental Nuclear Physics, Nuclear structure at high-spin, beta-decay studies, heavy-ion induced

**Anil Kumar Gourishetty**, Ph.D. (IIT Kharagpur) Nuclear Physics, Monte Carlo simulation of response of radiation detectors, Radiation induced effects in thin films, Characterization of radiation detectors for different applications

**Anirban Mitra**, Ph.D. (IIT Kanpur) Laser, opto-electronics, Optical properties of semiconductors

**Arup Samanta**, PhD ( Indian Association for the Cultivation of Science, Kolkata) Nano-electronics:, Single Electron Transistors, Dopant Atom Transistors, Quantum Computing, Single Electron Metrology, Silicon Photovoltaics:, SiNW- and Quantum Dots-based Solar Cells.

**Binoy Krishna Patra**, Ph.D. (BHU, Varanasi) High Energy Nuclear Physics, Quark – Gluon Plasma in ultra-relativistic nucleus-nucleus Collisions and in the early Universe, Low-energy effective field theory, Spectral Representation in finite-temperature field theory

**Byas Dev Indu**, DPhil (HNB University, Garhwal) Condensed Matter Physics: Theoretical Study of Impurity & anharmonicity Effects on the Acoustical,

Optical & Electronic Properties of High Temperature Low Dimensional Super Conductors, Semiconductors & Insulators and effects of lower dimensions

**Davinder Kaur**, Ph.D. (Delhi University, Delhi) Experimental Condensed Matter Physics: Thin films & Devices of Solid State Functional Materials Especially High Temperature Superconductors and CMR Materials

**Ghanshyam Das Varma**, Ph.D. (BHU, Varanasi) Experimental Condensed Matter Physics: High Temperature Super Conductor, Nano Carbon Tubes

**Kanhalya Lal Yadav**, Ph.D. (IIT Kharagpur) Experimental Condensed Matter Physics, Smart Electro-Ceramics & Biomaterials

**Lalita Sharma**, Ph.D. (IIT Roorkee) Atomic and Molecular Collision Physics: Theory of Scattering of Spin Polarized Electrons with Spin Polarized Atomic Systems. Atomic Structure Calculations with Relativistic Effects, Autoionizing States & their Decay

**Mayank Goswami**, Ph.D. (IIT Kanpur) Nuclear Physics, Wave Propagation, Mathematical Physics, Inverse Problems & Algorithm Development, instrumentation & Applied Physics, Computed Tomography, X-Ray/Gamma Ray/Ultrasound/Optical Coherence/Positron Emission Tomography

**Monojit Bag** Ph.D. (JNCASR, Bengaluru) Organic Electronics, Organic Solar cells, Organic LEDs, FETs, sensors & detectors, Electrical & optical characterization, Organic-inorganic hybrid materials, Perovskite solar cells, stability study, impedance spectroscopy, optical microscopy., Intensity Modulated Photocurrent Spectroscopy, multi-layered device structure, polymer/electrolyte based device, bioelectronics

**Moumita Maiti**, Ph.D. (SINP, Kolkata) Nuclear Physics and its applications, Production of neutron deficient radio nuclides

**M. V. Sunil Krishna**, Ph.D. (IIT Roorkee)  
Space and Atmospheric Physics, Optical Aeronomy, Auroral & Airglow Studies, Planetary Atmospheres, Space Weather, Atmospheric Chemistry and Dynamics, Modeling of airglow, Radiative processes in thermosphere

**Nataraj S. Hullyar** Ph.D. (IAP, Bengaluru)  
Atomic and Molecular Physics, Symmetry violations in atoms and molecules, Atomic and molecular cloaks, Matter-antimatter symmetry

**P Sanyal**, Ph.D. (IISc Bengaluru)  
Theoretical Solid State Physics

**P.C. Srivastava**, Ph.D. (Allahabad University) Theoretical Nuclear Structure Physics, Exotic nuclei, Nuclear Models, Large-scale shell model, Double and Neutrinoless double beta decay

**P. Arumugam** Ph.D. (MS University, Thirunelveli) Nuclear Structure theory, Nuclear Astrophysics, Hot and rotating nuclei, Relativistic mean field theory

**Rajdeep Chatterjee**, Ph.D. (SINP, Calcutta)  
Theoretical Nuclear Physics, Nuclear Astrophysics, Low and medium energy nuclear reactions, Unified models of nuclear structure and reactions, exotic radioactivity, physics of dripline nuclei

**Puneet Jain**, Ph.D. (SOKENDAI, Japan)  
Accelerator Physics, Beam dynamics and instability issues, High-order-modes studies in superconducting radio-frequency accelerators

**Rajesh Kumar** Ph.D. (Ghent University, Belgium) Photonics, Optical Interconnects, Optical Logic, Optical Signal Processing (Experimental), Optical Buffers

**Rajesh Srivastava**, Ph.D. (BHU, Varanasi)  
Head, Atomic and Molecular Collision Physics: Theory of Scattering of Spin Polarized Electrons with Spin Polarized Atomic Systems. Atomic Structure Calculations with Relativistic Effects, Autoionizing States & their Decay, Atomic processes in plasma, Plasma modeling

**Ravindra Nath**, Ph.D. (IIT Delhi)  
Condensed Matter Physics: Piezo-Pyro & Ferroelectric Properties of Polymers & Device Applications.

**Soumitra Satapathi**, Ph.D. (University of Massachusetts Lowell, USA) Experimental

Condensed Matter Physics, organic photovoltaics, optical sensors, organic electronics, nanotechnology, Biomedical Optics and nonlinear imaging, Biophysics, Nano-Biotechnology

**Sumanta Sarkhel**, Ph.D. (PRL, Ahmedabad)  
Upper Atmospheric Physics, Sodium Airglow, Mesospheric Chemistry and Dynamics, Atmospheric Gravity Waves, Optical Instruments, Active and Passive Remote sensing, Airglow Imager

**Tashi Nautiyal**, Ph.D. (University of Roorkee) Condensed Matter Physics: Theoretical Study of Electronic, Magnetic & Optical Properties of Compounds

**Tulika Maitra**, Ph.D. (IIT Kharagpur)  
Condensed Matter Theory, Correlated Electronic Systems, frustrated magnetic systems, Organic electronic systems

**Vipul Rastogi**, Ph.D. (IIT Delhi) Laser Physics: Fiber Optics, Integrated Optics, Photonics

**Vivek K. Malik** Ph.D. (University of Fribourg, Switzerland) Experimental Condensed Matter Physics, Thin Films and Multilayers of Complex Oxide Materials, Magnetism, Superconductivity

**Yogesh Kumar Sharma**, Ph.D. (NUS Singapore) Experimental Condensed Matter Physics, Energy Storage Materials: Nanomaterials, crystal Structure, Ionic and electronic conduction, Energy Storage, Li-Ion Battery, Supercapacitor, Fuel cells, Nanotechnology and Nanoscience

**Vir Singh**, Ph.D. (BHU, Varanasi)  
Atmospheric Physics: Atmospheric & Space Science, Auroral & Airglow Studies, Planetary Atmospheres

#### Emeritus Professor/ Fellow

**Ashok Kumar Jain**, Ph.D. (BHU, Varanasi)  
Nuclear Physics: High-Spin States, Super-Deformed Nuclei; Semi-Classical Physics: Order & Chaos in Nuclei, Periodic Orbit Theory

#### Visiting Faculty/PDF/IF etc.

**Bhaswar Chatterjee**, PDF

#### Other Academic Staff

**Meena Kothiyari** (Scientific officer)

### 3. HONORS AND AWARDS TO FACULTY MEMBERS

Prof. Rajesh Srivastava	Member, International Advisory Committee for the 19th International Symposium on Polarization and Correlation in Electronic and Atomic Collisions* to be held during August 2-4, 2017 at Palm Cove, Queensland, Australia
	Chairman, Planning Committee on SERC School on electron impact and related phenomena to be held at Kolkata, 17Jan. 2018.
Prof. A.K. Jain	Prof. P.A. Pandya Endowment Lecture award-2016, Indian Physics Association.
	Member, Expert Committee IRPHA program of DST to evaluate INGA project.

Prof. D. Kaur	Shastri Indo-Canadian Fellowship Award (2017).
Dr. Vipul Rastogi	IAPT-Dinbandhu Sahu Memorial Award for Undergraduate Physics Teaching from Indian Association of Physics Teachers.
Dr. Soumita Satapathi	Bhaskara Advanced Solar Energy Fellowship from Indo-US Science and Technology Forum and DST, Govt. of India. Indo-DAAD Fellowship from DST, Govt. of India.

#### 4. DISTINGUISHED VISITORS TO THE DEPARTMENT (NATIONAL/ INTERNATIONAL)

Sl. No.	Name of Visitor	Designation and Affiliation	Purpose	Dates of visit
1.	Prof. Mukundan Thelakkat	University of Bayreuth, Germany	Seminar	21 September, 2016
2.	Dr. Partha Bagchi	VECC, Kolkata	Seminar	29 September, 2016
3.	Prof. Ajit Mohan Srivastava	IOP, Bhubaneswar	Seminar	3-6 October, 2016
4.	Prof. Jayant Kumar	University of Massachusetts Lowell, USA	Research Collaboration	19 October, 2016
5.	Prof. Radhey Shyam	SINP, Kolkata	Research Collaboration	9-17 March, 2017
6.	Dr. Sangeeta Sharma	Max-Planck-Institute für Mikrostrukturphysik, Weinberg, Germany	Research Collaboration	18 Nov-2016
7.	Prof. Carlos Bertulani	Texas A & M University, USA	Seminar and Research Collaboration	9-11 March, 2017
8.	Dr. Tapan Misra	Director, Space Application Centre, ISRO, Ahmedabad	Guest Lecture	26 August, 2016
9.	Dr. P. Sreekumar	Director, Indian Institute of Astrophysics, Bengaluru	Institute Lecture	15-17 March, 2017

#### 5. ACADEMIC ACTIVITIES ORGANIZED BY THE DEPARTMENT

Name of the conf./seminar/ symp./ workshop	Name of the Chairman	Sponsored by	Dates
<i>Recent Advances in Strongly correlated Electronic Materials</i>	Tulika Maitra (Convener) Vivek K Malik (Co-convener)	SERB-DST, CSIR, BRNS, TIFR, IMSC	08-10 Feb. 2017
Indo-Japan Accelerator School (IJAS 2017)	Punnet Jain (Convener)	SERB-DST	9-11 March 2017
Familiarization Workshop on Nanofabrication Technologies	Vivek K. Mallik (Coordinator) Arup Samanta (Joint- Coordinator)	INUP, IISc Bangalore	27-28 April, 2017

#### 6. SPONSORED RESEARCH PROJECTS

Sl. No.	Project Status	Total No. of Projects	Amount (Rs. In lacs)
1.	Completed Projects	04	67.50
2.	Ongoing Projects	04	61.92
3.	New Projects	13	467.48

## **7. SUMMARY OF MAJOR SPONSORED RESEARCH SCHEMES AND CONSULTANCY PROJECTS (Rs. 20 Lacs)- A brief write-up upto 100 words (New Projects during the year 2016-17)**

### **Study of elastic electron scattering from molecules and its application to plasma modelling (Prof. Rajesh Srivastava & Dr. Lalita Sharma)**

Electron collisions with molecules are the dominant processes in cool plasma and discharges. There are a number of industrial applications which depend on electron-molecule collisions, e.g., in spark plugs that fire internal combustion engines or their use in electric lighting, to initiate the plasma etching processes where electron-molecule collisions initiate many laser processes and are routinely used in discharges to stimulate interesting chemistry. Electron collisions also take place in nature, for example, in our own atmosphere through auroras and lightning. In space, besides planetary auroras, vast tracks of the interstellar medium are weakly ionized plasma where the cold chemistry of molecular ions predominates. Electron collisions control much of this chemistry. Hotter regions in the interstellar medium, such as shocks and planetary nebulae, can also be sensitive to electron-molecule collision processes. The importance of electron-molecule collisions has stimulated significant work both experimentally and theoretically. There are new experimental results reported for electron scattering from various molecules and there are not accurate or reliable theories to explain and compare the results. Moreover, the experimental studies are scarce for various large molecules and requirement of reliable theoretical approach is mandatory. In the light of the above facts we propose to undertake a theoretical study of elastic scattering of electrons from a wide variety of the molecular systems using optical potential approach and explore its application to plasma modeling.

### **Study of atomic processes for reliable plasma modeling (Prof. Rajesh Srivastava & Dr. Lalita Sharma)**

Electron-induced processes are among the key processes which must be considered for modeling of variety plasma. We propose to develop CR model to predicting plasma parameters by utilizing our fine-structure reliable cross sections and suitable electron energy distribution function. In fact, the success of the model depends crucially on the accuracy of the required cross-sections/rate coefficients for various electron-impact processes and as well as a suitable electron energy distribution function (EEDF). These rate coefficients are required for a wide range of atomic systems ranging from neutral atoms to highly charged ions, depending on the nature of plasma. However, experimental data for electron-impact cross sections/rates is generally not available for all possible transitions and for all ionic states. Therefore, necessity of the cross section data has to be supplemented by reliable theoretical calculations. In this regard, we propose to implement relativistic distorted wave theory (RDW) to calculate electron impact excitation cross sections for fine-structure transitions of atoms/ions, which are relevant to plasma modeling. The RDW method will be developed to be able to consider highly charged heavy ions by taking into account quantum electrodynamic effects which have sizeable effect on such ions. Further, for plasma modeling a suitable collisional radiative (CR) model will be developed which will use our calculated RDW cross sections to predict various plasma parameters, e.g., plasma temperature, population densities of excited species and line intensities etc. The proposed studies not only casts light on the fundamental nature of the highly charged heavy ions, but also have vast practical applications e.g. to assist the International project on fusion engineering, to manufacture many products such as gas lasers, plasma displays and most importantly, semiconductor circuits.

### **Investigation of Earth's Upper Atmosphere using Optical Imaging Techniques (Dr. Sumanta Sarkhel)**

The proposed sponsored research on exploring Earth's upper atmosphere using optical imaging techniques offers a unique opportunity to investigate plasma irregularities in the F region of ionosphere. It will help us to understand the mechanism behind the interaction of mid latitude plasma irregularities on low-latitude plasma irregularities with the collaborative use of multiple optical imaging instruments and will bring out the knowledge of coupling between magnetic low and mid latitude over Indian sector. The outcome of the proposed research will open up new scientific explorations in the field of airglow imaging. The proposed research is to attempt for the detection of the magnetic mid-latitude generated Medium Scale Traveling Ionospheric Disturbances (MSTIDs) and its effect on low-latitude plasma irregularities will help to locate the dynamic boundary between magnetic low and mid latitude over Indian sector. This proposed research needs a multi-wavelength airglow imager and will be operated from a high altitude observatory, Hanle, Leh-Ladakh (32.78 N, 78.96 E; altitude: 4.5 km above mean sea level) operated by Indian Institute of Astrophysics, Bengaluru. There is no such Aeronomical observations reported from this part of Himalayan region so far. Therefore, the investigation on upper atmosphere and operating the airglow imager from Hanle, Leh-Ladakh is itself is a unique opportunity to study MSTIDs over the Indian sector.

**Investigation of semiconductor/electrolyte interfaces by impedance spectroscopy and photo-transient measurement (Dr. Monojit Bag):** This proposal focuses on the importance and utilities of interface engineering in organic, bioelectronics and organic-inorganic hybrid devices especially semiconductor/electrolyte interface based devices. So far most of these engineering have done by trial and error method without much characterization. The role of each interfacial layer should be well understood if one has to design efficient organic semiconductor/electrolyte based devices. There are several questions to be addressed in this proposal, some of them are a) How do photophysical properties of polymers/electrolyte interface change with semiconducting polymer band gap or electrolyte concentration? b) What is the role of charge transfer or ion transport at the semiconductor/electrolyte or polyelectrolyte interface? c) What is the impact of perovskites band gap on the photophysical properties of perovskite/electrolyte interfaces? In the current proposal, some of the non-destructive methods will be used to study Semiconductor/electrolyte interface, those are; Electrochemical Impedance spectroscopy (EIS), Intensity Modulated Photocurrent spectroscopy (IMPS) and transient photocurrent and photovoltage measurements.

**Low cost technology for waste water treatment for domestic and industrial applications -DST, Water Technology Initiative(Dr. Soumitra Satapathi)**

Clean water is of utmost importance for the wellbeing of large population of the country. This is also important for safe domestic water supply. There exist several water purification technologies but such systems are either inappropriate or too expensive to be used by the rural population and also in large scale. As a potential alternative, engineered nanomaterials based photo-catalysis has gained significant interest recently due to large aspect ratio, tunable photo-physical properties, and quantum confinement effects of these nanomaterials. Here we propose, graphene oxide (GO)/ poly-acrylonitrile (PAN) composite nanofibers synthesis by electrospinning method and their application for degradation of Rhodamine 6G (Rh6G) dye. Rh6G is a xanthenes based dye which is commonly used in different optoelectronics applications and as a coloring agent in various industries including cotton, silk, wool, fibers leather etc. It is a mutagen, hence highly toxic for cells, tissues and organisms. Dye removal efficiency will be investigated by monitoring UV-vis absorption intensity over time. These large area reusable graphene nanofibers will provide a scalable and novel route for photocatalytic degradation of carcinogenic dyes from industrial water.

**Fabrication of large area (1 cm X 1 cm) uniform, pin hole free and highly efficient (upto 18%) stable Perovskite solar cells - DST, Solar Energy Research Initiative (Dr. Soumitra Satapathi)**

We have a large social need for renewable energy especially solar energy. With about 300 clear, sunny days in a year, India's theoretically calculated solar energy incidence on its land area alone is about 5,000 trillion kilowatt-hours (kWh) per year (or 5 EWh/yr). The successful execution of the proposed research project will enable us to fabricate large area (1 cm<sup>2</sup> cm<sup>2</sup>) pin hole free and uniform, highly efficient (upto 18%) reproducible and stable perovskite solar cells. This will enable us to provide power in remote areas of the country and therefore will have a large social and technological impact. Here, we proposed a combination approach in cationic and anionic sites in organic-inorganic lead perovskites and room temperature solvent extraction method to fabricate large area, uniform, pin-hole free perovskite film. The morphology and photophysics of these films will be studied and high efficiency solar cells will be fabricated. Therefore, the successful execution of this project will not only benefit people from rural and hilly areas but also this is directly transferrable technology to realize zero energy smart cities.

**Development of Portable Sensing Devices for On-Site and Visual Detection of Nitroaromatic Explosives -CSIR (Dr. Soumitra Satapathi)**

Sensing chemical wares like 2, 4 Dinitrotoluene (DNT) and 2, 4, 6 Trinitrotoluene (TNT) are of significant interest for civilian and military safety as well as for environmental reasons. The nitroaromatic explosives are highly explosives and environmentally detrimental substance that has been of pressing social concern. It is well-known that fluorescent technique bears the merits of high signal output and simplicity. Especially combination of near-infrared (NIR, 650-900 nm) and turn-on fluorescence can greatly improve the sensitivity due to the efficient decrease of background signals both from short wavelength (400-600 nm) emission in samples and from probe signals themselves. Unfortunately, the present designs for TNT sensing are almost focused on fluorescence quenching based on the electron-deficiency of TNT molecule and employ short wave-length emission signal. As a potential alternative, here we proposed graphene based fluorescent nanomaterials like quantum dots for sensing a broad class of nitroaromatic compounds with very high sensitivity. This will have a direct military application where on-site and visual detection is extreme necessity.



**Design and Experimental Explorations on Phase Change All-Photonic Memory(DEEPAM) (Dr. Rajesh Kumar)**

In order to provide a partial solution to von Neumann bottleneck, this project aims to investigate all-optical non-volatile memory with low foot-print, high switching speed (of the order of few to several GHz) with lower power consumption as compared to electronic solutions available commercially. The target material for realization of proposed all-optical memory will be a phase change material in thin-film form. The most suitable candidate at present is a chalcogenide-Ge<sub>2</sub>Sb<sub>2</sub>Te<sub>5</sub>(GST). For the realization of all-photonic memory, the optical waveguide platform will be enabled in which the GST material can be incorporated. The target waveguide platform in this project is Silicon-on-Insulator (SOI) due to its compatibility with Complementary-Metal-Oxide-Semiconductor (CMOS) fabrication processes. The research work proposed here is envisaged to be of high impact for short reach as well as long reach communication. Computing and optical packet switching are the areas that will greatly benefit from the outcome of this research in terms of speed of operation and energy consumption. If efforts in the direction of non-von Neumann computer architecture become a success, it will be a paradigm shift in the way the data centers function today. Success of this effort will increase confidence for further use of optics in modern computing systems.

**8. RESEARCH PUBLICATION**

Sl. No.	Details	Total Number
a	Conference/Symp./Seminars	46
b	International Conference	05
c	National Journals	00
d	International Journals	85

## 4.19 DEPARTMENT OF WATER RESOURCES DEVELOPMENT & MANAGEMENT

*Academic Staff: 06 Students Admitted: PG : 44 ; Ph.D : 03  
Publications In: Book/Books Chapters: 02, Journals: 53 , Conferences: 24,  
Sponsored Research project: Rs. 179.66 Lacs, Consultancy Projects: Rs. 430.098 Lacs*

### 1. SALIENT FEATURES

- The Department of WRD&M is a balanced blend of academicians and field engineers.
- The faculty is experienced in planning, design, construction, operation, and maintenance of water resources development projects (viz., hydropower, Irrigation management, and flood control management). It helps in implementation of application oriented academic programs.
- Since its creation in 1955, the Department has trained over 2681 serving engineers from 51 countries. The Department is offering post graduate training (P.G. Dip. / M.Tech.) in Water Resources Development and Irrigation Water Management

### 2. LIST OF FACULTY MEMBERS

**Ashish Pandey**, Ph.D. (IIT Kharagpur)  
Irrigation Water Management, Hydrological Modeling of Watershed, Remote Sensing and GIS Applications

**Deepak Khare**, Ph.D. (Roorkee), **Head**

**M.L. Kansal**, Ph.D. (Delhi Univ.)  
Water Resources Systems, Hydropower Operation Management and Drinking Water

**S.K. Mishra**, Ph.D. (Roorkee)  
Irrigation Water Management, Hydrology

**Thanga Raj Chelliah**, Ph.D. (IIT Roorkee)  
Power Electronics Applications in Large Pumped Storage Plants Ground Water, Hydraulic Structures, Watershed Management, Climate Change

**Emeritus Fellow**

**Nayan Sharma**, Ph.D. (Roorkee) River Engg., Hydraulic Structures & Irrigation Engg

### 3. HONOURS AND AWARDS TO FACULTY MEMBERS

1.	Dr. M. L. Kansal	JPSS Chair Professor (Hydropower), IIT Roorkee. Executive Member of Indian Association of Hydrologists (IAH) Chartered Engineer (I), Institution of Engineers, India Member, Indian Association of Agro-meteorologists (2016 onwards)
2.	Dr. Deepak Khare	Received Distinguished Scientist Award- Water Resources, December 2016 at Le Royal Meridien, Chennai, by Venus International Foundation 2016. The International Research Awards Scheme instituted by the Centre for Advanced Research and Design-CARD of Venus International Foundation
3.	Dr. Ashish Pandey	Received Eminent Engineers Award-2015 by the Institute of Engineers (India), Uttarakhand State Centre (IEI, UKSC), Dehradun.
4.	Dr. Nayan Sharma	IIT Roorkee has been conferred <b>S. N. Gupta Memorial Award</b> by The Indian Society of Hydraulics in their HYDRO-2016 INTERNATIONAL Conference held in CWPRS, Pune during December 8-11, 2016. The Indian Society of Hydraulics awarded JALVIGYAN PURASKAR jointly to Mohammad Aamir & Prof. Nayan Sharma for their research paper "Riverbank protection with Porcupine systems: development of rational design methodology", published in ISH Journal of Hydraulic Engineering.

#### 4. INTERNSHIPS OFFERED TO OTHER STUDENTS IN IIT – ROORKEE

Sl. No.	Name of student	Name of Supervisor	Under Graduate	Post Graduate	Name of Collaborative Institute	Period
1	Mr. Kush Paliwal	Dr. Deepak Khare	B. Tech Civil		Shiv Nadar University G.B. Nagar	May 15, 2016 to July 15, 2016
2	Ms. Kanika Agarwal	Dr. T.R. Chelliah	B. Tech Computer Sc. & Engg		G.B.P.U.A & T Pantnagar	May 15, 2016 to July 15, 2016
3	Ms. Prasujya Gogoi	Dr. Nayan Sharma		Ph. D.	Nottingham University, U.K.	May 04, 2016 to Sept 22, 2016

#### 5. ACADEMIC ACTIVITIES ORGANIZED BY THE DEPARTMENT

Name of the conf./seminar/symp./workshop	Name of the Chairman	Sponsored by	Dates
National Workshop on "Challenges in Irrigation Management for Food Security"	Dr. S.K. Mishra	Ministry of Water Resources, River Development & Ganga Rejuvenation, Govt. of India	November 26-27, 2016
Workshop on "Water Governance"	Dr. S.K. Mishra	Ministry of Water Resources, River Development & Ganga Rejuvenation, Govt. of India	September 19-20, 2016

#### 6. SPONSORED RESEARCH PROJECTS:

Sl.No.	Project Status	Total No. of Projects	Amount (Rs. in Lacs)
1	Completed Projects	03	84.10
2	Ongoing Projects	04	155.93
3	New Projects	01	23.73

#### 7. SERVICE TO INDUSTRIES

##### Consultancy Project

Sl.No.	Project Status	Total No. of Projects	Amount (Rs. in Lacs)
1	Completed Projects	22	891.87
2	Ongoing Projects	05	233.598
3	New Projects	07	196.50

#### 8. SCIENTIFIC AND TECHNICAL REPORTS

Title of the Projects	Participants	Authors	Remarks
Rehabilitation & Up-gradation of NH-216 from Raigarh to Saraipalli section in Chhattisgarh state & scour modelling of bridge over Mahanadi river		Dr. Nayan Sharma	
Field Study of Anti Erosion works using Woven Geobags		Dr. Nayan Sharma	
Analytical Study on High Level Bridge over River Teesta with approaches near Haldibari, connecting Mekhliganj with Par-Mekhliganj/Haldibari in the district of Coochbehar, West Bengal		Dr. Nayan Sharma	
Physical Model Study on High Level Bridge over River Teesta with approaches near Haldibari, connecting Mekhliganj with Par-Mekhliganj/Haldibari in the district of Coochbehar, West Bengal		Dr. Nayan Sharma	
Preparation of Vision Document for Dal Lake in Srinagar		Dr. Nayan Sharma	

#### 9. RESEARCH PUBLICATION

Sl. No.	Details	Total Number
a	Conference/Symp./Seminars	06
b	International Conference	18
c	National Journals	18
d	International Journals	35

## 4.20 ALTERNATE HYDRO ENERGY CENTRE

**Academic Staff: 06, Students Admitted: UG/INT. M.Tech/M.Sc. Nil ;  
PG: 38; Ph.D.: 08, Publications in: Journals: 48, Conferences 29,  
Projects: Research (Rs. in Lacs): 7826.02, Consultancy (Rs. in Lacs): 3244.22**

### 1. SALIENT FEATURES

1. AHEC has been offering education through M.Tech programme in "Alternate Hydro Energy Systems" and "Environmental Management of Rivers and Lakes" as well as through short term national and international training courses attended by large number of professionals in the area of small hydro power and other renewable energy development as well as in environmental management of water bodies during the year.
2. A new laboratory entitled "Renewable Energy Research & Development Lab" has been set up at AHEC to carry out research in the area of renewable energy viz solar thermal energy storage, performance evaluation of engines using biofuels, effect of cavitation on hydro turbine etc.
3. The setting up of Small hydro power Hydraulic Turbine R&D Laboratory with the support of Ministry of New and Renewable energy, Government of India is in advanced stage of commissioning.
4. The planning, design and vetting of SHP projects in various states of the country has been undertaken. Technical assistance & support was provided to Govt. of Haryana, Kerala, UP Karnataka, Maharashtra, Punjab, Andhra Pradesh, Arunachal Pradesh Uttarakhand for development of SHP projects. Techno-economic appraisal for several pollution abatement schemes of rivers and lakes proposed by state of Uttarakhand, UP, Delhi & Maharashtra were also carried out.
5. A number of consultancy & research projects are received and completed. AHEC provided the technical support to the public utilities of the state of Uttarakhand, Bihar, HP and Arunachal Pradesh for development of small hydropower projects as well as the projects related to environmental management of water bodies.

### 2. LIST OF FACULTY MEMBERS

**Arun Kumar**, Ph.D. (Roorkee) Planning, Investigations, Designs of Small Hydropower Energy Economics and Policy, Project Management, Environmental Management of Water Bodies..

**Mahendra P. Sharma**, Ph.D. (Roorkee) Bio Energy, Solar Energy, Wind Energy, Modelling of IRES, EIA, Energy Auditing, Energy Conservation of industries & Hydropower plants, water quality assessment and conservation of rivers & lakes.

**Mukesh K. Singhal**, Ph.D. (Roorkee) Planning, Design and Analysis of Civil Works,

**Rajeshwar P. Saini**, Ph.D. (Roorkee) Hydro mechanical Equipment, Solar Energy, Wind Energy, Modelling of IRES, EIA Environment Auditing and Energy Conservation.

**Shyam N. Singh**, Ph.D. (Roorkee) Electrical Machines, Control & protection, Rural Transmission and Distribution lines of SHP stations, E&M works for small Hydropower stations, wind conversion and solar energy conservation

**Sunil K. Singal**, Ph.D. (Roorkee) Planning, Design of Civil Works for SHP projects, Financing and Economics of SHP projects

### 3. HONORS AND AWARDS TO FACULTY MEMBERS

Dr. Arun Kumar	Awarded Uttarakhand Best Engineer Award – 2015 from The Institution of Engineers (India) Dehradun.
	Nominated and presented before parliamentary committee on Government assurances (2015-16) on June 29, 2016.
	Appointed as Non Official Part time Director on the Board of NHPC Ltd. on Nov 18, 2015 by Ministry of Power, Govt. of India.
	Member, Governing Council of Skill Council for Green Jobs since Aug 2015
	Nominated Member of Committee on the National Lab Policy for Renewable Energy Sector of Ministry of New and Renewable Energy since March 2016.
Dr. R.P. Saini	Awarded "Lifetime Achievement", Venus International Faculty Awards - VIFA 2016 by Venus International Foundation, Chennai-July 2016.
Dr. S.K. Singal	Awarded Best Citizens of India Award - 2016 by International Publishing House, New Delhi, August 2016.

#### 4. DISTINGUISHED VISITORS TO THE DEPARTMENT (NATIONAL/ INTERNATIONAL)

Sl. No.	Name	Designation & Affiliation	Purpose	Dates
1.	1. IGEN-GIZ Team 2. Mr. K M Dhareesan Unnithan	Director, EMC, Kerala	To visit AHEC facility and discuss possible collaboration	May 12, 2016
2.	Dr. James L. Wescoat Jr.	Professor, Massachusetts Institute of Technology, Cambridge, USA	To discuss possible cooperation	Aug 16, 2016
3.	25 B.Tech students	From Northern India Engineering College, FC-26, Shastri Park, New Delhi-110 053	To visit International level hydraulic Turbine laboratory	April 07, 017 at 2:30 PM
4.	Sh. K. Raghavan H.O.D.	Renewable Energy Deptt., Eternal University, Baru Sahib, Himachal Pradesh	To learn working, laboratory & testing facilities for teaching a course on SHP Systems to M.Tech Renewable Energy students at Eternal Univ.	July 14-15, 2016
5.	Dr Dhiman Chatterjee, & Prof. Shyama Prasad	Hydroturbomachines Laboratory, Deptt. of Mech. Engg. IIT Madras	To discuss a project proposal for UchchatarAvishkarYojana, MHRD, Govt. of India	July 22, 2016

#### 5. INTERNSHIPS OFFERED TO OTHER STUDENTS IN IIT - ROORKEE

Sl. No.	Name of student	Name of Supervisor	Under Graduate	Post Graduate	Name of Collaborative Institute	Period
1	Jayant Agarwal	Prof. R.P. Saini	B.Tech. (Mech.)	---	COER, Roorkee	15 May-15 July, 2016
2.	Abhinav Gupta		B.E. (civil)		Visvesvarya National Institute of Technology, Nagpur	June 01 – 30, 2016

#### 6. ACADEMIC ACTIVITIES ORGANIZED BY THE DEPARTMENT

Name of the Conf./Seminar/ Symp./ Workshop	Name of the Chairman	Sponsored by	Dates
One day Workshop on R&D in Small Hydro Power Technology in New Delhi	Prof. Arun Kumar	MNRE	Sept 16, 2016

#### 7. SPONSORED RESEARCH PROJECTS:

Sl. No.	Project Status	Total No. of Projects	Amount (Rs. in lacs)
1.	Completed Projects	02	96.80
2.	Ongoing Projects	11	7261.22
3.	New Projects	03	468.00

#### 8. SERVICE TO INDUSTRIES:

##### a. Consultancy Project

Sl. No.	Project Status	Total No. of Projects	Amount (Rs. in lacs)
1.	Completed Projects	65	791.78
2.	Ongoing Projects	152	1876.27
3.	New Projects	52	532.11

##### b. Testing Services

Sl. No.	No. of Industries Served	Total outlay (Rs. in lacs)
1.	06	44.66

**9. SUMMARY OF MAJOR SPONSORED RESEARCH SCHEMES AND CONSULTANCY PROJECTS (Rs. 20 Lacs) (A brief write-up upto 100 words) (New Projects during the year 2016-17).**

- (i) Alternate Hydro Energy Centre (AHEC) was identified as the test agency for performance evaluation of SHP plants. Accordingly performance testing of the SHP power stations of several projects in HP, Uttarakhand, Karnataka, Kerala, Tamilnadu have been assigned.
- (ii) National Mission for Clean Ganga, NGRBA, Govt. of India, New Delhi requested Techno appraisal of DPRs for Interception, Diversion & Treatment Works for river Alakhanda at Sirkot – Ganganali, Kirtinagar, Nandprayag, Srinagar, Karanprayag, Rudraprayag, Joshimath, Badrinath, for river Ganga at Jhunsi, Naini, Shuklaganj, Ramnagar, Chunar and Mirzapur towns and for river Yamuna at Mathura in Uttar Pradesh.
- (iii) UJVN Ltd. Dehradun requested for Carrying capacity study in respect of hydro projects and river valley projects on river Bhagirathi basin and its tributaries in Uttarakhand as well as river Alaknanda basin and its tributaries in Uttarakhand
- (iv) Ministry of New and renewable energy, govt. of India, New Delhi requested checking of the reasons for cost variations – electrification illumination of all villages along the border of Arunachal Pradesh being executed by Department of Hydropower Development, Govt. of Arunachal Pradesh.
- (v) Mussoorie Dehradun Development Authority, Dehradun requested Preparation of DPR for Solar Power Generation on selected stretches of Bindalriver and Rispana river having different river width (10 m to 40 m).
- (vi) Development and Implementation of 100 kW through Surface Water Velocity Driven Hydrokinetic Turbines- VARUN-III – UJVN Limited, Dehradun. (Rs. lacs 418.90).

VARUN III is a patented innovation of M/S MACLEC TECHNICAL PROJECT LABORATORY PVT. LTD. in the field of kinetic hydro turbine. The proposed innovative hydrokinetic turbine is capable to harness energy form almost every type of water body that have flowing water with adequate depth, width and adequate water velocity required. To harness hydro power from flowing water body VARUN III required minimum civil structure just for the purpose of anchoring and does not require to develop any big-structure or diversion of water body from its natural flow. The proposed System is directly driven by kinetic energy, present abundantly in every flowing artificial/ natural water body. The Design of the proposed system is quite simple in nature, easy to manufacture, less expensive & economic. A scale-up model of the proposed design shall be developed and installed at site.

- (vii) "Mini/Micro Turbine for Hydro Power Generation Application in India" – (i) MHRD, (ii) M/s Eaton Technologies Pvt. Ltd., Pune and (iii) IIT Madras (Rs. lacs 266.05).

With a view to promote industrial innovation of a higher order that directly impacts the needs of the Industries, thereby, improving the competitive edge of Indian Manufacturing industry. Government of India has introduced the UchhatarAvishkarYojana (UAY) scheme, whereby project funding is created by a grant provided by Government of India. The Industry Partner will also contribute to the Project funding as well as participate in the Project. IITR is also involved in this project as a collaborating partner with specific deliverables.

**10. SCIENTIFIC AND TECHNICAL REPORTS**

Title of the Projects	Participants	Authors	Remarks
Performance Testing of Ubarah SHP Station (2x1.2 MW), Chowari, Distt.Chamba (HP)	Shakti Hydro Electric Co. Pvt. Ltd., New Delhi	Prof. RP Saini, Prof. Arun Kumar, DrDilbag Singh Dr B.K. Gandhi & Others	April 2016
Performance Testing of Ranni-Perunad SHP Station (2x2 MW) Distt.Pathanamthitta (Kerala)	Kerala State Electricity Board Ltd., Kerala	Prof. RP Saini, Prof. Arun Kumar, Dr BK Gandhi, DrDilbag Singh	April 2016
Performance Testing of Tangmarg SHP Station (3x3.33 MW), Distt.Baramulla (J&K)	Magpie Hydel Construction Operation Industries Pvt. Ltd., Khidmat Complex, Phase-2, Srinagar, J&K.	Prof. RP Saini, Prof. Arun Kumar, DrDilbag Singh, Dr B Majumdar Dr. B.K. Gandhi & others	May 2016

Title of the Projects	Participants	Authors	Remarks
Performance Testing of Damanganga Stage-II SHP Station (1x2.6 MW), Silvasa, Distt.Valsad (Gujarat)	Tarini Infrastructure Ltd., D-2, First Floor, Amar Colony, Lajpat Nagar – IV, New Delhi	Prof. Arun Kumar, Prof. RP Saini, DrManojTripathy Dr. B.K. Gandhi& others	May 2016
Performance Testing of Motighat SHP Station (2x2.5 MW), Munshiyari, Distt.Pithoragarh (Uttarakhand)	Himalaya Hydro Pvt. Ltd., 46, AMR Building, Flat No. 202, MIA& MPs Colony, Jubilee Hills, Hyderabad	Prof. Arun Kumar, Prof. R.P. Saini, Dr. B.K. Gandhi& others	June 2016
Performance Testing of Baragaon SHP Station (3x8 MW), Patlikuhai, Distt.Kulliu (HP)	Kanchanjunga Power Company Pvt. Ltd., B-37, 3th Floor, Sector-1 Noida-201301	Prof. RP Saini, Prof. Arun Kumar, DrDilbag Singh Dr. B.K. Gandhiand others	June 2016
Performance testing of Baner-II (2x3 MW) SHP in Dharamshala Tehsil, Dist. Kangra, HP	M/s Prodigy Hydro Power Pvt. Ltd., 6th floor, Prestige Meridian II, MG Road, Bangalore – 560001	Prof. Arun Kumar, Prof. RP Saini, DrDilbag Singh Dr. B.K. Gandhi and others	July 2016
Performance testing of Kurmi SHP (8 MW) capacity, Village Phancha, Shimla, Himachal Pradesh	Kurmi Energy Private Limited, SCO 140-141, Sector-34 A, Chandigarh	Prof. Arun Kumar, Prof. RP Saini, DrDilbag Singh Dr. B.K. Gandhi and others	Aug. 2016
Performance testing of 1 x 3.0 MW +33% COL Shaung Small Hydro Electric Power Plant (Distt. Kinnaur, HP)	FLOVEL Energy Private Limited, 15/3, Tayal Motor Building (FF), Mathura Road, Faridabad	Prof. Arun Kumar, Prof. RP Saini, DrManojTripathy Dr. B.K. Gandhi and others	Oct. 2016
Performance Testing of Kurhed SHP (4.5 MW) Near Holl in Chamba District, Himachal Pradesh	Managing Director, Himachal Hydel Projects Pvt. Ltd., SCO 263, Sector 14, Panchkula -13411	Prof. Arun Kumar, Prof. RP Saini, DrDilbag Singh Dr. B.K. Gandhi and others	Dec. 2016
Performance testing of Simla HEP (5 MW) in Distt. Shimla, Himachal Pradesh	M/s Sai Engineering Foundation, Sai Bhawan, Sector-IV, New Shimla, Shimla- 171009(H.P)	Prof. RP Saini, Prof. Arun Kumar, DrDilbag Singh Dr. B.K. Gandhiand others	Jan.2017
Performance testing of Kurtha (5 MW) SHP in Chamba District of Himachal Pradesh	K.B. Lal Chopra & Co., SCO 116/B, 2nd floor, Sector-58, Mohall-160059	Prof. R.P. Saini, Prof. Arun Kumar, Dr. B.K. Gandhi and others	Nov 2016
Performance testing of BanerSangam Small Hydro Electric Project (5 MW) in Himachal Pradesh	M/s Yogindera Power Ltd, VPO: HaarJalari, Teh. & Distt-Kangra-176038 (H.P)	Prof. R.P. Saini, Prof. Arun Kumar, Dr. B.K. Gandhi and others	Jan 2017
Detailed project report for Canal based Solar PV plant on Chilla power channel	Uttarakhand JaiVidyut Nigam Limited, Dakpathar	Prof. Arun Kumar	Oct 2016
Technical assistance for Techno-economic and Financial bid Evaluation of Dhalipur (3 - 17 MW) Hydropower station	Uttarakhand JaiVidyut Nigam Limited, Dhalipur, Dehradun	Prof. Arun Kumar	Nov 2016
Appraisal report of DPR for Rejuvenation of Nag River and its tributaries in Nagpur, Maharashtra	MoEF&CC, Gol, New Delhi	Prof. Arun Kumar	May 2016
Appraisal report of DPR Interception and Diversion of Sisamau and Other Nalas of Kanpur City	NMCG, NGRBA, MoWR, RD & GR, Gol, New Delhi	Prof. Arun Kumar	July 2016

Title of the Projects	Participants	Authors	Remarks
Appraisal report of DPR & CA&FS report for I&D and STP Works in (i) Badrinath, (ii) Chamoli-Gopeshwar, (iii) Joshimath, (iv) Kirtinagar, (v) Nandprayag Uttarakhand	NMCG, NGRBA, MoWR, RD & GR, Gol, New Delhi	Prof. Arun Kumar	Jan 2017
Appraisal report of DPR for I&D Works in (i) Karanprayag and (ii) Rudraprayag Town, Uttarakhand	NMCG, NGRBA, MoWR, RD & GR, Gol, New Delhi	Prof. Arun Kumar	Jan 2017
Appraisal report of DPR & CA&FS report for I&D and STP Works in Srinagar, Uttarakhand	NMCG, NGRBA, MoWR, RD & GR, Gol, New Delhi	Prof. Arun Kumar	Jan 2017
Appraisal report of DPR on pollution abatement for river Alaknanda at Sirkot – Ganganali Part A Interception and Diversion with STP under NamamiGange, Uttarakhand	NMCG, NGRBA, MoWR, RD & GR, Gol, New Delhi	Prof. Arun Kumar	March 2017
Techno-Economic Review Report Pith SHEP ( 2x6.5 MW)	DHPD	Dr. M.K. Singhal	Oct. 2016
DPR- Renovation and modernization of Chenani-III SHP (3x 2.5 MW)	J&KPDC	Dr. M.K. Singhal	Jan. 2017
DPR- Renovation and modernization of Tharali MHP ( 1 x 400 kW)	UREDA	Dr. M.K. Singhal	Feb. 2017
DPR- Renovation and modernization of Sewa-III SHP (3x 3 MW)	J&KPDC	Dr. M.K. Singhal	March 2017
Techno – Economic appraisal for Anonpani Hydroelectric project Ar. Pradesh	Department of Hydro Power Development Govt. of Ar. Pradesh,	Dr. S.K.Singal Prof. Arun Kumar	
Techno – Economic Review Of DPR Of Rima SHP In Arunachal Pradesh	Department Of Hydro Power Development, Govt. Of Ar. Pradesh	Dr. S.K.Singal Prof. Arun Kumar	
Cost Updating of Nirgajini, Chittaura, Salawa and Bhola SHP Stations on Upper Ganga Canal	UP JalVidyut Nigam Ltd.	Dr. S.K.Singal	

#### 11. RESEARCH PUBLICATION

Sl. No.	Details	Total Number
a	Conference/Symp./Seminars	10
b	International Conference	19
c	National Journals	01
d	International Journals	47



## 5. Centres of Excellence

5.1 Centre of Transportation Systems  
5.2 Centre of Nano Technology

5.3 Centre of Disaster Mitigation and Management

### 5.1 CENTRE FOR TRANSPORTATION SYSTEMS (CTRANS)

**Academic Staff: 35 (Associated faculty). Students Admitted: M.Tech: 12; Ph.D.: 04  
Publications in: Book/Books Chapters: 02, Journals: 14, Conferences: 06**

#### 1. SALIENT FEATURES

CTRANS is a Centre of Excellence of IIT Roorkee in the area of Transportation Systems. The Centre aims to evolve a holistic approach for study of transport systems. CTRANS is primarily a multidisciplinary initiative with collective participation of Engineers, Scientists and Researchers from Science & Technology, Humanities and Social Sciences, Architecture & Planning and Management background. The aim of CTRANS is also to promote multidisciplinary research and education for manpower development in transportation systems encompassing all modes of transport such as Road Transport, Rail Transport, Inland Water Transport, Air Transportation, Pipeline Transport, etc. Thus, the primary aims and objectives of the centre include the following:

- To promote multidisciplinary research on transportation systems.
- To provide technological support to national projects related to the growth of Transportation System in the country.
- Establishment of International Linkage for collaborative research in the frontier areas.
- Creation of a Resource Centre for rapid dissemination of information and knowledge.

CTRANS runs M.Tech. (Infrastructure Systems) and PhD programmes.

#### 2. LIST OF ASSOCIATED FACULTY MEMBERS

CTRANS does not have any regular faculty on the role. However, following faculty members from various departments of the institute are associated with the centre to run its PG programmes and contribute in research and consultancy projects.

**Anil Kumar** (Mechanical & Industrial Engg. Deptt.)

**A. Ramesh** (Management Studies Deptt.)

**A.K. Nayak** (Mathematics Deptt.)

**Abinash Kumar Swain** (Mechanical & Industrial Engg. Deptt.)

**Arindam Biswas** (Architecture & Planning Deptt.)

**B. R. Gurjar** (Civil Engg. Deptt.), Head  
**Bikash Mohanty** (Chemical Engg. Deptt.)

**D.K. Nauriyal** (Humanities & Social Sciences Deptt.)

**Durga Toshniwal** (Computer Science & Engg. Deptt.)

**E. Rajsekar** (Architecture & Planning Deptt.)

**Gaurav Raheja** (Architecture & Planning Deptt.)

**Harshit Lakra** (Architecture & Planning Deptt.)

**(Mrs.) Ila Gupta** (Architecture & Planning Deptt.)

**Jogendra K. Nayak** (Management Studies Deptt.)

**Kiran Rawat** (Electronics and Communication Engineering)

**M. Parida** (Civil Engg. Deptt.)

**N. P. Padhy** (Electrical Engg. Deptt.)

**P.K. Garg** (Civil Engg. Deptt.)

**P.K. Jain** (Mechanical & Industrial Engg. Deptt.)

**Pradeep Kumar** (Mechanical & Industrial Engg. Deptt.)

**P.S. Chani** (Architecture & Planning Deptt.)

**Prakash Biswas** (Chemical Engg. Deptt.)

**R.D. Garg** (Civil Engg. Deptt.)

**Rajat Agarwal** (Management Studies Deptt.)

**S.K. Ghosh** (Civil Engg. Deptt.)

**S.S. Jain** (Civil Engg. Deptt.)

**S.N. Rangnekar** (Management Studies Deptt.)

**S.P. Harsha** (Mechanical & Industrial Engg. Deptt.)

**Sudipta Sarkar** (Civil Engg. Deptt.)

**Uttam K. Roy** (Architecture & Planning Deptt.)

**Vivek Kumar** (DPT, SRE)

**V.H. Saran** (Mechanical & Industrial Engg. Deptt.)

**V.K. Katiyar** (Mathematics Deptt.)

**Vikas Pruthi** (Biotechnology Deptt.)

**Y.S. Negi** (DPT, SRE)

### 3. HONORS AND AWARDS TO ASSOCIATED FACULTY MEMBER

- 1) Dr Amit Rathi, Postdoctoral Researcher of CTRANS received IconSWM 2016 Excellent Paper Award (Nov 2016), 6th Icon SWM Conference, Jadavpur University, Kolkata.
- 2) Dr Amit Rathi, Postdoctoral Researcher of CTRANS received ISWA Austria Scholarship for Summer School, Technische Universität Wien, Vienna, Austria (Sep 2016).

### 4. RESEARCH PUBLICATION

Sl. No.	Details	Total Number
a	Conference/Symp./Seminars	--
b	International Conference	06
c	National Journals	--
d	International Journals	14

## 5.2 CENTRE FOR NANOTECHNOLOGY

**Academic Staff: 03, Students Admitted: UG: Nil;  
P.G.: 9+11; Ph.D. 24, Journals:49, Conferences: 33;  
Sponsored/ Consultancy/ New Projects: Research Rs. Lacs: 117.269**

### 1. SALIENT FEATURES

Centre of Excellence: Nanotechnology (CON) was established in December 2005 as one of the Centres of Excellence at IIT Roorkee. The faculty members of the centre are joint faculty, belonging to different departments. They are developing state-of-the-art facilities at CON and vigorously pursuing interdisciplinary research on various aspects of Nanoscience and Nanotechnology. These faculty members are either nominated by their parent departments or joined the Centre by own due to their interest in Nanoscience and Nanotechnology.

In view of the major impact of 'Nanoscience' in vast disciplines of Science and Technology, M.Tech. programme on 'Nanotechnology' had started in 2008. This course aims at providing the basic knowledge to B.Tech./M.Sc. students about various concepts of Nanoscale materials, their synthesis, characterization, novel properties, applications and future perspectives. Nanotechnology being evolved as a multidisciplinary area, a number of electives have been designed and developed to impart knowledge on Nanoscale modeling and simulation, Nanophysics, Nanochemistry, Nanobiotechnology, Nanomedicine and technological aspects of Nanomaterials. Besides, it is providing students a practical training on advanced methods being employed for the synthesis, characterization and elucidation of different Nanostructures.

Students for Ph.D. degree are also registered at CON, getting their fellowships from sponsoring agencies like MHRD, UGC, CSIR, DST and parent sponsoring organizations.

### 2. LIST OF ASSOCIATED FACULTY MEMBERS

**A. Sii**, Metallurgical and Materials Engg.

**Ankik Giri**, Mathematics

**B.S.S. Daniel**, Metallurgical and Materials Engg.

**Dharmendra Singh**, Electronics & Computer Engg.

**Debrupa Lahiri**, Metallurgical and Material Engg.

**Davinder Kaur**, Physics

**G.D. Varma**, Physics

**G.P. Chowdhary**, Metallurgical and Material Engg.

**G. Singh**, Civil Engg.

**Indranil Lahiri**, Metallurgical and Material Engg.

**K.L. Yadav**, Physics

**K.R. Justin Thomas**, Chemistry

**K. Pal**, Mechanical and Industrial Engg.

**K.M. Poluri**, Biotechnology

**M. Sankar**, Chemistry

**M. Bag**, Physics

**N.P. Pathak**, Electronic and Computer Engg.

**P. Gopinath**, Biotechnology

**P. Jeevanandam**, Chemistry

**Partha Roy**, Biotech

**R.K. Dutta**, Chemistry

**R. Jayaganthan**, Metallurgical & Materials Engg.

**R. Chandra**, Institute Instrumentation Centre

**Rajib Chowdhury**, Civil Engg.

**S. Manhas**, Electronic and Computer Engg.

**S.K. Nath**, Met. & Materials Engg.

**S. Sarkar**, Civil Engg.

**Satapathi Soumitra**, Physics

**S. Hazra**, Biotechnology

**T. Mandal**, Chemistry

**Vimal C.Srivastava**, Chemical Engg.

**V.K. Katiyar**, Mathematics

**Yogesh K. Sharma**, Physics

### 3. HONOURS AND AWARDS TO FACULTY MEMBERS

- Dr. P. Gopinath has served as a member of the program committee of the 4<sup>th</sup> International Conference on Bioimaging held in Porto- Portugal from 21<sup>st</sup> -23<sup>rd</sup> February 2017.
- Dr. D. Kaur has received **Shastri Indo-Canadian Fellowship Award (2017)**.

#### 4. DISTINGUISHED VISITORS TO THE DEPARTMENT (NATIONAL/ INTERNATIONAL)

Name	Designation and Affiliation	Purpose	Dates
Dr. Vitaly Khanadeev	Senior Researcher, Laboratory of Nanobiotechnology, IBPPM RAS, 13 Prospekt Entuziastov, Saratov 410049, Russia.	DST-Indo Russia collaborative research project work	Dec 18 – 26, 2016

#### 5. SPONSORED RESEARCH PROJECTS:

Sl. No.	Project Status	Total No. of Projects	Amount (Rs. in lacs)
1.	Completed Projects	01	46.63
2.	Ongoing Projects	03	110.55
3.	New Projects	03	128.57

#### 6. SUMMARY OF MAJOR SPONSORED RESEARCH SCHEMES AND CONSULTANCY PROJECTS (Rs. 20 lacs) (A brief Write-up upto 100 words) (New Projects during the year 2016-17).

COPD is one of the most prevalent diseases in the world with limited treatment options. Therefore new and innovative ways in treating this important disease would be significant. The innovation lies in the approach of developing targeted therapeutic nanoparticles for this disease. The research can result in innovative approaches to a common disease which may reduce the burden of COPD.

#### 7. RESEARCH PUBLICATION

Sl. No.	Details	Total Number
a	Conference/Symp./Seminars	19
b	International Conference	14
c	National Journals	44
d	International Journals	05

### 5.3 CENTRE FOR DISASTER MITIGATION AND MANAGEMENT

**Academic Staff: Nil Students Admitted: M.Tech: 11 ; Ph.D: 02**  
**Publications in: Journals-06, Conferences- 04,**  
**Projects: Research (Rs. in Lacs): 47.82 lacs, Consultancy (Rs. in Lacs): 3.45 lacs**

#### 1. SALIENT FEATURES

A Centre of Excellence in Disaster Mitigation and Management was established at IIT Roorkee in March 2006 for national capacity building in Disaster Mitigation and Management. The Centre has many objectives.

- National capacity building in Disaster Mitigation through Human Resource Development
- Dissemination of technical know-how by conducting short term courses in Disaster Mitigation & Management
- Dissemination of technical know-how to meet the challenges arising of disasters through consultancy services
- Minimize the impact of natural disasters through R & D and extension activities by providing engineering solutions in the area of Disaster Mitigation
- Evolving strategies for mitigation and management of disasters and establishment of national technical data base for rapid dissemination of information and knowledge
- Conduct research in related areas leading to Ph.D. degree in Disaster Mitigation and Management
- **Targets Achieved :**
  - 4<sup>th</sup> batch of M.Tech. Program in Disaster Mitigation & Management is nearly completed dissertation work.
  - 5<sup>th</sup> batch of M. Tech. Program in Disaster Mitigation & Management is pursuing their course work
  - Following Ph.D. has been submitted in this year –
  - Sujay Negi

The Centre of Excellence in Disaster Mitigation and Management is very young Centre. This draws strength of faculty members of other Departments to solve important problems.

#### 2. LIST OF ASSOCIATED FACULTY MEMBERS

Amit Dhiman, Deptt. of Chemical Engg.  
Anil K. gourishetty, Deptt. of Physics.  
Anand Joshi, Deptt. of Earth Sciences  
Ajanta Goswami, Earth Sc. Deptt.  
Ajay Galrola, Deptt. of Civil Engg  
B.K. Maheshwari,  
B.R. Gurjar, Civil Engg. Deptt.  
D.S. Arya, Hydrology Deptt.  
(Mrs.) H.S. Lakra, Deptt of Arch & Planning  
Inderdeep Singh, Deptt. of Mechanical & Industrial Engg.  
J. D. Das, Deptt. of Earthquake Engineering  
Kamal Jain, Deptt. of Civil Engg.  
Mahua Mukherjee, Arch & Plng.  
M.K. Rao, Department of Management Studies  
M.L. Sharma, Earthquake Engg. Deptt.  
N.K. Goel, Hydrology Deptt.  
N.K. Nawani, Deptt of Biotechnology  
P.K. Garg, Civil Engg. Deptt.

Ravi Kumar, Mech. & Indl. Engg. Deptt.  
Ranjana Pathania, Deptt of Biotechnology  
Rajdeep Chatterjee, Deptt. of Physics.  
Rajat Agarwal, Deptt. of Management Studies  
R.S. Jakka, Deptt. of Earthquake Engineering  
Shishir Sinha, Deptt. of Chemical Engg.  
Sudip Roy, Computer Science & Engg. Deptt.  
Sumit Sen, Department of Hydrology  
Yogendra Singh, Earthquake Engg. Deptt.  
**Emeritus Fellow**  
Amrita Sinhal, Deptt. of Earthquake Engg. (Emeritus Fellow till June 30, 2016)  
Ashok Kumar (till 31-7-2016 and then reemployed)  
D.K. Paul, Deptt. of Earthquake Engg. (Emeritus Fellow till June 30, 2016)

### 3. HONOURS AND AWARDS TO FACULTY MEMBERS

#### Dr. B.K. Maheshwari

- Visited IIT Kharagpur to examine one Ph.D. Thesis in Deptt. of Geology and Geophysics on July 4, 2016.
- Visited Japan as a part of High Level Policy Dialogue on Cooperation in Education, led by Shri V.S. Oberoi, Secretary, MHRD, Govt. of India during July 6-9, 2016.
- Invited to deliver a **Special Presentation Lecture** entitled "Recent Advances in Nonlinear Soil-Structure Interaction for Earthquake Loads" in 6th International Conference on Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics held at Extension Centre, IIT Roorkee at Greater Noida on August 5, 2016
- Invited to deliver a **Key Note Lecture** entitled "Geotechnical Issues and Foundation Design of Tall Buildings" in Conference Planning and Design of Tall Buildings Including Earthquake and Wind Effects Organized by Indian Association of Structural Engineers at New Delhi on December 7, 2016
- Attended a meeting as a member of CED39 (Earthquake Engineering Section) of Bureau of Indian Standards (BIS) at New Delhi on February 27, 2017.

#### Dr. Sudip Roy

- Awarded by the Early Career Research Award from SERB, DST, Government of India.

### 4. DISTINGUISHED VISITORS TO THE CENTRE (NATIONAL/INTERNATIONAL)

Name	Designation and Affiliation	Purpose	Dates
Pratima Rani Bose	Associate Director, DDF Consultants Pvt. Ltd., Delhi	Laboratory Visit	24.8.2016
Ankita Ghosal	The Espee Global School, Puhana, Distt. Haridwar, Uttarakhand	A visit of class 5 <sup>th</sup> kids	31.1.2017
T.P. Singh	Professor, All India Institute of Medical Sciences, New Delhi	To interact with the faculty and students	31.3.2017
Yuji Nishikawa	Japanese Embassy, New Delhi	To visit the Centre for possibilities of collaborative research	12.4.2017
Kodama Daisuke	Japanese Embassy, New Delhi		
Hihoshi Yoshino	University of Tokyo		
Shigeki Ashida	Ritsumeikan India Office, New Delhi		

### 5. SPONSORED RESEARCH PROJECTS

Sl. No.	Project Status	Total No. of Projects	Total Amount (Rs. In Lacs)
1.	Completed Projects	01	241.84
2.	Ongoing Projects	03	47.81
3.	New Projects	00	00

### 6. SERVICE TO INDUSTRIES

Sl. No.	Project Status	Total No. of Projects	Total Amount (Rs. In Lacs)
1.	Completed Projects	01	3.45
2.	Ongoing Projects	00	00
3.	New Projects	01	3.45

### 7. SCIENTIFIC AND TECHNICAL REPORTS

Title of the Projects	Participants	Authors	Remarks
Peer-Review of the Report on Vibration Control for Payload Fabrication and Test Facility (PFTF) at SAC New Campus, Bopal, Ahmedabad	Indian Space Research Organization (ISRO), Bangalore	Dr. B.K. Maheshwari	Final report submitted to the funding agency

### 8. RESEARCH PUBLICATION

Sl. No.	Details	Total Number
a	Conference/Symp./Seminars	02
b	International Conference	02
c	National Journals	04
d	International Journals	02

## 6. Academic Service Centres

6.1 Continuing Education Centre

6.2 Institute Computer Centre

6.3 Institute Instrumentation Centre

6.4 Quality Improvement Programme Centre

### 6.1 CONTINUING EDUCATION CENTRE

#### 1. SALIENT FEATURES

This centre acts as a single window to disseminate information and technology on latest developments. The activities organised by this centre are innovative, refreshing and stimulating and address to the current needs of the participants. Apart from the technical expertise available in the departments and centres of the Institute, experts from industries and R&D organisations are also invited to deliver talks/lectures wherever necessary.

Continuing Education Centre (CEC) is conducting training programmes in various disciplines of management, engineering, science and technology for participants from all parts of the country as well as from the neighboring countries. This year the Centre has conducted 38 courses including 4 International Courses in which about 643 participants have been trained.

#### 2. LIST OF ASSOCIATED FACULTY MEMBER

- Dr. B.K. Gandhi  
Coordinator  
Continuing Education Centre  
IIT Roorkee

#### 3. SHORT TERM / SPONSORED COURSES ORGANISED BY THE CENTRE

Sl. No.	Organizing Deptt./ Centre	Course Name	Course Coordinator(s)	Duration	No. of Participants
1.	EARTHQUAKE	Retrofitting Methodology	Dr. M.L. Sharma & Dr. M. Shrikhande	April 5-25, 2016	28
2.	MMED	Advanced Knowledge of Safety :Quality Inspection, Fatigue and Fracture Mechanics	Dr. P.K. Ghosh	April 18-23, 2016	12
3.	AHEC	Real Time Digital Simulator for SHP Stations	Dr. M.K. Singhal	May 9-14, 2016	7
4.	HYDROLOGY	River Basin Planning using HEC Software	Dr. N.K. Goel	May 16-20, 2016	20
5.	AHEC	DPR Preparation and Evaluation for SHP Projects	Dr. S.K. Singhal	May 31-June 3, 2016	21
6.	DOMS	Data Analysis for Research and Publication	Dr. J.K. Nayak	June 18-19, 2016	33
7.	MIED	GET Induction Programme	Dr. Dinesh Kumar	June 27-30, 2016	23
8.	HYDROLOGY	River Basin Planning using HEC-RAS	Dr. N.K. Goel	July 11-16, 2016	21
9.	AHEC	Real Time Digital Simulator for SHP Stations	Dr. M.K. Singhal	Aug. 8-13, 2016	9
10.	AHEC	Small Hydropower Development	Dr. Arun Kumar	Aug. 29-Sept. 2, 2016	15
11.	AHEC	Real Time Digital Simulator for SHP Stations	Dr. M.K. Singhal	Sept. 5-10, 2016	9
12.	HYDROLOGY	River Basin Planning using HEC-RAS	Dr. N.K. Goel	Sept. 5-10, 2016	17
13.	AHEC	Int. Course on Diversion Structure and Dam Design of Hydro Power Projects	Dr. Arun Kumar	Sept. 5-15, 016	10
14.	AHEC	Operation & Maintenance of SHP Stations	Dr. S.N. Singh	Sept. 19-22, 2016	9

Sl. No.	Organizing Deptt./ Centre	Course Name	Course Coordinator(s)	Duration	No. of Participants
15.	AHEC	Real Time Digital Simulator for SHP Stations	Dr. M.K. Singhal	Oct. 17-22, 2016	10
16.	EARTH SCIENCE & EARTHQUAKE	Geo-Informatics in Earthquake Studies	Dr. A.K. Saraf & Dr. J. Das	Nov. 1-5, 2016	18
17.	AHEC	Real Time Digital Simulator for SHP Stations	Dr. M.K. Singhal	Nov. 7-12, 2016	11
18.	HYDROLOGY	Identification of Contaminated Sites and Its Treatment Technologies	Dr. B.K. Yadav	Nov. 14-18, 2016	12
19.	AHEC	Selection & Design of Electro Mechanical Equipment for SHP	Dr. S.N. Singh	Nov. 21-25, 2016	11
20.	AHEC	Real Time Digital Simulator for SHP Stations	Dr. M.K. Singhal	Nov. 28-Dec.3, 2016	10
21.	AHEC	Real Time Digital Simulator for SHP Stations	Dr. M.K. Singhal	Dec. 5-10, 2016	9
22.	DOMS	Data Analysis for Research & Publication	Dr. J.K. Nayak	Dec. 10-11, 2016	27
23.	WRDM	Int. Course on Planning, Design & Implementation of Irrigation Schemes	Dr. Ashish Pandey	Dec. 5-15, 2016	15
24.	AHEC	Hydropower development	Dr. S.K. Singal	Dec. 12-24, 2016	36
25.	AHEC	Performance Testing and Evaluation for SHP Stations	Dr. R.P. Saini	Dec. 19-23, 2016	16
26.	WRDM	Dam Safety Management including Instrumentation of Existing Dams	Dr. S.K. Mishra	Jan. 12-14, 2017	16
27.	AHEC	Real Time Digital Simulator for SHP Stations	Dr. M.K. Singhal	Jan. 16-21, 2017	6
28.	WRDM	Geotechnical & Geological investigations under overburden	Dr. S.K. Mishra	Jan. 27-29, 2017	20
29.	WRDM	Assessment of Soil Erosion & Sedimentation Control in	Dr. Deepak Khare	Jan. 30-Feb.1, 2017	20
30.	AHEC	Real Time Digital Simulator for SHP Stations	Dr. M.K. Singhal	Jan. 30-Feb. 4, 2017	8
31.	CHEMICAL	Cleaner Production Technologies – Practical Aspects	Dr. V.C. Srivastava	Feb. 15-17, 2017	23
32.	AHEC	Real Time Digital Simulator for SHP Stations	Dr. M.K. Singhal	Feb.20-25, 2017	10
33.	AHEC	Int. Course on Planning and Design of Underground Structures of HP Project	Dr. Arun Kumar	Feb. 21-28, 2017	10
34.	HYDROLOGY	River Basin Planning using HEC-RAS	Dr. N.K. Goel	Feb. 20-25, 2017	11
35.	ARCHITECTUR E	Modeling Techniques for Sustainable Built Environment	Dr. Mahua Mukherjee	March 17-19, 2017	17
36.	AHEC	Small Hydropower Development	Dr. S.K. Singal	March 20-24, 2017	15
37.	DOMS	Business Analytics	Dr. A. Ramesh	April 8-9, 2017	33
38.	DOMS	Hydropower Development and General Management for AE's	Dr. S. Rangnekar & Dr. Deepak Khare	March 7-April 14, 2017	45
<b>Total Participants attended</b>					<b>643</b>



## 6.2 INSTITUTE COMPUTER CENTRE

### 1. SALIENT FEATURES

The Institute Computer Centre (ICC) is an academic service centre providing the following computing and networking resources:

- (i) High-Performance Computing
- (ii) Central bulk licensing of Engineering/Scientific software
- (iii) Special needs for hardware/software of Research Scholars
- (iv) Facilities for B.Tech/ M.Tech computer related laboratory classes
- (v) Central data storage facility
- (vi) Campus Wide Network
- (vii) E-mail, Internet and Intranet facility

#### Computing resources:

The Centre maintains a comfortable environment, conducive for research & training for both students and faculty. It has eight job-specific labs with about 250 workstations/desktops of latest configuration in 100/1000 mbps CAT 6 based structured network having Gigabit Managed Switches with Internet connectivity at every system. The range of servers covers from Intel based servers to high-end Blade Servers with SAN (Storage Area Network), RISC servers from SUN with NAS and SAN. Centre is also equipped with network laser printers and scanners, Linux based HPC Cluster, and all the other servers (including software licensing servers) can be accessed within the campus including DPT Saharanpur Campus.

ICC has state-of-the-art hardware and software for applications such as: CAD/MCAD, Computational Fluid Dynamics (CFD), FEM & FEA Image Processing / Scientific Visualization, 3DAnimation/ Visual Simulation/ Geospatial imaging and analysis. Centre has mid-range to high-end configured graphics workstations.

ICC is playing the major role of a central facilitator to students and faculty members who are intensely engaged in research activities.



#### High Performance Computing (HPC) Facility at ICC

High Performance Computing (HPC) Cluster at ICC is having 16 nodes (15 compute nodes (148 cores) + 1 head node) and automatic backup system with the following:

- Red Hat Enterprise Linux (RHEL HPC server/compute nodes OS)
- Cluster Management Software - HP Insight CMU
- Job Scheduler - Altair PBS Professional
- Intel® Cluster Studio XE: Intel® C/C++ Compiler, Intel® Fortran Compiler, Intel® MPI library, Intel® Threading Building Blocks, Intel® Math Kernel Library, Intel® Integrated Performance Primitives, Intel® Trace Analyzer and Collector, Intel® VTune™ Amplifier XE, Intel® Inspector XE
- For automatic back up – Back up server, Tape SMSL 2024 Tape Library and hp Data protector Software
- Other application software on HPC platform being used by faculty and researchers are ANSYS (HPC), Dalton, GAMESS, GROMACS and R software.

ICC's software licensing facilities provide the following major engineering and scientific software available throughout the campus over LAN:

- **ANSYS Multiphysics Campus Solution with HPC v 17.2**
- **ArcGIS 10.5**
- **Abaqus 2017**
- **Autodesk Revit Architecture Suite 2009 & Educational Solution Set 2009**
- **Bentley Academic Select Program Agreement** - with a set of 50+ software for Civil Engineering, Architecture, Plant Engineering, Geospatial, Geotechnical, Hydraulic Engineering, and Structural Analysis.
- **Chem Office Ultra 10.0**
- **ERDAS Imagine 2016** with LPS and SAR Interferometry module
- **Felix for NMR**

- Hytran 3.7.3-7
- Intel Visual Fortran 9.0
- NI LabVIEW Fall 2016
- MATLAB R2016b with various tool boxes & Distributed Computing Engine
- Mathematica 5.0
- Mechanical Autodesk Inventor Series 11
- MagNet 64 bit v 6.22.1
- NAG Libraries and Compilers
- Oracle 9i & 10g
- Creo 2.0
- SigmaPlot 13.0
- SARscape 4.2 with ENVI 4.7
- SAR Interferometry module with ERDAS Imagine
- SAP2000 Ult V-19; ETABS Ult V - 2016 and SAFE P/T Ult V-2016
- SPSS 16.0
- Solid Edge 18.0
- Adobe Acrobat 9.0 Prof. (Academic Version)
- Microsoft software products (latest) under School and Campus Agreement.

**Academic activities held at ICC:**

1. **Computer Systems & Programming** practical classes with C++ (Autumn semester) for B.Tech 1<sup>st</sup> year students of EED and for B.Arch 1<sup>st</sup> year in Spring semester.
2. **Rajbhasha classes**- Regular practical classes conducted at ICC by Hindi Cell, IIT R for Hindi Typing for from IIT R candidates registered under Vibhag, Gol
3. **Dedicated systems** with specialized software required by students of M.Tech, and Ph.D scholars during their dissertation/thesis period in the Research Scholars Lab at ICC. These are high- end workstations with multi-core with high processing speed and high capacity memory and graphics adaptors in network with remote access facility on 365x24x7 basis. Scientific and engineering software licenses being served through servers at ICC.
4. **Online placement/ internship examination conducted at the center:**

International/National Companies	For Placement	For Internship
International	3	1
Students participated	360	35
National	82	31
Students participated	19710	5210

**Institute Computer Centre is spread over two floors having two Data Centers for (I) Computing Servers (II) Campus Wide Network.** For strengthening of these the following hardware/software have been added in the reporting period:

**Software strengthening:**

ICC is following one-point installation of Engineering/Scientific software for creating a central hub of software usage. The following new software/upgradation has been done at ICC and made them available throughout the campus over the LAN.

- (i) **ANSYS Academic Research upgraded to v 17.2:** In use for research in the following departments - MIED, Earthquake Engg., Civil Engg. and Chemical Engg.
- (ii) **Abaqus Standard/Explicit/CAE/CFD upgarded to v 2017:** Software in use at MIED, Civil Engg, EQD, MMED.
- (iii) **ArcGIS upgraded to 10.5 and ERDAS Imagine to v 2016** - These software are in use for geospatial and remote sensing data analysis at AHEC, Architecture & Planning, Civil Engg. Deptt. Centre for Transportation Systems (CTRANS), Centre of Excellence in Disaster Mitigation & Management (CoEDMM), Computer Science & Engineering Deptt. Earth Sciences Deptt. Earthquake Deptt. E & CE Deptt. Hydrology Deptt. WRDM
- (iv) **MATLAB with various tool boxes upgraded to v R2016b (50 users)** - All academic departments/centres use this software for technical computing
- (v) **Microsoft Campus Agreement** under academic pricing for major and latest Microsoft software products ranging from latest versions of OSs (32/64 bit - Standard and Enterprise) for Server/Workstation/ Desktop along with and Office Applications suites, and Visio Prof. have been licensed for the period April 2016 – March 2017 for whole Institute under that agreement.

- (vi) **NI LabVIEW upgraded to v Fall 2016 (Academic Site license)** – This software is in use for B.Tech Projects, M.Tech Dissertation and research in the following centres/departments - AHEC, E&CE, EED, EQD, Biotech, MIED and IIC.
- (vii) **SAP2000 Uit V-19; ETABS Uit V-2016 and SAFE P/T Uit V-2016:** Software suite for structural engineering research and to be used for various courses in CED and EQD.

These software are available throughout the campus over the network.

Centre runs in two shifts from Monday to Friday from 8:00 AM to 11:00 PM and on Saturday and Sunday 8:45 AM to 11:00 PM. It is rendering services all 7 days/week. Computing, software license serving and Networking facilities are available on 24x7 basis within the campus including DPT Saharanpur (SRE).

#### **Networking Resources:**

Networking resources at ICC acts as the nodal centre for outside/inside connectivity to the campus and serves as an Information Technology Center for promoting the effective use of IT, resource management and facilities for modernization/automation of the IP Infrastructure of the Campus.

The Institute has a star topology Gigabit Ethernet Switch based, state-of-the-art Enterprise class network with data, voice and video communication capabilities. All department and Centres are connected to the Network Data Centre at ICC through Optical Fiber. The network covers 365 acres of area through 35 Km of OFC and 70 km of CAT6A/CAT6/ CAT 5 UTP, connecting all Departments/Centres, Hostels and Saharanpur Campus. The Centre has Approximately 15,000 nodes network spread within all the Departments/ Centres/ Hostels including SRE Campus for providing internet/intranet and e-mail facility to all faculty, students, staff, library and laboratories.

#### **(i) Network Structure and Facilities**

- State-of-the-Art Data/Audio/Video capable campus wide network. with Enterprise Class Core, and Access switches, firewall etc.
- 10G and 1G Ethernet optical fiber (SMF/MMF) based backbone for campus wide connectivity to all departments, centres and hostels in star topology.
- Network Access security at gateway and time based management of internet access at the hostels.
- Wired line CAT 6A Internet / Intranet connectivity in each room of all research scholar hostels, all boys and girls hostels.
- Wireless Internet/ Intranet connectivity in hostels through 802.11n Wi-Fi network.
- ADSL based broad band internet connectivity at faculty residences.
- RAS (Remote Access Server) dial up internet connectivity at staff residences.

#### **(ii) Internet Bandwidth**

- 10 Gbps internet leased line link of National Knowledge Network (NKN) from NIC under MHRD Govt of India initiative.
- 2 Mbps Leased Line Link from ERNET India, New Delhi.
- 34 Mbps dedicated Leased Line Link (RailTel) in a close group to Saharanpur Campus.
- 100Mbps internet Leased Line Link of National Knowledge Network (NKN) from NIC under MHRD Govt of India initiative to Saharanpur Campus.

#### **(iii) Application Server**

- High Performance Internet/ Intranet Applications servers for E-mail, Institute Internet/Intranet Website, DNS, DHCP, Radius etc.
- Antivirus Solution for E-mail Gateway and Desktops for the whole campus.

#### **(iv) Mail Messaging System**

Oracle Sun Java Mail messaging system to provide spam free mail services to the Institute users. Institute has 8000 user license. Mail messaging system is installed in active-active mode with full redundancy with separate storage. So that users can have more mail space with the facility of calendaring and instant messaging also.

#### **(v) Other Facilities**

- E-notice Board, Portal for Online Placement for Campus interview, Online Undergraduate Registration, Alumni portal.
- Publish online interactive JEE, JAM, GATE examination brochures and results.
- Channel-I and Institute portal.

#### **(vi) Antivirus at E-mail Gateway and Desktops of Campus**

- Upgraded Trend Micro (InterScan messaging security virtual Appliance) with SPS (Spam Prevention Solution)
- Trend Office Scan Corporate Edition with its upgraded versions.
- Subscribed Norton Symantec End Point Protection for desktops.

- (vii) **Multipoint Video Conferencing and Virtual Class Room facilities**  
For conducting interviews, meetings and interactive lectures. Centre also is having two Virtual Class Rooms under NKN- VCR project for conducting lectures through VCs for SRE campus as well as for other Institutes.
- (viii) **Multicast Video Streaming**  
Centre is doing multicast video streaming for Convocation over campus LAN and at Intranet for last several convocations.
- (ix) **Eduroam Enabled Campus:** It is a global service that enables students, researchers and staff from participating institutions to obtain Internet connectivity across campus and when visiting other participating institutions by simply opening their laptop or activating their smartphone or other portable devices through WiFi.
- (x) **Cisco Identity Services Engine (ISE):**  
802.1x LAN authentication for all hostel network administration for enforcement of security and access policies for endpoint devices connected to the routers and switches in core network at ICC. This authentication protocol prevents unauthorized clients from connecting to LAN through accessible ports unless they are properly authenticated. The authentication server authenticates each client connected to a switch port before making available any services offered by the switch or the LAN for wired and wireless authentication on network

**Strengthening for Network resources:**

**New State-of-the-art Data Centre (DC):** For housing the 10G and existing network devices and SAP ERP infrastructure new DC got commissioned 29<sup>th</sup> August 2016. This new DC is on the first floor of ICC, having 10 nos. of 42u racks with blade servers, SAN, core switches, firewalls, infrastructure for web servers and mail messaging. New DC would be having precision air conditioning, building management system, access control and fire suppression system for overall better management of the systems.



**List of Associated Faculty Members/Academic Staff**

**Kaushik Chattopadhyay B.Tech (CSE),**  
Internet Security Cloud Computing Machine  
Learning Big Data Analytics

**Mohan Lal, PhD (Roorkee)**  
RDBMS / Networking

**Mukesh Kumar, M.Sc., PGDCA**  
Enterprise LAN/WAN designing, integration,  
management and troubleshooting.

**Smt. Murugesan Subathra**

**M.S. (Computer Science)**  
SAP-ERP, Web Application Development,  
JAVA, Struts

**Navneet K. Gupta, PhD (HNB Garhwal)**  
High Performance Computing/ Web  
Technologies / Digital Image Processing and  
GIS Internet/ Intranet Application Server  
hosting and management.

**R. Balasubramanian,**  
Computer Vision- Optical Flow Problems,  
Fractional Transform Theory, Wavelet

Analysis, Image and Video Processing, Multimedia Security: Digital Image Watermarking and Encryption, Biometrics, Content Based Image and Video Retrieval, Hyperspectral and Microwave Imaging, Visualization, Volume Graphics

**Rajesh Sachdeva**, PG Dip.(Kurukshetra) Internet/Intranet

**Sanjeev Shukla**, M.Tech (CSE) (Roorkee) LAN-WAN designing and implementation/System Admin (Linux & Windows)

**PARTICIPATION OF FACULTY IN CONFERENCE/SEMINAR/WORKSOP:**

Name of Faculty	Details of Conf./Semi./Workshop	Venue	Date
<b>Navneet Kr. Gupta Mukesh Kumar Kaushik Chattopadhyay</b>	National Knowledge Network Uttarakhand Workshop	Doon University, Dehradun organized by National Informatics Centre (Ministry of Electronics & Information Technology) , State Unit Uttarakhand	10th June, 2016
<b>Navneet Kr. Gupta</b>	High Performance Computing users group conference, HP- CAST(Consortium for Advanced Scientific and Technical) .	Thiruvananthapuram	29-30 September 2016,

**ACADEMIC ACTIVITIES ORGANIZED BY CENTRE:**

Name of conf./seminar/symp./workshop	Name of the Coordinator(s)	Sponsored by	Dates
Two days Training on latest version of ANSYS HFSS 17.x	<b>R. Balasubramanian Navneet Kr. Gupta</b>	ANSYS Software Private Limited	13-14 October, 2016
3 Day Training on "Engineering Critical Thinking Skills using ANSYS Mechanical software"	<b>R. Balasubramanian Navneet Kr. Gupta</b>	ANSYS Software Private Limited	28 – 30 March, 2017

## 6.3 INSTITUTE INSTRUMENTATION CENTRE

*Academic Staff: 05. Technical Staff: 03; Ph.D. 01  
Publications in Journals: 20*

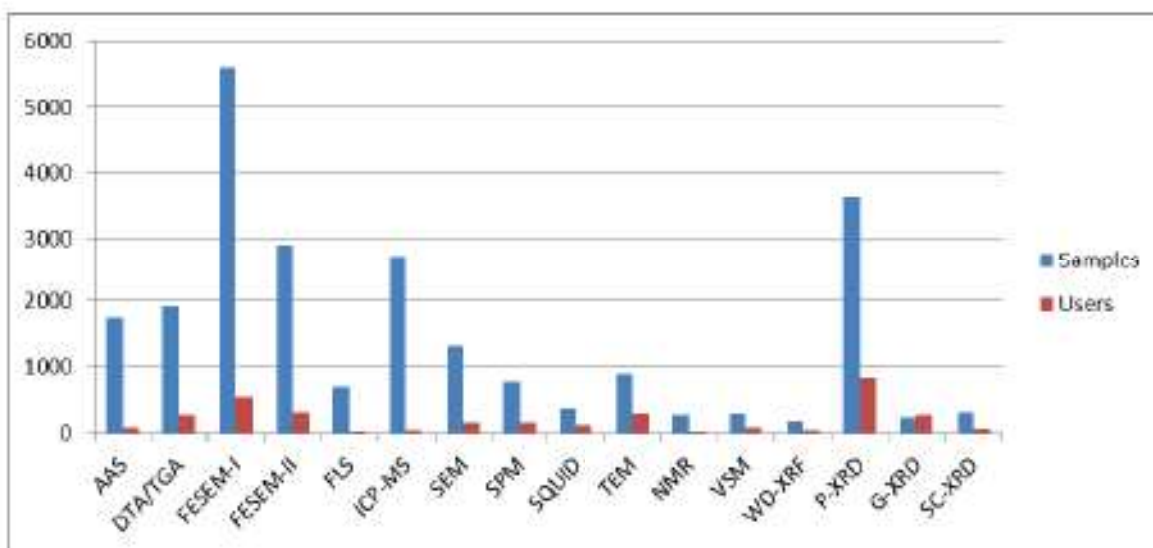
### 1. SALIENT FEATURES

Institute Instrumentation Centre runs and maintains nearly twenty one Analytical Laboratories with modern Equipment's used for research and teaching of UG, PG and Ph. D students. The list of laboratories is as follows-

1. Characterization of Materials
  - a. X-Ray Diffractometer (XRD)
    - i. Powder XRD
    - ii. Glancing Angle XRD
    - iii. Single-Crystal XRD
  - b. Superconducting Quantum Interference Device (SQUID)
  - c. Thermo-Gravimetric/Differential Thermal Analyzer (TG/DTA)
  - d. Fluorescence Life-Time System (FLS)
  - e. Vibrating Sample Magnetometer (VSM)
2. High Resolution Imaging
  - a. Scanning Electron Microscope (SEM)
  - b. Field-Emission SEM (FE-SEM)
    - i. FEI Field-Emission SEM (FE-SEM)
    - ii. Carl-Zeiss Field-Emission SEM (FE-SEM)
  - c. Transmission Electron Microscope (TEM)
  - d. Scanning Probe Microscope (SPM)
3. Chemical Analysis of different Materials
  - a. Destructive
    - i. Atomic Absorption Spectroscopy (AAS)
    - ii. Inductively Coupled Plasma Mass Spectrometry (ICP-MS)
    - iii. X-Ray Fluorescence (XRF)
  - b. Non-Destructive
    - i. Electron Probe Micro-Analysis (EPMA)
    - ii. X-Ray Photoelectron Spectroscopy (XPS)
4. Advanced Labs (Special Facilities)
  - a. Macromolecular Crystallographic Unit (MCU)
  - b. Nuclear Magnetic Resonance (NMR)
  - c. Nano Science/Thin-Film Lab (NSL)
  - d. Thermal Ionization Mass Spectrometer (TIMS)
5. Other Facilities
  - a. Liquid Nitrogen Plant
  - b. Electronics/Electrical Repair Lab
  - c. Workshop

#### 1A. Significant Achievements:

Installation of new phi versa probe X-Ray Photoelectron Spectroscopy (XPS) machine at Institute Instrumentation Centre (I.I.C).



### Highly utilized laboratories of IIC

#### 2. LIST OF Staff/Professors:

**Amit Kumar Sen**, PhD (ISM Dhanbad)  
 Professor in Department of Earth Sciences  
**Akash Katoch**, PhD (Inha University, South Korea) Materials Science and Engineering  
**Bhupender Singh**, PhD (IIT Roorkee)  
**D. Prasad**, M. Tech (IIT Delhi)  
**Jagdish Singh**, M. Phil (University of Roorkee)

**Kamal Singh Gotyan**, B. E. EC & T (Aurangabad)  
**Ravindra Saini**, M. Tech (BARC Mumbai)  
**Ramesh Chandra**, PhD (IIT Delhi) Experimental Condensed Material Physics, Nanotechnology  
**S.D Sharma**, M. Tech (University of Roorkee)

### 3. Overall Performance of the Centre

Sl. No	Laboratory		No. of Samples Analyzed	No. of Users served
<b>Characterization of Materials</b>				
1.	1.1	Powder XRD	3635	828
	1.2	Glancing Angle XRD	236	236
	1.3	Single-Crystal XRD	320	61
	1.4	Superconducting Quantum Interference Device (SQUID)	381	127
	1.5	Thermo-Gravimetric/Differential Thermal Analyzer (TG/DTA)	1922	278
	1.6	Fluorescence Life-Time System (FLS)	687	33
	1.7	Vibrating Sample Magnetometer (VSM)	314	88
<b>High Resolution Imaging</b>				
2.	2.1	Scanning Electron Microscope (SEM)	1315	165
	2.2	FEI Field-Emission SEM (FE-SEM)	5594	536
	2.3	Carl-Zeiss Field-Emission SEM (FE-SEM)	2898	326
	2.4	Transmission Electron Microscope (TEM)	879	287
	2.5	Scanning Probe Microscope (SPM)	769	164
<b>Chemical Analysis of different Materials</b>				
3.	3.1	Atomic Absorption Spectroscopy (AAS)	1738	94
	3.2	Inductively Coupled Plasma Mass Spectrometry (ICP-MS)	2716	52
	3.3	X-Ray Fluorescence (XRF)	178	44
	3.4	X-Ray Photoelectron Spectroscopy (XPS)	-	-
	3.5	Electron Probe Micro-Analysis (EPMA)	-	-
<b>Advanced Labs (Special Facilities)</b>				
4.	4.1	Macromolecular Crystallographic Unit (MCU)	121	16
	4.2	Nuclear Magnetic Resonance (NMR)	264	27
	4.3	Nano Science/Thin-Film Lab (NSL)	8 users	
	4.4	Thermal Ionization Mass Spectrometer (TIMS)	-	-
<b>Other Facilities</b>				
5.	5.1	Liquid Nitrogen Plant	25039 liter	580
	5.2	Electronics/Electrical Repair Lab	Total equipment repaired- 67(Sophisticated- 15, Analytical- 22, General- 5) 22 days	
	5.3	PA System		
Total 23846 samples analyzed and 3373 users served				

\* Labs under repair/Maintenance.

### 4. SERVICE TO INDUSTRIES

Consultancy Projects:

Sl. No.	Project Status	Total No. of Projects	Amount (Rs. in lacs)
1.	Completed Projects	01	32.20
2.	Ongoing Projects	02	28.02
3.	New Projects	00	00

### 5. RESEARCH PUBLICATION

Sl. No.	Details	Total Number
1.	Conference/Symp./Seminars	00
2.	International Conference	00
3.	National Journals	00
4.	International Journals	20



## 6.4 QUALITY IMPROVEMENT PROGRAMME CENTRE

*Academic Staff : 01; Short Term Courses-19*

### 1. SALIENT FEATURES

The Government of India launched the Quality Improvement Programme (QIP) in the year 1971 to upgrade the expertise and capabilities of the faculty members of the degree level engineering colleges/institutes in the country. This programme is now being implemented and monitored by the All India Council for Technical Education.

At present, there are two principal activities under QIP scheme being carried out by the QIP Centre, IIT Roorkee.

- (i) Providing opportunities for faculty members of AICTE – recognized degree level engineering Colleges/institutes to improve their qualifications, i.e., Masters and Ph.D. degree programmes.
- (ii) Organizing Short Term Courses for faculty working in engineering institutes/colleges.

This year the QIP Center at IIT Roorkee has offered admission to 19 engineering college teachers for Ph.D programme and 04 teachers for M.Tech programme.

### 2. ASSOCIATED FACULTY MEMBER

Prof. Bhupendra K. Gandhi  
Coordinator  
QIP Centre  
IIT Roorkee

### 3. VISIT OF FACULTY MEMBERS TO OTHER INSTITUTIONS

Name of Faculty	Institute/ Organization Visited	Purpose of Visit	Dates
Prof. Bhupendra K. Gandhi	IIT Bombay	To attend NQCC meeting	04.11.2016- 05.11.2016

### 4. Short Term/Sponsored Course organized by the Deptt. (excluding Contd. Education)

Sl. No.	Coordinator	Name of the Courses	No. of Participants	Dates
1.	Prof. Ramesh Chandra Dr. Pravindra Kumar	Advances in Material Characterization Techniques	29	May 30-June 03, 2016
2.	Dr. Harshit Sosan Lakra Prof. M. Parida	Big Data Analytics for Urban Planning and Management	41	June 6-10, 2016
3.	Dr. B.V. Manoj Kumar Dr. V. V. Dabhade	Materials and Processes for High Temperature Applications	27	June 6-10, 2016
4.	Prof. D.K. Nauriyal Prof. S.P. Singh	Research Tools, Techniques and Software Application for Quality Research	40	June 13-17, 2016
5.	Dr. Mukesh Kumar Barua Dr. Usha Lenka	Entrepreneurship Competency Development Program	23	June 13-17, 2016
6.	Dr. Sumana Ghosh Dr. Vimal Kumar	Chemical Micro Process Engineering: Flow Modelling & Application	23	June 20-24, 2016
7.	Dr. Bhavesh Kumar R. Bhalja Prof. B. Das	Protection and Monitoring of Power System Network During Smart Grid / Micro-Grid Environment	27	June 27-July 01, 2016
8.	Dr. Anil Kumar Prof. Yogendra Singh	Vibration Mitigation Techniques: Theory & Application	21	June 27-July 01, 2016
9.	Dr. Partha Pratim Roy Dr. R. Balasubramanian	Vision, Graphics and their Applications	19	July 4-8, 2016
10.	Prof. P.N. Agarwal Dr. Uday Singh	Mathematical Analysis and Applications	26	July 4-8, 2016
11.	Dr. Pushparaj Mani Pathak	Modelling and Control of Robots	27	July 11-15, 2016
12.	Dr. Yogesh K. Sharma Prof. Anjan Sil	Relavance of Nanotechnology to the Rechargeable Battery Technology	23	July 18-22, 2016

Sl. No.	Coordinator	Name of the Courses	No. of Participants	Dates
13.	Dr. Sandeep Kumar Prof. Manoj Misra	Developments and Challenges in Fault, Reliability and Safety Analysis of Software Systems for Smart Cities	23	28 <sup>th</sup> Nov. to 2 <sup>nd</sup> Dec. 2016
14.	Dr. Sushanta Dutta Prof. B.K. Gandhi	Advances in Fluid Flow Control and Measurement Techniques	28	Dec. 5-9, 2016
15.	Dr. Barjeev Tyagi Dr. Vishal Kumar	Wide Area Power System Monitoring, Protection and Control	30	Dec. 12-16, 2016
16.	Dr. V.C. Srivastava Dr. T.K. Mandal	Green Chemistry for Cleaner Technology	18	Jan. 9-13, 2017
17.	Dr. C.P. Gupta Dr. Ganesh Kumbhar	HVDC Systems for Bulk Power Transmission and Grid Integration of Renewable Energy Sources	30	27 <sup>th</sup> Feb. – 3 <sup>rd</sup> March , 2017
18.	Dr. Inderdeep Singh Dr. Apurbba K. Sharma	Make in India: Dreams to Reality	32	Jan. 03-14, 2017
19.	Prof. Rama Bhargava Dr. Aameya Kumar Nayak	Recent Advances on Numerical Methods for Solving Engineering Problems	26	Feb. 13-24, 2017

## 7. Other Units

### MAHATMA GANDHI CENTRAL LIBRARY

Libraries play very vital roles in strengthening the quality of services offered by any Academic and Research Institution of national importance. Libraries are the backbone of any institution as it provides best possible quality information support to students and academics. MGCL makes all efforts to extend best services to its patrons. Like all years this year also, focus was on the strengthening of collection of printed literature and technical journals, digitization of Ph.D. theses & dissertations. Now the project of electronic Theses & Dissertations repository eSodh-Bhagirathi of IIT Roorkee is accessible from web for reference purposes. Contents are available for viewing only.

Like in past, this year also MGCL played the role of nodal office for checking the similarity of contents of theses submitted by IITR students through the online Anti-Plagiarism software TURNITIN. During this period 450 theses and research articles were checked and provided originality reports, required for award of degrees, to our research scholars.

#### 1. FINANCES

A fund of Rs.638.66 lacs under Plan Grant and Rs.1127.58 lacs under Non-Plan Grant (Grand Total Rs.1766.24 lacs) were allotted to MGCL for expenditure during the financial year under report. Detailed break-up of expenditure of Plan and Non-Plan Grant is given below in Tables.

**Table 1: Detailed Expenditure of Grant for FY: 2016-17.**

Sl. No.	Expenditure Description	Plan Grant (Rs. in lacs)	Non-Plan Grant (Rs. in lacs)	Total (Rs. in lacs)
1.	Subscription of Journals & Databases	553.51	1098.74	1652.25
2.	Purchase of Printed Books	85.15	0.00	85.15
3.	Other Library Operational Grant for OT, AMCs, Maintenance, Stationary etc.	0.00	28.84	28.84
	<b>Grand Total</b>	<b>638.66</b>	<b>1127.58</b>	<b>1766.24</b>

**Table 2: Details of Expenditure of Grant for FY: 2014-15, 2015-16 and 2016-17.**

Sl. No.	Budget Head	2014-15 (Rs. in lacs)	2015-16 (Rs. in lacs)	2016-17 (Rs. in lacs)
1.	MHRD Non-Plan Grant	37.50	265.60	1127.58
2.	MHRD Plan Grant	1245.44	513.15	638.66
	<b>TOTAL</b>	<b>1282.94</b>	<b>778.75</b>	<b>1766.24</b>

#### 2. PERIODICAL SECTION

During the FY-2016-17, total expenditure incurred on periodical subscriptions was Rs.1652.25 lacs. It includes Rs.553.63 lacs for renewal of 284 journals (print and online) and databases for the subscription year 2016, Web of Science for 2015 and rest for renewal and new subscriptions of journals (print and online), databases and standards for the year 2017. The major subscriptions during the period include complete package (55 e-journals) of Royal Society of Chemistry (RSC), World Scientific Publication's Natural Science package (37 e-journals), T&F collection of Science & Technology Social Sciences and Humanities (1755 e-journals), Scopus and Nature journals, 98 titles of Sage Publication comprising Management journals collection. Access to back-files of American Chemical Society (ACS), publication of Indian Journals.com (111 e-journals) including Applied science and Technology, Business Economics and Management and Library and information Science journals have also been renewed for this year. Besides, MGCL also purchased 500 articles through the Wiley's Article Select token Service on user's demand.

**Table 3: Number of Journals subscribed and Expenditure Incurred**

Year	Recommended Titles	Subscribed Titles	Amount (Rs. in lacs)
2014-2015	1167*	956*	1126.81
2015-2016	1028*	701*	680.94

\*plus 1755 package titles.

**Table 4: Number of Journals subscribed and Expenditure Incurred in FY.2016-17**

SN	Subscription Year	Description	Recommended Titles	Subscribed Titles	Amount Rs.
1	2015	Web of Science	-	-	2916968.00
2	2016	Journal Subscription	-	2039	52446113.00
3	2017	Databases, Standards, AST etc.	7	7	7241885.00
		Journal Subscription	2855	2706 (903+1803*)	102620844.00
<b>Total</b>					<b>165225810.00</b>

\* Payment of Rs.9297986.00 for these 1803 titles (including package titles) has been made in FY 2017-18.

**Note:** Out of 2855 recommended titles, 149 titles were not subscribed due to their online availability through e-ShodhSindhu consortium, Wiley's Article Select token (AST) Service and open access.

## 2.1 e-Journals Access through eShodh Sindhu Consortium-

Based on the recommendation of an Expert Committee, the MHRD has formed **e-Shodh-Sindhu Consortium** merging three consortia initiatives, namely **UGC-INFONET Digital Library Consortium**, **NLIST** and **INDEST-AICTE Consortium**. The e-Shodh-Sindhu provides current as well as archival access to more than 15,000 core and peer-reviewed journals and a number of bibliographic, citation and factual databases in different disciplines from a large number of publishers and aggregators to its member institutions including centrally-funded technical institutions. MGCL coordinated with them and got access to the following resources:

### 2.1.1 Full-Text Journals / Publications-

**Table 5: List of Resources - Full-Text Access for UNLIMITED USERS**

SN	Title	No. of Titles
1.	ACM Digital Library	1143
2.	American Institute of Physics (AIP)	19
3.	American Physical Society (APS)	11
4.	Annual Reviews Publication	53
5.	ASCE Journals	36
6.	ASME Journals	26
7.	ASTM and Digital Library	12500* Standard, 1500* Books, 16800* JI. Articles, 47000* Papers, Chapter & articles
8.	Economics and Political Weekly	1
9.	Elsevier's Science Direct	2524
10.	Emerald CFTI Collection	298
11.	IEEE / IEE Electronic Library Online (IEL)	150+
12.	JSTOR	3071
13.	Nature	1
14.	Optical Society of America (OSA)	18
15.	Oxford University Press	262
16.	SIAM	16
17.	Springer Link	1438
18.	Project Muse	648

## 2.1.2 Bibliographic / Factual Databases-

MGCL has full access to a number of bibliographical/factual databases for unlimited users. Details are given below.

**Table 6: List of Bibliographic Databases**

Sl. No.	Title	Area of Interest	Resources/ Titles Covered
1.	Capitaline	Information about companies listed on Indian Stock Exchanges	24000 listed & unlisted companies
2.	CRIS INFAC Industrial Information (CRISIL)	CRISIL is a global analytical company providing ratings, research, and risk and policy advisory services	Ratings on 14000* companies; 45000* SME Ratings; etc.
3.	Euromonitor (GMID)	Covers 350 markets from 207 countries	Global Marketing Information Database.
4.	ISID Database	Databases on various aspects of the Indian economy, particularly concerning industry and the corporate sector	Policy documents and statistical indicators.
5.	J Gate Plus	e-Journals gateway	Abstract level access.
6.	MathSciNet	Bibliographic Database for Mathematics	2,00,000 reviews
7.	Proquest ABI/Inform Complete	Business, Management and Trade - scholarly and trade journal articles, dissertations, market reports, industry reports, business cases and global and trade news.	Bibliographic and full-text database.
8.	SciFinder Scholar	World foremost chemistry database	10,000*
9.	Web of Science	Bibliographic Database with Citation Analysis Tools.	Scholarly journals.

## 2.2 e-Journal Access through IITR Arrangements-

MGCL is also subscribing to several full-text online journals as well as secondary Online/CD-ROM databases for unlimited users, apart from the resources available from e-Shodh Sindhu. The details are given below-

### 2.2.1 Full Text Journal Access-

MGCL has got access to the e-journals from the following scholarly publishers.

**Table 7: List of Resources: Full-Text Access FOR UNLIMITED USERS**

Sl. No.	Publisher	Nos. of Titles
1.	American Chemical Society (ACS) (All titles with Archives)	54
2.	American Economic Association	7
3.	American Soc. for Microbiology	12
4.	Cambridge University Press	10
5.	Electrochemical Society	7
6.	Elsevier Science	93
7.	ICE Publishing	29
8.	Indiansjournal.com	111
9.	Institute of Physics Publishing (IOP)	30
10.	Japan Publishing Trading Company	06
11.	IWA Publishing	05
12.	Nature Publication	6
13.	Portland Customer Service	04
14.	Royal Society	8
15.	Royal Society of Chemistry (RSC)	55
16.	Sage Publishers	150
17.	Springer	41

18.	Taylor & Francis Journals (33 subjects)	1755
19.	Trans. Tech. Pub.	14
20.	University of Chicago	5
21.	Walter DeGruyter	6
22.	Wiley InterScience	54
23.	World Scientific	37
24.	Other Publishers	207
	<b>Total</b>	<b>2706</b>

## 2.2.2 Bibliographic / Factual/ Full-Text Databases-

**Table 8: List of Databases**

Sl. No.	Title	Area of Interest	Resources/ Titles Covered
1	IEC Standards	Technical Standards	Standards/ Codes
2	British Standard	Technical Standards	Standards/ Codes
3	EBSCO Databases	Management and allied fields	375 Databases, 12000 Journals
4	ProQuest Dissertation & Theses	Full Text Theses & Dissertations from around the globe across all disciplines	More than 70,000 new full-text dissertations and theses each year
5	Scopus	The largest abstracting and citation database of peer-reviewed literatures	Abstract and citation database of peer-reviewed literature: scientific journals, books and conference proceedings.
6	The Arabidopsis information Resources (TAIR)	Genetic and Molecular Biology database.	The Arabidopsis Information Resource (TAIR) collects information and maintains a database of genetic and molecular biology data for Arabidopsis thaliana, a widely used model plant

## 2.3 Usage Statistics of major Electronic Resources-

### 2.3.1 Full Text Resources-

The usage of full-text in terms of year wise downloads are presented in the following table-

**Table 9: Usage Statistics of major Electronic Resources**

Sl. No.	Publisher	2014	2015	2016
1	ABI Inform Complete	19891	8855	8256
2	ACM Digital Library	7373	8637	8323
3	American Association for the Advancement of Science (AAAS)	1294	2976	4334
4	American Chemical Society (ACS)	84198	96329	97229
5	ACSESS	9	722	516
6	American Institute of Physics (AIP)	17052	20378	21378
7	American Mathematical Society (AMS)	425	29	470
8	American Physical Society (APS)	11531	15920	14171
9	American Society for Microbiology	5726	5783	6220
10	ASCE	11701	16409	15710
11	ASME	6088	6420	11372
12	Electrochemical Society	1072	445	1339
13	Science Direct	822857	841310	887369
14	Emerald CFTI Collection	22225	19867	22088
15	Institution of Civil Engineers (ICE)	314	1479	1753
16	IEEE / IEE Electronic Library Online (IEL)	191815	213709	206828
17	Indian Journals.com	NA	NA	1157

Sl. No.	Publisher	2014	2015	2016
18	Institute of Physics Publishing (IOP)	14339	16032	16191
19	Nature Publication	14014	23122	27160
20	PQDT	2102	8207	7086
21	Royal Society	1290	1592	2453
22	Royal Society of Chemistry (RSC)	58553	86592	88332
23	Sage Publications	9935	9241	8796
24	Springer	109345	120695	129147
25	Taylor & Francis	33260	50386	51270
26	Trans Tech Publications	4942	3869	3356
27	John Wiley	8925	58252	64035
28	World Scientific Publisher	1137	1795	1783

The usage details of top ten electronic resources (in terms of their usage at the Institute) are presented below in graph on logarithmic scale. Usage statistics of all full text Electronic Resources have shown substantial increase.

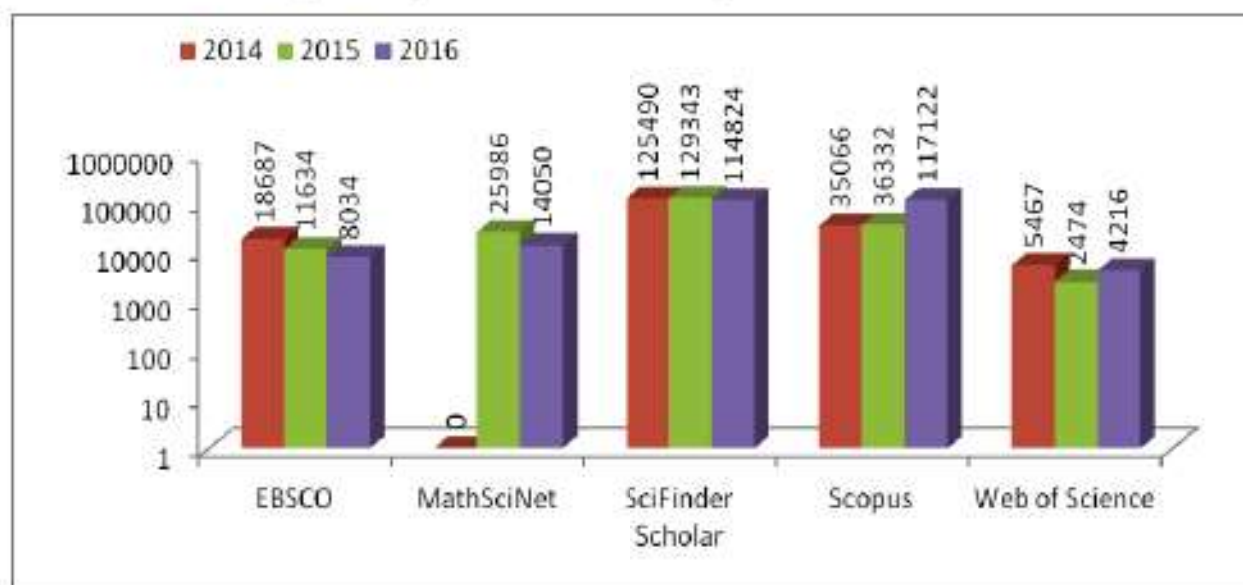
### 2.3.2 Indexing and other Databases (In terms of year-wise view/ download)

**Table 10: Usage Statistics of Indexing and other Databases**

Sl. No.	Publisher	2014	2015	2016
1	EBSCO	18687	11634	8034
2	MathSciNet	(Not sub)	25986	14050
3	SciFinder Scholar	125490	129343	114824
4	Scopus	35066	36332	117122
5	Web of Science	5467	2474	4216

The usage details of **Indexing and other Databases** (in terms of their usage at the Institute) are presented below in graph on logarithmic scale. There is a significant increase in use pattern of Scopus and Web of Science. However, there is decrease in use pattern EBSCO, MathSciNet and SciFinder Scholar compare to previous years.

**Figure: Usage Statistics for Indexing and other Databases**



### 3. ACQUISITION SECTION-

#### 3.1 Print Document Collection-

During the year under report following publications were acquired from different sources and added in MGCL collection-

**Table 11: Annual Collection Development: split figures**

Sl. No.	Types of Publications	Addition
1.	New Books	3590
2.	Hindi Books	251
3.	Gratis Books	259
4.	Theses and Dissertation	1546
5.	Non-book Materials	02
<b>Total</b>		<b>5648</b>

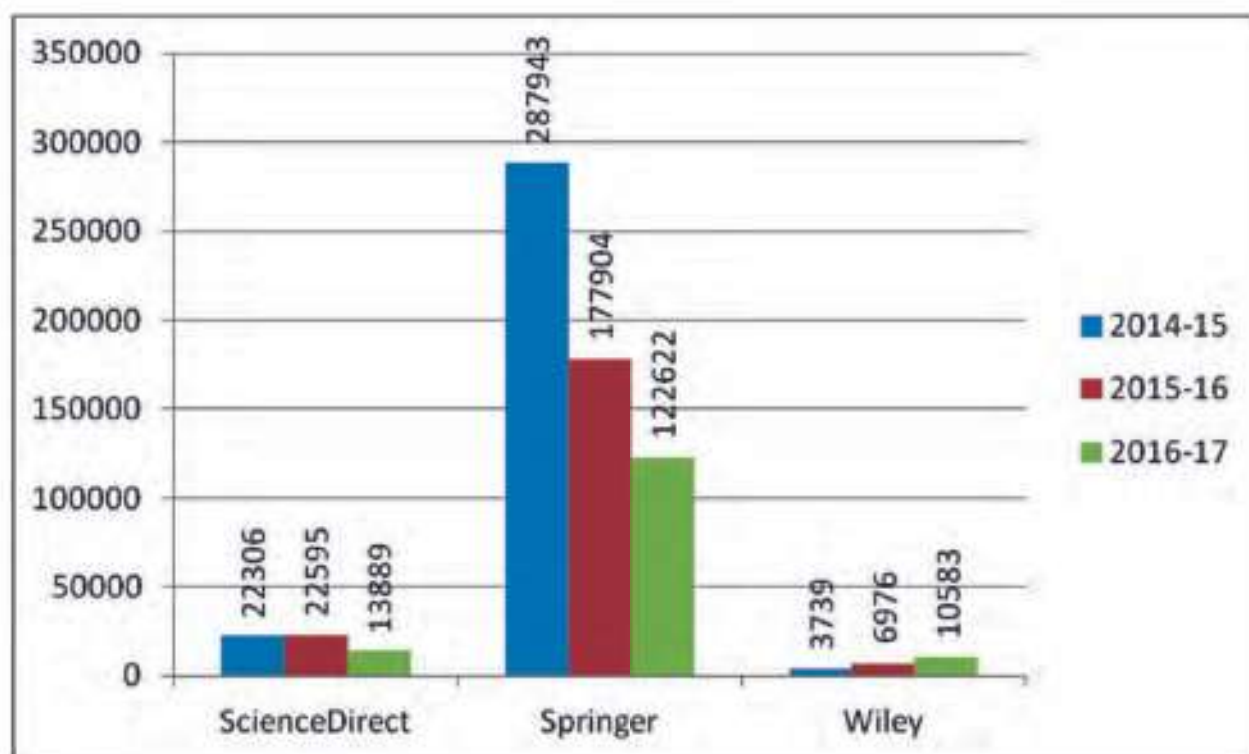
**Table 12: Annual Collection Development: Comparative figures**

Year	e-Books	Books	Bound Journals	Annual Intake
2014-15	704	2483	1562	4749
2015-16	800	3116	978	4894
2016-17	-nil-	4100	-nil-	4100

#### 3.2 Usage Statistics of eBooks-

Usage statistics of the online books (collection updated till 2012) accessible from various major publishers is given below. Table shows the total number of downloaded chapters of books.

**Figure: Usage Statistics of eBooks Resources**





### 3.3 Collection Development of Departmental Libraries-

During the FY.2016-17, 4100 (including Gratis, Hindi book etc.) new printed books were procured for enriching the collections of different departmental libraries and Central Library. Department-wise breakup is given below-

**Table 14: Collection of Departmental Libraries**

Sl. No.	Departments	Additions in 2016-17	Total Collection
1.	Architecture and Planning	45	4058
2.	Biotechnology	104	5116
3.	Chemical Engineering	52	3321
4.	Chemistry	19	2535
5.	Civil Engineering	111	19640
6.	Computer Science & Engineering	14	60
7.	Earth Sciences	09	3672
8.	Earthquake Engineering	06	5518
9.	Electrical Engineering	10	4794
10.	Electronics and Communication Engineering/Computer Science and Engg.	49	8815
11.	Humanities and Social Sciences	262	6525
12.	Hydrology	02	1704
13.	Management Studies	26	6747
14.	Mathematics	68	6585
15.	Mechanical and Industrial Engineering	00	10886
16.	Metallurgical and Materials Engineering	48	4212
17.	Paper Technology	123	21019
18.	Physics	67	4390
19.	Water Resources Development and Management	01	250
20.	Alternate Hydro Energy Centre	14	5381
21.	Centre of Nanotechnology	14	65
22.	Centre for Transportation Systems (CTRANS)	00	109
23.	Centre of Excellence in Disaster Mitigation & Management (CoEDMM)	14	97
24.	ICC+ISC+IIC	00	459
25.	Institute Hospital	09	16
26.	Intellectual Property Rights Books for IPR Chair	00	357
27.	MGCL collection (TBLS+General Books)	2523	---
<b>Total books available in departmental libraries till 31<sup>st</sup> Mar 2017.</b>			<b>126331</b>

### 4. TECHNICAL PROCESSING SERVICES-

During 2016-17, more than 5500 books, theses, & dissertations were classified and catalogued through Library Management Software Libsys for creating online catalogue. More than 4200 books were tagged through RFID system for smooth circulation and management.

### 5. CIRCULATION SERVICES-

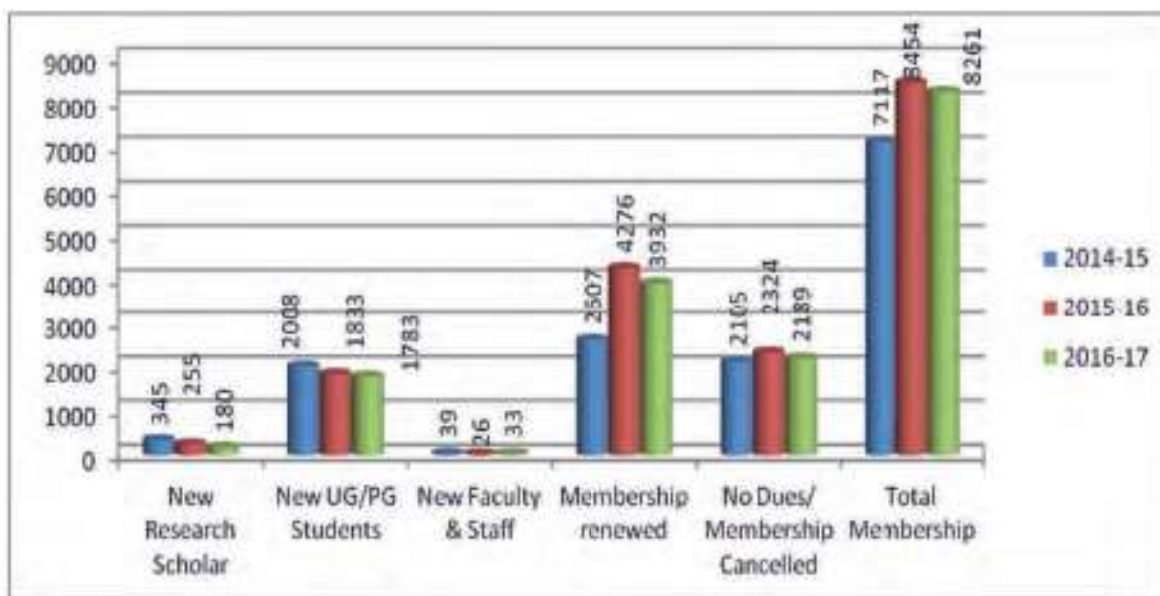
MGCL has large number of users and the circulation service is fully automated and integrated with RFID system. It provides lending services and facilities for return of loaned items. Membership registration, renewal and de-registration, catalogue enquiry and payment of overdue charges are also handled at the circulation desk. Library provides the circulation service to its user in all week days.

More than 5900 members were registered / renewed and facilitated the circulation services during the report period. Library users were also facilitated with cashless payment of overdue charges and other charges through Bank POS machine, installed at the counter. Users were informed through E-mail and SMS alert services immediately after any activity to confirm any transaction made by the user in library. Library members have also been facilitated to check their online library account through Online Public Access Catalogue (OPAC).

### 5.1 Membership -

1996 new members including undergraduates and postgraduate students, faculty, staff, research scholars and corporate members were enrolled as library users. Memberships of existing 3932 members were also renewed. Total 2189 membership were cancelled and No-Dues certificates issued. Around 4500 new members from UG and PG categories were also registered for Text-Book Loan Scheme. Library membership fee for corporate houses and retired professionals were revised this year on the recommendation of the LAC and approved by the competent authority.

**Figure: Comparative Data of Library Membership**



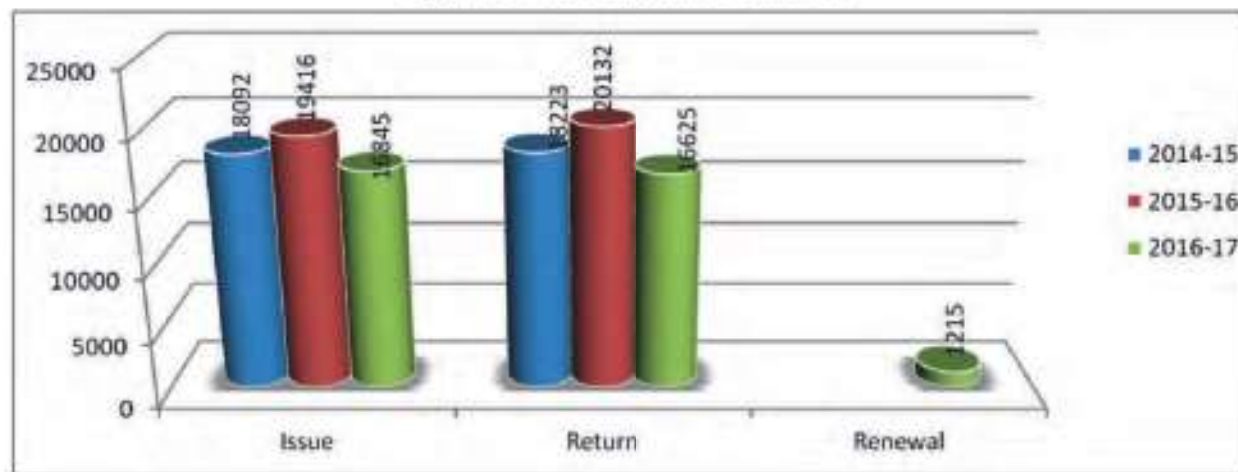
### 5.2 Book Lending Service-

The circulation service is available to all the users from 10:00 AM to 07:00 PM on all working days. A total number of 16845 general books were issued, 1215 books were renewed, and 16625 books were returned during the period under report. On an average 1505 books were issued/ renewed to the users per month.

From this year, MGCL made a provision of one time renewal of book for subsequent 15 days. During this period, periodical overdue reminders were also sent to the patrons.

A sum of Rs.3.53 lacs was collected towards institutional membership renewal fee and overdue charges etc. and deposited in the Institute Treasury during the FY.2016-17.

**Figure: Book Issue/Return Statistics**



### 5.3 Library Timings -

From 1<sup>st</sup> Apr 2016 till 5<sup>th</sup> Feb 2017, library remained open from 8:30 AM to 10:00 PM on all working days (except 10 listed holidays) ; and 9:45 a.m. to 6:30 p.m. during weekends and holidays and till 12.00 midnight from two weeks before and till the end of examinations.

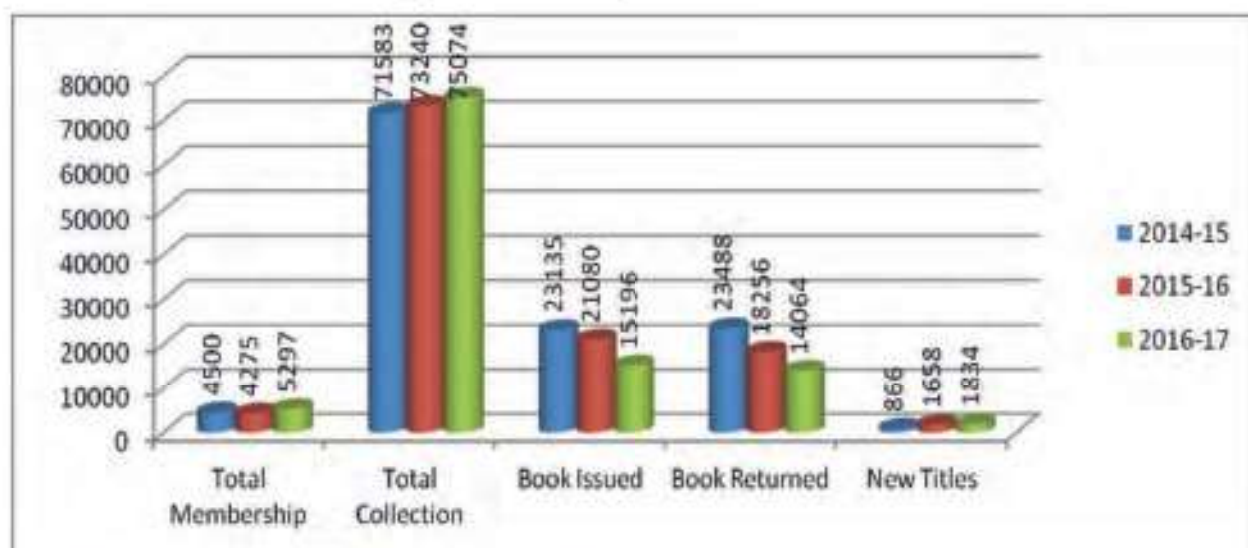
From 6<sup>th</sup> Feb' 2017, library is observing revised timing from 8:30 A.M. to 12:00 midnight on all days (except three national holidays and reduced hours for five holidays) and round the clock one week before and till the end of examinations.

### 6. TEXT-BOOK LOAN SCHEME (BOOK-BANK FACILITY) -

This year around 4297 students (from the academic year 2012-13 to 2016-17) from UG (all disciplines) and PG (selected disciplines) were benefited from this scheme in both the semesters and 15196 books were issued and 14064 books returned from time to time and at the end of semesters.

On the recommendations from HODs and faculty members, 1834 copies of new prescribed textbooks were added to the collection for students.

Figure: Membership details of TBLS Users



### 7. AUTOMATION AND NETWORKING SECTION-

For advancement of e-Services provided by MGCL some new features related to ICT based services were added this year. e-Services for users are maintained 24x7 throughout the year and a system is maintained by regular checking, maintenance and problem rectification for smooth access of e-Resources on Internet and Intranet.

- i. **Upgradation of RFID System & Web Based LMS Libsys 7.0 -**  
Advanced version of RFID Device Client Software L-Smart & Libsys Server LSU5 were Installed on Blade Server.
- ii. **e-Repository Bhagirathi-**  
New CentOS(Linux) Server prepared along with Installation of DSpace Server to manage Bhagirathi e-Repository and uploaded 789 pdf of scanned archive documents on the Server.
- iii. **e-Standard Web Services-**  
During the year 609 IEC Publications & 860 BSI Codes pdf uploaded on the e-Standard Server.
- iv. **National Digital Library (NDL) Project under NMEICT mission of MHRD-**  
Technical support provided to NDL Team for enabling data harvesting from Bhagirathi e-Repository and 789 records of such archival documents were harvested by the NDL Team.
- v. **Digital Surveillance System (IP based) -**  
A New Server installed to maintain live recording and backup of CCTV cameras for important locations of MGCL.
- vi. During the year 39 requests were attended to resolve cases of lost & found property recovery etc. by analyzing surveillance camera/ video recording.

## 8. USERS' SERVICES-

### 8.1 Document Delivery Service-

The Library being the core member of new e-Sodh Sindhu Consortium, is well aware of its responsibility towards the inter library cooperation for exchange of research articles. The Library receives requests from our scholars, other IITs, NITs and other institutions for technical literature. During this period, 315 articles were delivered to our research scholars as well as to other IITs, NITs and other institutions in timely manner.

### 8.2 Educational Tour of Alumni and outside students to MGCL-

More than 150 alumni of IIT Roorkee (erstwhile University of Roorkee) and students from the other institutions including foreign students and faculty, officers inducted at Institute for QIP courses, B. Lib and M. Lib. students from nearby Universities/ Institutions visited the Library on education tour. The information about the collection, infrastructure, services and specific features of MGCL had been provided to them beside the tour of entire library.

### 8.3 Xerox/Printing Service-

During the FY.2016-17 reprographic service was offered to users through outsourced agency till Dec. 2016. From Jan 2017 to 31<sup>st</sup> Mar' 2017, library is providing the service during limited hours. A total of 3810 pages of articles print and xerox pages of journal's back volumes were provided to users and a sum of Rs.2978.00 was collected for these services from the users and deposited in the Institute Treasury.

### 8.4 Plagiarism checking of Theses and Dissertations-

MGCL is working as central hub for plagiarism checking of the new Ph.D. theses and Research Papers through Anti-Plagiarism software- Turnitin. Through this service 304 theses and 148 Research Papers have been checked during this period and originality certificates have been provided to the research scholars.

## 9. ISO 9001:2008 Re-certification of Mahatma Gandhi Central Library-

Annual re-certification of MGCL's Quality Management System for ISO-9001:2008 was completed on 26<sup>th</sup> June' 2016 by the auditors of British Standards Institutions (BSI) for further one year.

## 10. OTHER IMPORTANT FACTS RELATED TO THE LIBRARY -

<b>Total Working days In a Year</b>	<b>: 355</b>
<b>Total Nos. of Holidays</b>	<b>: 10</b>
<b>Total number of Staff</b>	<b>: 28</b>
a) Library Academic Staff	: 06
b) Scientific Officer	: 01
c) Professionals (ALIO, SLIA, JLA)	: 17
d) Non Professionals	: 02
e) Secretarial Staff (contract)	: 01
f) Others (contract)	: 01

## 11. Seminars/ Workshops organized by MGCL

Following programmes were organized for the benefit of scholars and students-

Sl. No.	Name of the Programme	Date
1.	Library User's Awareness programme on Library Resources.	08/09/2016
2.	Workshop on Book Publishing by Elsevier ScienceDirect.	26/09/2016
3.	Workshop on EBSCO Business Source Complete resource.	18/10/2016
4.	Workshop on IEEE Xplore and CRISIL Database.	24/11/2016
5.	A Talk organized on 'Reading Habits' for Ishaan Vikas Participants.	05/12/2016
6.	Workshop on Springer Nature online platform.	08/12/2016
7.	Workshop on MENDELEY Reference Manager	20/01/2017 27-28/01/2017
8.	Workshop on Plagiarism and Impact of Research	04/03/2017
9.	Two Days Orientation Workshop on Electronic Journals and databases, subject coverage, searching and browsing, etc. for IITR departmental library staff.	17-18/03/2017

## 12. IMPORTANT EVENTS and EXHIBITIONS

MGCL organized the following events and exhibitions-

SN	Exhibition	Duration
1.	Exhibition of Hindi Books during Hindi Pakhwada.	14-21 Sep, 2016
2.	Observed and celebrated birth Anniversary of Mahatma Gandhi on 2 <sup>nd</sup> Oct' 2016 and organized a week long "Exhibition on Gandhian Literature".	01-07 Oct, 2016
3.	Drawing & Painting Competition for promoting library awareness and encouraging reading habits among young students from nearby schools.	2 <sup>nd</sup> Oct, 2016
4.	Observed and celebrated birth Anniversary of Pt. Jawaharlal Nehru as BAL DIWAS and organized an "Exhibition of books on and by Pt. Jawaharlal Nehru".	14-20 Nov, 2016

## 13. Academic Outreach: Research Papers/ Invited Talks/ Memberships / Other activities-

### I. Research Paper-

1. Soni, Ramniwas, Sudeshwar Ram, and Singh, Yogendra. "Shodh Bhagirathi: The Institutional Repository of ETD at IIT Roorkee." *Library Herald*; 54.3 (2016): 331-39

### II. Invited Talks / Memberships / other activities -

1. Dr. C. Jayakumar, has been nominated as Member, IOP Publishing India Library Advisory Board.
2. Dr. C. Jayakumar moderated a session on "E-Resources common to all IIT's", 5th Annual Meeting of IIT Librarians, Indian Institute of Technology Bhubaneswar, 18-20 November 2016.
3. Dr. C. Jayakumar attended Higher Education Forum: Leading the way in Institutional Rankings, organized by INFLIBNET & Elsevier, New Delhi, 14th September 2016.
4. Dr. C. Jayakumar was the chief guest for the Librarian's Day event "Library as a Learning Space: Opportunities for the Library and Information Professionals in rendering Reference and Research support", organized by Doon Library & Research Centre, Dehradun at Hotel Pacific, Dehradun, 12 Aug' 2016.
5. Shri Sanjeev K Sunny conducted sessions on Plagiarism and Reference Management on 10<sup>th</sup> March, 2016 in "Seven days National Workshop on Research Methodology and Techniques using SPSS & Mendeley" organized by DAV Centenary College, Faridabad.
6. Shri Sanjeev K Sunny participated as a resource person in "Two Days Workshop on Plagiarism and Reference Management using Mendeley" organized by Sikkim University, Gangtok to conduct sessions on plagiarism and reference management using Mendeley on 24<sup>th</sup> - 25<sup>th</sup> October, 2016.
7. Shri Sanjeev K Sunny took membership of International Society for Knowledge Organization (ISKO) - the premier international scholarly society devoted to the theory and practice of knowledge organization.
8. Shri Amarendra Sharma attended 21 days training programme on ERP-SAP Purchase Requisition Generation & Entries in SAP organized by Institute Computer Centre, IITR from 2<sup>nd</sup> to 23<sup>rd</sup> Aug' 2016.
9. Smt. Nisha attended a video conferencing session on 03<sup>rd</sup> Feb' 2016 at IITR related to set-up of National Digital Library (NDL) under NMEICT mission of MHRD Coordinated by IIT Kharagpur.
10. Smt. Nisha, Scientific Officer, participated in a 21 days training programme on ERP-SAP Purchase Requisition Generation & Entries in SAP organized by Institute Computer Centre, IITR from 2 to 23 August 2016.

#### 14. DISTINGUISHED VISITORS TO THE LIBRARY-

Date	Visitor's Name and Address	Comments
29.4.2016	Team of Advisory Council	A new commendable treasure trove of knowledge and wisdom.
19.9.2016	श्री गिरीश्वर मिश्र, महात्मा गाँधी हिंदी विश्वविद्यालय, महाराष्ट्र	रूडकी के प्रौद्योगिकी संस्थान द्वारा हिंदी माध्यम से कार्य करने की दृष्टि से कई महत्वपूर्ण पहल की गयी हैं। पुस्तकालय में भी हिंदी की पुस्तकों का व्यापक संग्रह हो रहा है।
14.10.2016	Sh. Anand Prakash Harit, Metallurgical Engg. U.O.R. 1969 Batch.	Excellent collection of very old drawings and writings.
25.11.2016	Sh. I.D. Taneja, U.O.R., 1959 batch.	I came to Library to introduce myself. To have the introduction of the working Librarian of the I.I.T., Roorkee.

#### 15. APPENDIX-

List of Library Academic Staff (as on 31.03.2017) -

Librarian	Dr. C. Jayakumar	M.L.I.S., Ph.D., DCPA.
Deputy Librarians	1. Sh. Sompal Singh	M.A., M.L.I.Sc.(KUK)
	2. Sh. Sanjeev Kumar Sunny	B.A. (Hons), ADIS (Bangalore)
Asst. Librarian (Sr. Scale)	Sh. Amarendra Sharma	B.Sc., M.L.I.Sc.(BHU), PGDCA (KUK)
Asst. Librarians	1. Sh. R.N. Soni	M.A., M.L.I.Sc.(Jiwaji Uni. Gwalior)
	2. Dr. Rimai Atonring	M.A. M.L.I.S., Ph.D.
Scientific Officer	Smt. Nisha	M.C.A.(GKU, Haridwar), B.L.I.Sc. (IGNOU)

## 8. Institute Accounts

- |   |  |
|---|--|
| 8.1 Summary of Balance Sheet                | 8.5.4 Grant/Assistance received from AICTE |
| 8.2 Summary of Total Income and Expenditure | 8.5.5 Grant/Assistance received from UGC   |
| 8.3 Details of MHRD Plan Expenditure        | 8.5.6 Grant/Assistance received from CSIR  |
| 8.4 Details of MHRD Non Plan Expenditure    | 8.5.7 Receipts from Seminar and conference |
| 8.5 Details of Other Accounts               | 8.6 Donations Received                     |
| 8.5.1 Sponsored Research Projects           |  |
| 8.5.2 Consultancy and Testing Projects      |  |
| 8.5.3 Institute Development Fund            |  |

### 8.1 SUMMARY OF BALANCE SHEET AS AT 31<sup>ST</sup> MARCH 2017

PARTICULARS	SCH. NO.	CURRENT YEAR		PREVIOUS YEAR	
		AMOUNT (Rs.)	AMOUNT (Rs.)	AMOUNT (Rs.)	AMOUNT (Rs.)
<b>SOURCES OF FUNDS</b>					
<b>CORPUS FUND</b>	1	3,276,771,108.98		3,202,142,542.67	
<b>GENERAL FUNDS:</b>					
Institute Development Fund	1A	2,671,012,957.43		2,608,093,297.43	
JEE Fund	1B	179,297,001.78		155,881,511.78	
JAM Fund	1C	18,787,072.35		15,480,003.35	
GATE Fund	1D	<u>368,954,081.56</u>	<b>6,514,822,222.10</b>	<u>307,949,139.56</u>	<b>6,289,346,494.79</b>
<b>ENDOWMENT FUNDS</b>					
Trusts Fund	2		306,297,856.83		268,901,969.58
<b>CURRENT LIABILITIES &amp; PROVISIONS</b>					
<b>SPONSORED FELLOWSHIP AND SCHOLARSHIP</b>					
Univ. Grant Commission Fund	3A	6,245,380.38		5,059,184.38	
Govt. of India Fund	3B	<u>61,975,479.71</u>	<b>68,220,851.09</b>	<u>54,582,629.46</u>	<b>59,641,813.84</b>
<b>SPONSORED PROJECTS</b>					
SRIC Fund	3C		3,609,800,691.08		3,063,107,171.95
<b>OTHER CURRENT LIABILITIES</b>					
Expenses Payable/Other Payables	3D	141,240,841.00		135,805,391.00	
Provision for Employee's Benefits		9,339,563,898.00		8,503,374,825.00	
Security Deposits	3E-3G	<u>109,187,501.10</u>	<b>9,589,992,240.10</b>	<u>150,839,402.35</u>	<b>8,790,019,618.35</b>
<b>TOTAL [ RS.]</b>			<b>20,089,133,861.20</b>		<b>18,471,017,068.51</b>
<b>APPLICATION OF FUNDS</b>					
<b>FIXED ASSETS</b>					
Tangible Assets	4A-4C		11,381,117,673.00		10,610,876,615.16
<b>INVESTMENTS</b>	5		691,500,000.00		83,600,000.00
<b>CURRENT ASSETS, LOANS &amp; ADVANCES</b>					
<b>A. Current Assets:</b>					
a. Closing Stock of Medicines		1,602,205.56		760,870.27	
b. Non Plan Grant Receivable from MHRD		414,300,000.00		-	
c. Plan Grant Receivable from MHRD		-		-	
d. Cash & Bank Balances	6A-6C	5,930,835,952.35		6,340,895,012.19	
e. Interest Accrued on Investments		<u>422,770,559.89</u>	<b>6,769,508,717.80</b>	<u>207,498,853.89</u>	<b>6,549,154,736.35</b>
<b>Advances Recoverable in Cash or in Kind:</b>					
a. Advance against Foreign Letters of Credit issued by banks (pending adjustment)	7-7A	1,172,621,299.00		1,171,096,473.00	
b. Sundry Advances	8-8B	66,049,570.40		47,962,643.00	
c. Securities	9	<u>8,336,601.00</u>	<b>1,247,007,470.40</b>	<u>8,336,601.00</u>	<b>1,227,385,717.00</b>
<b>TOTAL [ RS.]</b>			<b>20,089,133,861.20</b>		<b>18,471,017,068.51</b>
<b>SIGNIFICANT ACCOUNTING POLICIES &amp; NOTES TO ACCOUNTS</b>	10				

## 8.2 SUMMARY OF TOTAL INCOME & EXPENDITURE 2016-2017

(Rs. in lacs)

Head of Accounts	Opening Balance	Receipts	Other Receipts	Total	Payments
<b>I. MHRD</b>					
(a) Plan Grant	(-) 1211.31	9700.00	245.00	8733.69	13078.24
(b) Non Plan Grant	2862.02	24147.00	5247.00	32256.02	28219.63*
<b>II. UGC</b>	50.47	90.00	20.88	161.35	109.02
<b>III. CSIR</b>	288.60	161.03	26.15	475.78	190.44
<b>IV. Institute Receipts</b>					
(a) Fee	2392.77	6698.94	1234.16	10325.87	7637.88
(b) Bhawan Receipt Payment Fund	409.30	62.49	16.11	487.90	74.00
<b>V. Sponsored Research Projects</b>	3589.65	4158.97	0.00	7748.62	3092.14
<b>VI. Consultancy &amp; Testing Projects</b>	4200.85	6845.89	0.00	11046.74	6768.83
<b>TOTAL</b>	<b>12,210.55</b>	<b>54,020.69</b>	<b>6,789.30</b>	<b>73,020.54</b>	<b>62,977.29</b>

\*The expenditure of Non-Plan includes (Rs. 26715.63 lacs actual expenditure + Rs. 1504.00 lacs saving transfer to IDF)

## 8.3 DETAILS OF MHRD PLAN EXPENDITURE

(Rs. in lacs)

Sl. No.	Head of Accounts	Expenditure 2016-17
<b>1.</b>	<b>Equipment</b>	
(i)	Replacement of obsolete equipment & modernization of laboratories	1143.82
(ii)	Equipment of new department/placement cell education Tech. Cell/EPBAX	125.08
(iii)	New Programme	
(a)	Equipment	0
(b)	NMR	(-) 0.02
(iv)	Office equipment/Automation	
(a)	A few new offices	0
(b)	Computerization of Adms. Functions	2.87
<b>2.</b>	<b>Audio Visual</b>	0
<b>3.</b>	<b>Up gradation of Computing facilities</b>	37.25
<b>4.</b>	<b>Up gradation of Networking &amp; Multimedia Facilities</b>	0
<b>5.</b>	<b>Strengthening of library</b>	629.63
<b>6.</b>	<b>ERP</b>	61.62
<b>7.</b>	<b>Staff / Student Amenities (other than buildings)</b>	
(a)	DOSW (Clubs & Sports)	2.87
(b)	Security	0.00
(c)	Hospital	0.42
(d)	Transportation	0.00
(e)	New Guest House	1.44
<b>8.</b>	<b>Renovation/Extension of Buildings (including support services)</b>	
(i)	Multi-Activity centre	165.34
(ii)	Renovation/Extension in Hostels/Department	0.41
(iii)	Transit Accommodation	6282.81
(iv)	Extension of Greater Noida	61.10
(v)	Dynamic Test lab EQD	18.97
(vi)	TIDES incubation centre	100.41



Sl. No.	Head of Accounts	Expenditure 2016-17
(vi)	Tinkering Lab	57.05
(vii)	Under Ground Fuel Storage Tank	1.00
(ix)	Trainee officer's Hostel CEC	5.45
(x)	Sewerage System and STP Roorkee Campus	5.75
<b>9.</b>	<b>Assistantship/ Fellowship</b>	<b>4374.97</b>
	<b>Total</b>	<b>13078.24</b>

#### 8.4 DETAILS OF MHRD NON PLAN EXPENDITURE

(Rs. in lacs)

Sl. No.	Head of Accounts	Expenditure 2016-17
<b>1.</b>	<b>Equipment</b>	
(i)	Replacement of obsolete equipment & modernization of laboratories	1143.82
(ii)	Equipment of new department/placement cell education Tech. Cell/EPBAX	125.08
(iii)	New Programme	
(a)	Equipment	0
(b)	NMR	(-) 0.02
(iv)	Office equipment/Automation	
(a)	A few new offices	0
(b)	Computerization of Adms. Functions	2.87
<b>2.</b>	<b>Audio Visual</b>	<b>0</b>
<b>3.</b>	<b>Up gradation of Computing facilities</b>	<b>37.25</b>
<b>4.</b>	<b>Up gradation of Networking &amp; Multimedia Facilities</b>	<b>0</b>
<b>5.</b>	<b>Strengthening of library</b>	<b>629.63</b>
<b>6.</b>	<b>ERP</b>	<b>61.62</b>
<b>7.</b>	<b>Staff / Student Amenities (other than buildings)</b>	
(a)	DOSW (Clubs & Sports)	2.87
(b)	Security	0.00
(c)	Hospital	0.42
(d)	Transportation	0.00
(e)	New Guest House	1.44
<b>8.</b>	<b>Renovation/Extension of Buildings (including support services)</b>	
(i)	Multi-Activity centre	165.34
(ii)	Renovation/Extension in Hostels/Department	0.41
(iii)	Transit Accommodation	6282.81
(iv)	Extension of Greater Noida	61.10
(v)	Dynamic Test lab EQD	18.97
(vi)	TIDES incubation centre	100.41
(vii)	Tinkering Lab	57.05
(viii)	Under Ground Fuel Storage Tank	1.00
(ix)	Trainee officer's Hostel CEC	5.45
(x)	Sewerage System and STP Roorkee Campus	5.75
<b>9.</b>	<b>Assistantship/ Fellowship</b>	<b>4374.97</b>
	<b>Total</b>	<b>13078.24</b>

**8.5 — DETAILS OF OTHER ACCOUNT****8.5.1 Sponsored Research Projects***(Rs. in lacs)*

Description	Amount
Opening Balance	3589.65
Receipts	4158.97
Payments	3092.14
Closing Balance	4656.48

**8.5.2 Consultancy and Testing Projects***(Rs. in lacs)*

Description	Amount
Opening Balance	4200.85
Receipts	6845.89
Payments	6768.83
Closing Balance	4277.91

**8.5.3 Institute Development Fund***(Rs. in lacs)*

Description	Amount
Opening Balance (Including FDR)	26080.93
Receipts	3736.64
Payments	3107.45
Closing Balance (Including FDR)	26710.12*

\* Loan from IDF to others A/c of Rs. 5100.00 lakh is not included in closing balance.

**8.5.4 Grant/Assistance received from AICTE***(Rs. in lacs)*

Scheme/Programmes	Amount Received
QIP	116.48
AHEC	0
Others	0
<b>TOTAL</b>	<b>116.48</b>

**8.5.5 Grant/Assistance Received from UGC***(Rs. in lacs)*

Scheme/Programmes	Amount Received
JRF/SRF/Fellow	0.00
Others	0.00
<b>TOTAL</b>	<b>0.00</b>

**8.5.6 Grant/Assistance received from CSIR***(Rs. in lacs)*

Scheme/Programmes	Amount Received
JRF/SRF/Fellow	161.03
Others	0.00
<b>TOTAL</b>	<b>161.03</b>

**8.5.7 Receipts for Seminar and Conference***(Rs. in lacs)*

Scheme/Programmes	Amount Received
DST/SERB	2.00
CSIR	2.50
Others	171.85
<b>TOTAL</b>	<b>176.35</b>

**8.6 DONATION RECEIVED***(Rs. in lacs)*

Scheme/ Programmes	Amount Received
Donation Received	20.46
<b>TOTAL</b>	<b>20.46</b>

- 9.1 Sponsored Research and Industrial Consultancy activities
- 9.2 Conference / Symposia / Seminars
- 9.3 Sponsored Research Projects
- 9.4 Research Publications

### 9.1 SPONSORED RESEARCH AND INDUSTRIAL CONSULTANCY ACTIVITIES

During the year 2016-2017, 134 new sponsored research projects by Department of Science and Technology (DST), CPRI Bangalore, Council of Scientific and Industrial Research, DRDO, Department of Atomic Energy, Ministry of Human Resource and Development, MNRE, ISRO, MIT, MoES, Ministry of Rural Development, Ministry of Water Resources and other agencies with an outlay of Rs. 6769.375lacs' were taken up and 797 new consultancy projects were taken up across the various departments with an outlay of Rs.5095.30lacs'.

### 9.2 CONFERENCES / SYMPOSIA / SEMINARS

A large number of National and International conferences, symposia and seminars were organized by various departments and centres of the Institute. The details regarding titles, dates

- 9.5 Industrial Consultancy/ Testing
- 9.6 Faculty Initiation Grant
- 9.7 Intellectual Property Rights (IPR) Cell
- 9.8 Intellectual Property Rights (IPR) Chair

and other relevant information about these activities are given in the information provided by the concerned departments. The financial support for these events amounting to Rs.176.35lacs were obtained from DST, CSIR and other funding agencies.

### 9.3 SPONSORED RESEARCH PROJECTS

Almost all the departments of the Institute participated in these projects. 88 projects with a total outlay of Rs.3212.18lacs were completed while 168 projects with an outlay of Rs.14085.75 lacs continued for study and investigation during the year. The department-wise and agency-wise breakup of these sponsored projects are given in tables. Tables 9.3.1 A and B give the details of completed projects. Tables 9.3.2 A and B list the ongoing projects whereas Tables 9.3.3 A and B contain newly started projects.

**Table 9.3.1 A. Sponsored Research Projects Completed (Deptt.-wise)**

Department	No. of Project	Outlay In Lacs of Rs.
Arch. & Planning	1	2.92
Biotechnology	3	67.90
Centre of Excellence in Disaster Mitigation & Management	2	414.10
Centre of Nanotechnology	4	105.13
Chemical Engg.	5	293.41
Chemistry	8	174.93
Civil Engineering	16	746.28
Computer Science & Engineering	1	6.00
Department of Paper Technology	7	153.46
Earth Sciences	5	83.68
Educational Technology Cell	1	58.00
Electrical Engineering	3	148.98
Electronics & Computer Engineering	8	209.46
Hydrology	2	161.98
Institute Instrumentation	1	20.70

Centre	No. of Project	Outlay In Lacs of Rs.
Management Studies	1	10.00
Mech. & Ind. Engineering	9	267.61
Met. & Mat. Engineering	1	24.91
Physics	5	146.34
WRD&M	5	116.39
<b>Total</b>	<b>88</b>	<b>3212.18</b>

**Table 9.3.1 B. Sponsored Research Projects Completed (Agency-wise)**

Organisations/ Agencies	No. of Project	Outlay In Lacs of Rs.
AICTE, New Delhi	1	40.00
Biotechnology Industry Research Assistance Council, New Delhi	1	51.20
CSIR, CBRI, Roorkee	1	5.00
CSIR, New Delhi	11	278.21
DAE, Mumbai	3	162.93
DBT, New Delhi	1	26.20
DRDO, IRDE, Dehradun	1	9.70
DRDO, Kanpur	2	29.40
DRDO, New Delhi	4	178.05
DST, New Delhi	17	626.83
ICMR, New Delhi	1	18.98

ICSSR, New Delhi	2	14.00
IIT Madras	1	20.00
INDO-US Science & Tech. Forum, New Delhi	1	28.54
INSA, New Delhi	1	15.00
ISRO, Bangalore	1	11.58
Max Planck Society Germany	1	33.13
MHRD, New Delhi	4	281.60
Ministry of Defence, GATET Programme Cell, GTRE, Bangalore	1	76.00
Ministry of Shipping, Roads Transport & Highways, New Delhi	1	20.28
Ministry of Water Resources, New Delhi	1	23.83
MoES, New Delhi	4	611.32
Nanyang Technical University, Singapore	1	39.10
NBCC, New Delhi	1	24.00
NPCIL, Mumbai	1	111.89
NVIDIA Cororation, Pune	1	1.55
RailTel Corporation of India Ltd., Gurgaon	1	23.72
SERB, New Delhi	18	398.26
SJVN Ltd, Shimla	1	0.60
THDC India Ltd., Rishikesh	1	15.00
UKIERI	1	33.36
Uttarakhand State Council for Science and Technology, Dehradun	1	2.92
<b>Total</b>	<b>88</b>	<b>3212.18</b>

**Table 9.3.2 A. Sponsored Research Projects Continuing (Deptt.-wise)**

Department	No. of Project	Outlay in Lacs of Rs.
AHEC	11	6167.37
Arch. & Planning	1	22.25
Biotechnology	22	812.24
Civil Engineering	15	703.85
Chemical Engineering	3	95.85
Chemistry	12	328.33
Computer Science & Engg.	3	164.60
Centre for Himalayan Studies	1	100.00
Centre for Transportation Systems	1	18.60
Centre of Excellence in Disaster Mitigation and Management	1	5.48
Centre of Nanotechnology	1	52.78
Department of Paper Technology	4	431.26
Electronics & Computer Engineering	13	2529.97
Electrical Engineering	4	322.31
Earthquake Engineering	6	161.52
Earth Sciences	10	335.92
Humanities & Social Sciences	1	19.70
Hydrology	1	19.11

Institute Instrumentation Centre	4	137.37
Mathematics	10	126.82
Mel. & Mat. Engineering	8	176.40
Mech. & Ind. Engineering	22	1030.00
Physics	8	184.81
WRD&M	6	139.21
<b>Total</b>	<b>168</b>	<b>14085.75</b>

**Table 9.3.2 B. Sponsored Research Projects Continuing (Agency-wise)**

Organisations/ Agencies	No. of Project	Outlay in Lacs of Rs.
BARC, Mumbai	3	305.97
BMTPC, New Delhi	3	28.50
BRNS, Mumbai	2	74.56
CSIR, New Delhi	12	194.85
DAE, Mumbai	1	2.99
DBT, New Delhi	13	652.83
Department of Electronics and Information Technology	1	1000.00
Department of Electronics and Information Technology, Ministry of communication and Information Technology, New Delhi	3	333.23
DRDO, Bangalore	1	9.80
DRDO, Dehradun	1	9.72
DRDO, New Delhi	3	77.20
DRDO, Visakhapatnam	1	19.78
DST, New Delhi	28	1742.16
Global Development Network (GDN), Washington DC	1	19.70
Govt. of Uttarakhand	1	6.00
HSMI/HUDCO, New Delhi	1	22.25
IBM, Almaden Research Center, 650 Harry Road San Jose CA 95120	1	9.32
IBM, TJ Watson Research Center, 1101 Kitchawan Road, Yorktown Heights, NY 10598	1	3.98
ICMR, New Delhi	1	25.44
IIT Roorkee	1	100.00
INDO-FRENCH Centre for Applied Mathematics (IFCAM), Bangalore	1	1.29
INSA, New Delhi	1	15.00
International Business Machine Corporation	1	28.06
ISRO, Bangalore	3	65.84
MHRD, New Delhi	1	47.08
Ministry of Mines, New Delhi	1	38.57
Ministry of Shipping, Transport Bhawan, New Delhi	1	33.97
Ministry of Steel, New Delhi	1	81.65
Ministry of Water Resources, New Delhi	2	74.81
MNRE, New Delhi	7	5975.05

MoES, New Delhi	6	112.84
National Centre for Medium Range Weather Forecasting	1	4.69
NBCC, New Delhi	4	130.11

Organisations/ Agencies	No. of Project	Outlay in Lacs of Rs.
RailTel Corporation of India Ltd., Gurgaon	3	1247.14
SERB, New Delhi	47	1384.92
THDC	1	63.70
THDC India Ltd., Rishikesh	3	86.93
UGC-DAE Consortium for Scientific Research, Mumbai	1	1.35
Uttarakhand Council for Biotechnology, GoU, U.S. Nagar	1	16.83
Uttarakhand State Council for Science and Technology, Dehradun	1	5.48
Uttarakhand Van Vikas Nigam, Dehradun	1	4.80
Voith Hydro Pvt., Noida	1	27.36
<b>Total</b>	<b>168</b>	<b>14085.75</b>

**Table 9.3.3 A. New Sponsored Research Projects (Deptt.-wise)**

Department	No. of Project	Outlay in Lacs of Rs.
AHEC	3	468.10
Arch. & Planning Department	5	106.56
Biotechnology	14	997.826
Centre for Transportation System	1	19.00
Centre of Nanotechnology	3	117.269
Chemical	6	131.8925
Chemistry	10	269.153
Civil Engineering	12	380.454
Computer Science and Engg.	3	32.21
Department of Paper Technology	8	361.1252
Earth Sciences	3	554.25
Earthquake Engg.	1	14.59
Education Technology Cell	1	40.00
Electrical Engg.	4	94.24
Electronics & Computer Engineering	16	1674.138
Humanities & Social Science	2	19.319
Hydrology	2	50.17
Management Studies Department	3	22.46
Mathematics	5	72.54
Mech. & Ind. Engineering	14	773.046
Met. & Mat. Engineering	8	320.6643
Physics	9	226.618
WRD&M	1	23.75
<b>Total</b>	<b>134</b>	<b>6769.375</b>

**Table 9.3.3 B. New Sponsored Research Projects (Agency-wise)**

Organisations/ Agencies	No. of Project	Outlay in Lacs of Rs.
Building Material & Technology Promotion Council, New Delhi	1	8.46
CCTech Pvt. Ltd., Pune	1	19.80
CEFIPRA, New Delhi	1	15.6795
CEH, UK	1	22.45
CPRI, Bangalore	1	30.00
CPRI, New Delhi	1	23.75
CSIR, New Delhi	4	76.68
DAE, Mumbai	10	371.759
DAE, New Delhi	1	199.95
DBT, New Delhi	2	100.25
DENIAR Trading India LLP, Mumbai	1	29.4552
DRDE, Gwalior	1	9.35
DRDO, Dehradun	1	18.50
DRDO, Jalahalli, Bangalore	1	30.00
DRDO, New Delhi	3	137.76
DST, New Delhi	22	2380.063
Fuzzy Logix	1	7.80
ICMR, New Delhi	4	100.276
ICSSR, New Delhi	3	22.00
IIT, Madras	1	26.65
Indian Council of Agricultural Research, Agricultural Engg., New Delhi	1	26.21
Inspire Faculty Award offer letter	1	35.00
ISRO	1	39.08
ISRO, Banglurur	1	16.80
IUSSTF, New Delhi	1	45.00
Lekha Wireless Solutions Pvt. Ltd., Bangalore	1	1.35
MHRD, New Delhi	6	838.28
Ministry of Housing and Urban Poverty Alleviation	1	26.00
MoES, New Delhi	2	41.594
MOM, New Delhi	1	20.00
NBCC Ltd., New Delhi	4	115.44
NIRD&PR, Hyderabad	1	11.319
NTPC Ltd.,	1	47.24
RDSI, Lucknow	1	20.21
Research and Graduate Studies, Thompson River University	1	2.50
RICET, IITR	2	100.116
SangeetNatak Academy and Ministry of Culture, New Delhi	1	3.00
SERB, New Delhi	42	1297.5633
THDC India Ltd., Tehri	1	20.63
UCS&T, Dehradun	1	7.41
UJVN, Ltd	1	419.00
Vedang Radio Tech., Mumbai	1	5.00
<b>Total</b>	<b>134</b>	<b>6769.375</b>

#### 9.4 RESEARCH PUBLICATIONS

Department-wise details of research publications under the following four categories are given in Table 9.4.

- A- Books/ Chapters in books/monograph
- B- Papers in Journals
- C- Papers in Conferences / Symposia / Seminar/ Workshop
- D- Scientific & Technical Reports

**Table - 9.4 Research Publications**

Department	A	B	C	D	Total
Arch. and Planning	06	20	19	01	46
AHEC	00	48	29	28	105
Biotechnology	04	89	28	01	121
Chemical Engg.	08	144	35	00	187
Chemistry	00	127	29	01	157
Civil Engg.	06	149	86	04	245
CSE	02	49	30	00	81
Earthquake Engg.	00	38	27	66	131

Earth Sciences	02	25	37	00	64
Electrical Engg.	01	40	29	00	70
Elec.& Comp. Engg.	01	17	14	02	34
Hum. & Soc. Sc.	07	32	15	00	54
Hydrology	07	07	09	00	23
Management	00	33	07	00	40
Mathematics	06	84	05	00	95
Mech.& Ind. Engg.	02	78	70	00	150
Met. & Mat. Engg.	00	73	45	01	119
Paper Technology	03	52	38	00	93
Physics	00	85	51	00	136
WRD&M	02	53	24	05	84
CTrans	02	14	06	00	22
Nanotechnology	00	49	33	00	82
Disaster Mitigation & Management	00	06	04	01	11
ICC	00	00	00	00	0
IIC	00	20	00	00	20
<b>Total</b>	<b>59</b>	<b>1332</b>	<b>670</b>	<b>110</b>	<b>2170</b>

#### 9.5 INDUSTRIAL CONSULTANCY / TESTING

During the year 2016-17, 797 new consultancy projects were taken up by different departments; major contributors are as:

Table 9.5 gives the details about number and outlay of consultancy projects incl. without lab facilities, with lab facilities and testing works.

Departments	No. of Projects	Total Outlay (Rs. in Lakhs)
Alternate Hydro Energy Centre	52	531.92
Arch. & Planning	3	15.93
Civil Engineering	626	3661.40
Chemical Engineering	3	8.76
Centre for Transportation Systems	4	33.00
Department of Paper Technology	11	16.69
Disaster Mitigation & Management Cell	1	3.00
E & C Engineering	2	4.94
Electrical Engineering	10	21.01
Earthquake Engineering	46	459.14
Earth Sciences	9	32.41
Hydrology	5	16.40
Institute Instrumentation Centre	2	7.00
Management Studies	1	2.50
Mech. & Industrial Engineering	12	45.99
Met.& Mat. Engineering	1	1.00
WRD&M	9	234.15
<b>Total Rs.</b>	<b>797</b>	<b>5095.30</b>

## 9.6 FACULTY INITIATION GRANT

(2016-2017)

From the resource generated through SRIC activities the research initiation grants are awarded to the new faculty members joining the institute. The details of research areas and the faculty who received the grant is given in Table below:

### SCHEME (OUT OF SRIC FUNDS) DURING 2016-17

Sl. No.	Name of Faculty Members	Departments	Project Title	Duration (Period)	Amount sanctioned (Rs. in Lacs)
1.	Dr. Sarada Prasad Pradhan, Asstt. Prof.	Earth Science	Geotechnical investigations of stability of slopes around dumripat, koraput, Odisha	2 years	10.00
2.	Dr. Ram Manohar Singh, Asstt. Prof.	Humanities & Social Science	Proposing an agenda for studying courts as an organization understanding court culture and performance	2 years	9.87
3.	Dr. Ravi Sharma Asstt. Prof.	Earth Science	Petrophysical and rock physical characterization of petroliferous basins in India	2 years	10.00
4.	Dr. Rajesh Kumar Asstt. Prof.	Physics	Enabling photonics platform for memories and logic gates with a phase change material	3 years	10.00
5.	Dr. Monojit Bag Asstt. Prof.	Physics	Understanding interfaces of organic electronic devices by impedance spectroscopy and intensity modulated photocurrent spectroscopy	2 years	10.00
6.	Dr. M. Felix Orlando Asstt. Prof.	Electrical Engg.	Development and control of a Novel three finger hand exoskeleton for rehabilitation of stroke patients	2 years	9.999
7.	Dr. Sourav Das Asstt. Prof.	Met. & Mat. Engg.	Austenite conditioning and its stability	3 years	10.00
8.	Dr. Kaustav Chatterjee Asstt. Prof.	Civil Engg.	Static, Pseudo-static and Dynamic Analysis of Sheet Pile Walls Considering Site-Specific Ground Response Analysis.	1 year	10.00
9.	Dr. Patit Paban Kundu Asstt. Prof.	Chemical Engg.	Development of low cost laminated/coated nano composite membranes for application in microbial fuel cell	2 years	10.00
10.	Dr. Ashish A. Kadam, Asstt. Prof.	DPT	Developing bio-based materials for packaging applications.	2 years	9.98
11.	Dr. Ram Sateesh Pasupuleti Asstt. Prof.	Arch. & Planning	Adaptive Vernacular Settlements: Integrating Disaster Risk Reduction and Climate Change Adaptation.	2 years	10.00
12.	Dr. Manavvi Suneja Asstt. Prof.	Arch. & Planning	Microclimate & thermal perception of institutional open spaces in composite climate.	2 years	10.00
13.	Dr. Sai Ramudu Meka, Asstt. Prof.	Met. & Mat. Engg.	Developing nitride dispersion strengthened steels	2 years	10.00
14.	Dr. Shailesh Ganpule Asstt. Prof.	Mechanical Engg.	Computational Framework for Studying Mechanics of Traumatic Brain Injury (TBI)	2 years	10.00
15.	Dr. Puneet Jain Asstt. Prof.	Physics	Design of Superconducting radio-frequency electron gun for free electron laser	1 year	10.00
16.	Dr. Mayank Goswami, Asstt. Prof.	Physics	Wave modeling via inverse problem method using Noninvasive Imaging Techniques	1 year	10.00

Sl. No.	Name of Faculty Members	Departments	Project Title	Duration (Period)	Amount sanctioned (Rs. in Lacs)
17.	Dr. Sonal Atreya, Asstt. Prof.	Arch. & Planning	Study of Gait and Circulation Analysis for Workstations and Spaces for Architecture.	2 years	10.00
18.	Dr. K.S. Suresh Asstt. Prof.	Met. & Mat. Engg.	Deformation behavior of rare earth containing Mg alloys and crystal plasticity simulations.	2 years	10.00
19.	Dr. Gargi Singh Asstt. Prof.	Civil Engg.	Selecting Pipe Materials, Disinfectant Type and Dosage for Preventing Pathogen Intrusion, Regrowth and Persistence in Water Distribution Networks	1 year	10.00
20.	Dr. Anshu Anand Asstt. Prof.	Chemical Engg.	Modeling of Segregation for non-spherical granular materials in fluidized bed and other geometries	1 year	10.00
<b>Total</b>					<b>199.85</b>

### 9.7 INTELLECTUAL PROPERTY RIGHTS (IPR) CELL

The details of patent for the year 2016-17(w.e.f. 1.4.2016 to 31.03.2017), are as under:

Sl. No.	Year	Patents Filed	Patent Awarded
1.	2016-17	07	Nil

Application No. 3498819 for copyright of Institute Logo has been filed in class 41 on 03.03.2017.

### 9.8 INTELLECTUAL PROPERTY RIGHTS (IPR) CHAIR

#### 1. Follow-up Workshop at Army Public School Roorkee titled "School Education for Innovation and Creativity"

A follow-up workshop was organized at Army Public School Roorkee on 20<sup>th</sup> May 2016 to interact with teachers for their active participation in recognizing and nurturing innovation at school level. Teachers shared their experiences and put forward various problems related to finding and fostering the talent at school and linking education attainment to innovation & IP creation.



Total Participants: 50

#### Outcome

Information collected and the following issues were discussed.

- Action taken at the school to introduce the concept of innovation amongst students.
- Action taken towards the planning of activities to identify the innovative minds and ideas.



## 2. Training of Trainers (ToT) Program on "Organising IP Creation & Management in HEIs"

A five day Training of Trainers (ToT) program on "Organising IP Creation & Management in HEIs" during September 13-17, 2016 was organized by IPR Chair, IIT Roorkee at the Center for Continuing Education.

### Objective

- Promoting and encouraging Policy makers for creating an IPR policy for effectively organizing IP creation & Management in HEIs.
- Highlighting the role of faculty members at HEIs in contributing towards Intellectual Property Creation & Management.
- Understanding the relevance of culture at HEIs for effective creation and management of IP.
- Highlighting pedagogy adopted by various HEIs overseas in organizing IP creation & Management.



### Invited Speakers

- Prof. Pradeep K. Srivastava, Dy. Director (Sr. Principal Scientist) Ex., Medicinal & Process Chemistry Division, CSIR-Central Drug Research Institute, (Under the Ministry of Science and Technology, Govt. of India).
- Sri. D.P.S.Parmar Former Member Intellectual Property Appellate Board (IPAB).
- Dr. Shishir Kumar Jha, IPR Chair Coordinator, IIT Bombay.

### Total Participants: 25

### Outcome

The participants came to know about the process of identification of innovation and how to nurture it to generate IPR. It was observed that most of the institutes do not have IPR policy and related administrative and technical infrastructure for effective management of intellectual property. The purpose of the training of trainers program was to provide an in-depth knowledge to faculty members at HEIs on various aspects of creating and managing intellectual property rights in their institutions.

## 1. Conference on "Scientific Validation of Traditional Knowledge-II (SVTK-II) 2017"

A two day conference on "Scientific Validation of Traditional Knowledge-II (SVTK-II) 2017" was organized on 24-25 February, 2017 at the Department of Biotechnology, IIT Roorkee. This was the third activity in the series of promoting exploration of scientific aspects of Traditional Knowledge and its required protection in commercial prospects.

### Objective

IPR Chair IIT Roorkee has started a mission to prepare an Encyclopedia of Traditional Knowledge which will help in protection of intellectual property and will serve as a databank and base for research & innovation in this field. This conference was the third initiative in the direction of achieving this mission. The first two initiatives in this series helped in developing information, networking and structuring of an encyclopedia. Scientific Validation of Traditional Knowledge-II (SVTK-II) 2017 is organized with a broad objective of protecting traditional knowledge with modern instrument of intellectual property rights.



#### **Invited Speakers**

- Dr. Shashank Mauria, Former Assistant Director General, Intellectual Property and Technology Management Unit, Indian Council of Agricultural Research, New Delhi
- Prof. V.C.Vivekanandan, Director Proximate Education NALSAR University of Law, Hyderabad
- Prof. Rama Jayasundar, All India Institute of Medical Sciences, New Delhi
- Dr.Shaleen Raizada, MD&CEO, Sanshadow Consultants Pvt. Ltd

#### **Total Participants: 170**

#### **Outcome**

Introductory edition of the "Encyclopedia on Scientific Validation of Traditional Knowledge for Commercial Prospects" was launched at the Conference. The final version of the encyclopedia, which is expected to come out in the next three years time, shall propagate awareness, knowledge about our unfathomable glorious asset of ancient knowledge and also shall enlighten the present as well as the future generations, so that the work of the earlier centuries does not become futile for the centuries to come. The conference also helped in creating a platform of experts who are working in the field of TK. It also created an ambience for commercial prospects of TK which is still overlooked by modern day research. A Brainstorming session in the conference was organized where in experts were asked to provide their suggestions on the introductory edition of the Encyclopedia on Scientific Validation of Traditional Knowledge. The suggestions are to be included in the final version of the encyclopedia.

#### **RESEARCH INITIATIVES**

The chair is continuously working on the research aspect of innovation and intellectual property. One scholar is working under Chair and registered for Ph.D through Department of Management Studies. Further the two Research Officers of the IPR Chair have also registered for Ph.D in IIT Roorkee on research topics under the primary interest of the activities of IPR Chair. The focus of research in Chair is to explore the issues related to IPR and Innovation.

#### **Paper Presentations**

1. Ghosh, P.K., Kashyap, Ankur., & Agarwal, Rajat., (2016) "IP generated in academic environment: Influencing knowledge intensive world economy" International Conference on Management of Intellectual Property Rights and Strategy (MIPS) 2016, IIT Bombay, July 15-16 (2016).
2. Kashyap, Ankur., Agarwal, Rajat., & Ghosh, P.K., (2016) "Factors Driving Creation of Intellectual Property in Indian HEIs" Fifth 21st Century Academic Forum Conference, Harvard University, September 27-29 (2016).
3. Rathor, Rahul., & Agarwal, Rajat. (2016) "HEIs Based Business Incubators: Indian Scenario" International Conference on Global Trends in Business & Sustainability Research (ICGTBSR-2016), IIT Roorkee, December 2-4, (2016).
4. Kashyap, Ankur., Agarwal, Rajat., & Ghosh, P.K., (2016) "Intellectual property rights and institutes of higher education: Role in knowledge oriented world economy" International Conference on Global Trends in Business & Sustainability Research (ICGTBSR-2016), IIT Roorkee, December 2-4, (2016).

- |                                       |  |
|---------------------------------------|--|
| 10.1 General                          | 10.8 Cultural Society                    |
| 10.2 Students' Welfare and Facilities | 10.9 Educational Cinema Club             |
| 10.3 National Cadet Corps (NCC)       | 10.10 Himalayan Explorers Club           |
| 10.4 Sports Association               | 10.11 Students Affairs Council (SAC)     |
| 10.5 National Service Scheme          | 10.12 International Students' Activities |
| 10.6 Institute Students' Club         | 10.13 Training & Placement Office        |
| 10.7 Hobbies Club                     |  |

**10.1 GENERAL**

During the year 2016-17, the students performed extremely well in academics, displaying high sense of responsibility and discipline. They also excelled in organizing extra-curricular activities and also in the management of hostels and mess facilities. Student's activities were multifarious and predominantly included participation in the Hobbies Club, Student's Club, National Cadet Corps (NCC), Sports Association, Cultural Council, NSS/NSO, Cinema Club and Himalayan Explorers' Club.

The Sports Association continued organizing its activities with usual vigor during the year 2016-17. Our students participated in main Inter IIT Sports meet organized from Dec 14-21, 2016 at IIT Kanpur and won Gold Medals in Athletics (Women) in 400 mtr. Run, 800 mtr. Run, 1500 mtr. Run. Shotput (Men), Javelin (M), Basketball (M) and in Wt. Lifting under 77 Kg.

Our Institute Festival Thomso-2016 was organized during 21<sup>st</sup> - 23<sup>rd</sup> Oct 2016 and Technical Festival Cognizance was organized during 24<sup>th</sup>- 26<sup>th</sup> March 2017.

Under the aegis of NSS, our students did commendable social work. Blood donation camp was organized. The other notable activities included helping handicapped people, organizing educational classes for poor children, and visiting nearby villages to improve awareness regarding general and personal hygiene.

Hobbies club had provided opportunities in the areas of Design, Electromics, Fine Arts, Gardening, Models & Robotics, Philately & Numismatics, Photography, Stargazing and Web Design. The 58<sup>th</sup> Annual Techno Hobby Exhibition, Srishti-2017 was conducted during 18-19 March 2017.

**10.2 STUDENT'S WELFARE AND FACILITIES**

As per the constitution of SAC, Executive Committee of Interim Students' Affairs Council (SAC) consisting of the following students was constituted for the session 2016-17.

- Mr. Apurwa Sarwajit, Gen. Secy. Hostel Affairs
- Mr. Sankalp Asawa, Gen. Secy. Acad. Affairs (UG)
- Mr. Aamir Ishaq Shah, Gen. Secy. Acad. Affairs (PG)
- Mr. Aniket Gupta, Gen. Secy. Technical Affairs
- Mr. Kartik Hajela, Gen. Secy. Alumni Affairs
- Mr. Mayank Sharma, Gen. Secy. Sports Council
- Mr. Navindu, Gen. Secy. Cultural Council

'Students Aid Fund' scheme was further operationalised to enable meritorious but financially weaker students to pursue their education. 24 students were provided financial assistance under this scheme and a sum of Rs. 4,80,000 was distributed to needy and deserving students during the year 2016-2017.

NCC training camp was organized between Nov. 23 to Dec. 02, 2016 at IIT Roorkee in which 26 boys and 2 girls participated out of which 4 cadets were from third year. International Yoga week was celebrated during June 18 to June 24, 2016 in institute with full enthusiasm.

Insurance policy has been issued for students from Oriental Insurance Company Ltd which provides reimbursement of medical expenses. Medical claims have been given to many students who have availed medical assistance from outside.

### 10.3 NATIONAL CADETS CORPS

Total number of cadets = 398 boys + 22 girls = 420 cadets

Year	Boys	Girls
I	328	18
II	60	4
III	10	0

Combined annual training camp held from 23.11.2016 to 2.12.2016 at IIT Roorkee in which 26 boys and 2 girls participated out of which 4 cadets were from third year.

Various social activities were conducted as per the details below:

Sl. No	Activity	Place	Date
1	Swach Bharat Abhiyan	Village Bhangeri, Maktulpuri Roorkee	25.4.2016
2	Swach Bharat Abhiyan	IIT Campus	3.8.2016
3	Save environment awareness rally and tree plantation	Shatabdi Gate IIT Roorkee to civil lines petrol pump	7.8.2016
4	Beti Bachao Beti padhao abhiyan	Shatabdi Gate IIT Roorkee to civil lines petrol pump	12.8.2016
5	Anti-drug rally	Bhangeri village	12.8.2016
6	Swach Bharat Abhiyan	Civil lines, Jadugar Road, Boat club	2.10.2016
7	Beti Bachao Beti padhao abhiyan	Village Tanshipur, Roorkee	29.11.2016
8	Blood donation	Civil hospital, Roorkee	1.12.2016
9	Commemoration run: Republic day	IIT Roorkee	24.1.2017
10	E-payment awareness rally	Sanjay Gandhi colony, Ramnagar, Roorkee	12 & 13 Jan 2017
11	Sports and cultural carnival	Multiactivity centre, IIT Roorkee	8.3.2017

### 10.4. INSTITUTE SPORTS COUNCIL'S ANNUAL REPORT 2016-17

"Intelligence and skill can only function at the peak of their capacity when the body is healthy and strong."

#### INSTITUTE SPORTS COUNCIL

**Chief Advisor Sports**

**Prof. M.L Kansal**

#### **STAFF ADVISORS**

Dr. Brijesh Yadav	Athletics, Gym, Yoga & Taekwondo
Dr. G.D Ransinchung R.N	Hockey & Football
Dr. S.K Ambatipudi	Cricket
Dr. Sumit Sen	All Racket Games
Dr. Yogesh Sharma	Swimming
Dr. Avlokita Agarwal	Rowing
Dr. Ajanta Goswami	Volleyball & Basketball

#### **SPORTS STAFF**

Sports Officer	Dr. Alok Kumar Pandey
Asstt. Sports Officer	Shri Hemant Sharma
Physical Training Instructor	Dr. Hema Pant
Physical Training Instructor (Saharanpur Campus)	Shri. Mukesh Choudhary
Coach (Badminton)	Shri S.N Goel

**OFFICE STAFF**

Superintendent	Sh. K.K Thapliyal
General Secretary	Mr. Mayank Sharma
Dy.General Secretary	Mr.Shubham Viz
	Mr. Akeel Patel

**(A) PARTICIPATION IN THE 51<sup>st</sup> INTER IIT SPORTS MEET 2016 AT IIT KANPUR****(I) Performance of IIT Roorkee in the Inter IIT Aquatic Meet**

IIT Roorkee's contingent consisting of 11 boys and 05 girls took part in the swimming events and Water Polo (Boys) game in the 51<sup>st</sup> Inter IIT Aquatic Meet -2016 held at IIT Kanpur during October 01 to 04, 2016. Following events were won by IIT Roorkee.

Sl	Events	Name of the Students	Position
1	100 mtr Butterfly	Mr. Mahamav Mitra	Silver
2	50 mtr Butterfly	Mr. Mahamav Mitra	Bronze
3	Breast Stroke	Ms. Ravee Chhawal	Bronze

The Main Inter IIT Sports Meet 2016 was organized from Dec 14-21, 2016 at IIT Kanpur. The following are the medal winners from IIT Roorkees.

**Activity: Athletics (Women)**

Sl	Events	Name of the Students	Position
1	400 mtr. Run	Shreya Singh	Gold
2	800 mtr. Run	Shreya Singh	Gold
3	1500 mtr. Run	Shreya Singh	Gold
4	100 Mtr	Trishna Chingappa	Silver
5.	200 mtr	Trishna Chingappa	Silver
6.	Long Jump	Trishna Chingappa	Silver
7.	High Jump	Raveena Rahar	Silver
8.	Shot Put	Swapnil Gupta	Bronze
9.	100 mtr Relay		Silver

IIT Roorkee Women team won the Athletic Championship.  
Ms. Shreya Singh was awarded as the Best Women Athlete.

**Athletic (Men)**

Sl	Activity	Name of the Students	Position
1	400m Hurdles	Tushar Mehra	Silver
2	110 Hurdles	Shivam Dimri	Bronze
3	Shotput	Sushil Kumar	Gold
4.	Shotput	Aman Pal	Bronze
5	Javelin	Harsh Jindal	Gold
6.	High Jump	Dhiraj Indiana	Silver

**Wt. Lifting**

Sl	Weight Category	Name of the Students	Position
1	Under 77 Kg	Mr. Manish Kumar	Gold
2	Above 77 Kg	Mr. Gagandeep Singh	Silver
3	Under 62 Kg	Mr. Sukhbir Singh	Silver

Mr. Manish Kumar was awarded the best lifter. He was also break the record in Clean & Jerk.

## TEAM GAMES

Sl.	Activity	Position
1.	Badminton (W)	Fourth
2.	Basketball (M)	Gold
3.	Basketball (W)	Silver
4.	Hockey	Bronze
5.	Volleyball (M)	Bronze
6.	Volleyball (W)	Fourth
7.	Wt.Lifting	Bronze

## (B) EXTERNAL TOURNAMENT & PARTICIPATION

- **All India Inter University Yoga Championship 2016-17**

All India Inter University yoga Championship held at Kurukchetra University, Kurukchetra Haryana from March 16 to 18, 2017 with participation from 254 colleges/universities. IITR's 6 boys and 6 girls participated in extravaganza.

- **All India Inter University Taekwondo Championship 2016-17**

All India Inter University Taekwondo Championship held at Maharishi Dayanand University, Rohtak, Haryana from March 16 to 21, 2017 with participation from 157 Universities. This is the first time Taekwondo Team (7 students) has participated in All India Inter University Level.

- **Participation in the SportsTech 2017 organized by IIT Delhi**

Sporttech 2017 was organized by IIT Delhi from March 1-4, 2016. IIT Roorkee contingent consisting of around 152 students participated in different indoor & outdoor Sports. IIT Roorkee team won many Laurel as mention below:

Sl. No.	Activity	Position
1.	Athletics	First Place
2.	Basketball (W)	Second Place
3.	Badminton (M)	Third Place
4.	Cricket	Third Place
5.	Football	First Place
6.	Hockey	Second Place
7.	Wt.Lifting	Second Place

- **Participation in the friendly match with IIT Delhi**

An initiative was taken by IIT Delhi to organize a friendly match series on Sep 24-25, 2016 in Cricket & Hockey. IIT Roorkee cricket team won 2 matches & Hockey team won one match in the series.

## (C) ORGANIZATION OF "SANGRAM SPORTS FEST" (March 31<sup>st</sup> to 2<sup>nd</sup> April, 2017)

Sangram'17 was organized from 31<sup>st</sup> March-2<sup>nd</sup> April, 2017. Around 43 Colleges consisting of various IITs and NITs from over 15 states including Kamataka, Gujarat, West Bengal, Jharkhand, Orissa, Madhya Pradesh, etc participated in it. Total numbers of participants were around over 1250. Alumni teams of IIT Roorkee also participated in Sangram'17. The opening ceremony was graced by the presence of **Padma Shri Sushil Kumar Solanki, Olympics silver medalist**.

Total 13 events were organized including Athletics, Badminton, Basketball, Chess, Cricket, Football, Hockey, Snooker, Table Tennis, Taekwondo, Tennis, Volleyball and Weightlifting.

Mr. Sangram event was introduced for the first time in Sangram'17. The Chief Guest for the occasion was **Shri. Sumit Singla, Mr. India, 2014**. Women's Javelin throws and Hammer throws was also introduced. Informal events like beat the clock, Treasure hunt and Tug of War were also organized.

Two online events like Sport quiz "Quizzathon and video competition "Fitness Freak" were also organized to promote motto of Sangram'17. "**Awarethon**", Sangram Roorkee Half Marathon was also organized as a promotion of Sangram'17.

The closing ceremony graced by chief guest **Mr. Pradeep Batra, MLA of Roorkee constituency** of Haridwar. The performance of IIT Roorkee in Sangram'17 was as follow:

1.	Athletics	Championship
2.	Badminton (M)	Third Place
	Badminton (W)	Third Place
3.	Cricket	First Place
4.	Football	First Place
5.	Hockey	First Place
6.	Volleyball (M)	First Place
7.	Volleyball (W)	First Place
8.	Wt.Lifting	Championship
9.	Power Lifting	Championship

**(D) TOURNAMENTS ORGANISED BY IIT ROORKEE:**

- Volleyball Team, Hockey Team and Football Teams of IIT Roorkee played matches with BEG & Centre, Roorkee, with ICFRE, FRI Dehradun and with few local Teams.
- Friendly cricket matches were played with AIS Glass factory team and with Roorkee Town Club Cricket Team.
- Friendly Basketball & Volleyball Matches were played with BEG & Centre, Roorkee, Haridwar.
- Water polo matches were played with BEG & Centre Teams.
- Badminton & Table Tennis & Squash matches were played with local team.

**(E) COACHING CAMPS CONDUCTED FOR IIT ROORKEE STUDENTS AND OTHERS**

1. Basic coaching camps were conducted for all Indoor & outdoor games.
2. Basic & Advance coaching camps were conducted in swimming events.
3. Summer Coaching Camp for school going children of the campus were organized in Badminton, Tennis, Swimming, Cricket & Aerobics.
4. Winter Coaching camp was also organized this year in the month of December in Tennis & Badminton.
5. Coaching Camps were also conducted in yoga, Aerobic, Swimming, Cricket & Taekwondo for the faculty, Staff & their wards of IITR and other sister organization established in IITR campus.

**(F) Tournaments Conducted & Participated:**

**A. INTERNAL (INTRAMURAL) TOURNAMENTS:**

In order to encourage 100% students participation in the Sports activities various tournaments were organized within the IIT Roorkee (Intramural) Institutes Trophy Tournament & Institute Open tournaments.

The teams for the Institute Trophy competition were constituted on the basis of performance in different activities by putting the good players in each house and other team members were distributed by draw of lots, with the name of five houses Black Mamba, Blue hawks, Red Bulls, Green Mantis & white sharks.

**(I) Result of Institute Trophy 2016-2017 (Men)**

ACTIVITY	WINNERS	RUNNERS-UP
ATHLETICS	Black Mamba	Blue Hawks
BADMINTON	Black Mamba	Blue Hawks
BASKETBALL	Green Mantis	Red Bulls
CRICKET	Green Mantis	White Shark
FOOTBALL	Red Bulls	Blue Hawks
HOCKEY	Black Mamba	Blue Hawks
TABLE TENNIS	Black Mamba	Blue Hawks
VOLLEYBALL	Black Mamba	Green Mantis
TENNIS	Red Bulls	Black Mamba
WT. LIFTING	Green Mantis	Blue Hawks

**(II) Result of Institute Trophy 2016-2017 (Women)**

ACTIVITY	WINNERS	RUNNERS-UP
ATHLETICS		
BADMINTON	Blue Hawks	Black Mamba
BASKETBALL	Blue Hawks	Black Mamba

TABLE TENNIS	Black Mamba	Green Mantis
VOLLEYBALL	White Shark	Red Bulls

### (III) WEIGHT LIFTING COMPETITION 2016-2017

The weight lifting competition was organized in the five weight categories. Following were the results:

Weight Category under 56 Kg		Position
1.	Mr. Kuldeep Kumar IVth Yr, MSP	FIRST
2.	Mr. Prakhar Saxena, 1 <sup>st</sup> Yr, CE	SECOND
3.	Mr. Akshay Sheokhand, IVth Yr, AR	THIRD
Weight Category 56- 62 Kg		
1.	Mr. Shivankee Sahul Vth Yr, GPT	FIRST
2.	Mr. Sajay Kr Verma 1 <sup>st</sup> Yr, CHED	SECOND
3.	Mr. Vipin Kumar, IIInd Yr, EE	THIRD
Weight Category 62- 69 Kg		
1.	Mr. Nilesh Tanwar, IIIrd Yr, Int.M.Tech, Geo	FIRST
2.	Mr. Utkarsh Kumar, IIInd Yr, Electrical	SECOND
3.	Mr. Pankaj Dogra, IIInd Yr, IN	THIRD
Weight Category 69- 77 Kg		
1.	Mr. Manish Kumar IVth, P&I	FIRST
2.	Mr. Rishabh Ojha, IIIrd Yr, Chemical	SECOND
3.	Mr. Apurv Maheswari, IVth Yr, P&I	THIRD
Above 77kg		
1.	Mr. Gaurav Pahuja, IVth Yr, CE	FIRST
2.	Mr. Dheerendra Pratap Meena, Ist Yr, ME	SECOND

### (IV) POWER LIFTING COMPETITION 2016-2017

Weight Category under 56 Kg		Position
1.	Mr. Prakhar Sexena, Ist yr, CE	FIRST
2.	Mr. Kuldeep Kumar IVth Yr, MSP	SECOND
3.	Mr. Jogesh Kumar, 1 <sup>st</sup> Yr, ME	THIRD
Weight Category 57-62 Kg		
1.	Mr. Shivankee Sahul Vth Yr, GPT	FIRST
2.	Mr. Amit Sharma, IIIrd Yr, CSE	SECOND
3.	Mr. Vipin Kumar, IIInd Yr, IIInd Yr, EE	THIRD
Weight Category 62- 69 Kg		
1.	Mr. Nilesh Tanwar, IIIrd Yr, Int.M.Tech, Geo	FIRST
2.	Mr. Mukesh Kr Mehta, IIIrd Yr, MT	SECOND
3.	Mr. Mayank Sharma, IVth Yr, CE.	THIRD
Weight Category 69- 77 Kg		
1.	Mr. Manish Kumar IVth, P&I	FIRST
2.	Mr. Apurv Maheswari, IVth Yr, IN	SECOND
3.	Mr. Rishabh Ojha, IIIrd Yr, Chemical	THIRD
Above 77kg		
1.	MR. Minmoy Sinha, IIIrd YR, MMED	FIRST
2.	Mr. Dheerendra Pratap Meena, Ist Yr, ME	SECOND
3.	Mr. Akash Gupta, IVth Yr, CSE	THIRD



**(V) BADMINTON INSTITUTE OPEN COMPETITION 2016-17**

<b>SINGLES</b>		<b>Position</b>
1.	Mr. Layan Kaushik, B.Tech 1stYr ,PSE	<b>Winner</b>
2.	Mr.UditKalani,	<b>Runner-up</b>

<b>DOUBLES</b>		<b>Position</b>
1.	Mr. HimaSagar, B.Tech IVth YR, ECE Mr. Lara Garg, B.Tech 1stYr, ECE	<b>Winner</b>
2.	Mr. Himanshu, B.Tech IIIrdYr, EE Mr. Gaurav Maurya, M.Tech	<b>Runner-up</b>

<b>SINGLES (Girls)</b>		<b>Position</b>
1.	Ms. Tanvi Sharma, B.Tech IIIrdYr, ECE	<b>Winner</b>
2.	Ms.Sapna Kakroda, B.Tech II Yr, Chemical	<b>Runner-up</b>

**(VI) TABLE TENNIS INSTITUTE OPEN COMPETITION 2016-17**

<b>SINGLES (Men)</b>		<b>Position</b>
1.	Mr. Mandeep Singh, B.Tech IIIrd Yr, ECE	<b>Winner</b>
2.	Mr. Divanshu Bansal, B.Tech IIrd Yr, Chemical	<b>Runner-up</b>

<b>DOUBLES (Men)</b>		<b>Position</b>
1.	Mr. Abhishek Sandani, B.Tech IVth Yr, Chemical Mr. Sadtarshi Ghosh	<b>Winner</b>
2.	Mr. Mandeep Singh, B.Tech IIIrd Yr, ECE Mr. Madhvendra Singh	<b>Runner-up</b>

<b>SINGLES (Girls)</b>		<b>Position</b>
1.	Ms. SaloniGautam, B.Tech IIrd Yr, BT	<b>Winner</b>
2.	Ms. Pragati Gupta,	<b>Runner-up</b>

**(VII) TENNIS INSTITUTE OPEN COMPETITION 2016-17**

<b>SINGLES (Men)</b>		<b>Position</b>
1.	Mr. Shubham Vij, B.Tech IIIrdYr, MT	<b>Winner</b>
2.	Mr.Anurag Soni, B.Tech IV Yr Elect.	<b>Runner-up</b>

<b>DOUBLES (Men)</b>		<b>Position</b>
1.	Mr. Salil Jain, Int V yr, Physics Mr.Anurag Soni, B.Tech IV Yr Elect.	<b>Winner</b>
2.	Mr. Shubham Vij, B.Tech IIIrdYr, MT Mr. PavitTeg Bir Singh, B.Tech IIIrdYr, MT	<b>Runner-up</b>

**(VIII) ANNUAL ATHLETIC MEET 2016-2017**

Annual Athletic Meet for the session 2016-17 was held on March 8&, 9, 2017. Following are the winners of trophies/ cup in Annual Athletic Meet for the session 2016-2017

<b>Sl.</b>	<b>Cup/Trophies</b>	<b>Name &amp; Class</b>
1.	Lion Trophy	Raj Kumar Meena, B.Tech IIrd Yr, CE
2.	Stampe Cup	Shreya Singh, B.Tech IIrd Yr, EE
3.	Bemett Cup	Aman Pal, B.Tech IIIrd, MT
4.	Krishna Hudda Cup	Shristi Sonal, B.Tech IIIrd Yr, EE
5.	Best Thrower	Aman Pal, B.Tech IIIrd, MT

**(IX) INDIVIDUAL YOGA COMPETITION**

The Individual Yoga competition was held on Feb 5, 2017 at Boat Club. The Results of the Competition are as follow:

**(MEN)**

Sl.	NAME	Year/Branch	Position
1	Mr.Lakshman.NChakrav	B.Tech IVYr, Meta	First
2	Mr. Brajesh Kumar	B.Tech IIIYr, Meta	Second
3	Mr.Dinesh Kumar	Phd. IstYr	Third

**(WOMEN)**

Sl.	Name	Year/ Branch	Position
1	Ms. Shweta Bajaj	Ph.D, III Yr, EQD	First
2	Ms. Poonam	Ph.D, III Yr, Chemistry	Second
3	Ms. ChinikaDangi	B.Tech, IIYr Mathematic	Third

**(B) NSO (National Sports Organization)**

NSO (National Sports Organization) scheme was launched to spread awareness of physical fitness and importance of Sports among students. About 200 students from Ist Year were selected and fitness/ Coaching classes were conducted four days in a week. It was found that there was a marked improvement in their physical fitness level. Numbers of NSO students have represented Institute's team, participated & performed well in various games.

**(C) SPORTS AWARD WINNERS FOR THE YEAR 2016-17**

In order to encourage the Sportsmen/ women (students of IITR) participating in various activities, the Institute Sports Council has selected few outstanding sportspersons who performed extremely well in their activity during the year 2016-17 and honored them with special sports awards. The following sports men/women were the recipient of the Institute Sports Awards for the year 2016-17.

Sl	Award	Name	Branch & Year
1	Institute Colour Award	Ms. Shreya Singh Mr. Manish Kumar	B.Tech IIyr, Elect. B.Tech IVth, P&I
2	Best Sports Man Award 2016-17	Mr. Raghav Sarda	B.Tech IVthyr,
3	Best Sports woman Award 2016-17	Ms. Princi Solanki	Civil B.Tech IVthyr, Chemical
4	RohitGuruwara Award	Ms. Trishna Chingappa	B.Tech Istyr, PSE
5.	Special Prize Award	Mr.Mahamav Mitra	B.Tech IIIthyr
6.	Best Emerging Sportsmen of the year	Mr. Bittu Mondal	B.Tech IIIthyr, MSM

**(D) UP GRADATION OF SPORTS FACILITIES FOR THE YEAR 2016-17****Sports facilities work completed:**

1. Successful Installation of Sprinkler System at football & Hockey ground.
2. Renovation of swimming pool & fencing around the boundarwall.
3. Relaying of mini football ground.
4. Renovation of Boat club.
5. Renovation of gymnasium.
6. A proper track is maintained in LBS for morning & evening walkers.
7. Colored iron benches were fixed for the comfort of walkers

**10.5 National Service Scheme****Education**

1. Primary Education  
**Free tuitions** to students of Class-4 onwards
2. Secondary Education  
**One-to-one** Coaching for students from Class-6  
**6 Students** to secure above 80% in UP Class-10 Board Examination

3. Navodaya Class  
Dedicated Coaching for students to crack **JNV Exam**  
**3 Selections** for Jawahar Navodaya Vidyalaya, Haridwar in 2015-16
4. JEE Coaching  
**Professional** subject-wise coaching by PG Students  
In association with Aakash Institute and Anurupa Roy, renowned social activist

#### Science and Technology Promotion

1. Rashtriya Avishkar Abhiyaan, IIT Roorkee -  
**Science Promotion** among students from Class-6 to Class-8;  
**Experimental Learning** in Science and Mathematics using NCERT approved kits;  
**Educational Tours** for Students to various Research facilities in IIT Roorkee
2. Rural Transformation through Education -  
**Workshops** in Villages to promote Sanitation, Better Farming Techniques, Gender Equality, Banking Methods;  
**Right to Education Act** enforcement in Private Schools through **Indus Action Plan**

#### On-Campus Outreach

1. **Guest Lectures** - Padma Shri Prakash Singh (IPS), Dr Michael Cremo (Indologist); Motivational Speakers GG Krishnamurthy, Vivek Bindra.
2. Blood Donation Camp -  
**National Record** Holder for number of units collected in College based BDC, 1002 units in September, 2014, and 902 Units in February, 2017;  
Donations during **Dengue** Epidemic;  
**Trans Blood App** for Blood Request and Donation based on Location Tracking
3. Faculty Connect Program -  
Connecting Faculty's **Interested Family Members** to teach **special** skills like sewing, personality development, etc. to underprivileged sections;  
**Book Collection** at the end of School Academic Year and **donation** to the needy;  
**Cloth, Soft Toys, Newspaper** Collection and further **Distribution**
4. Indian Road Safety Campaign -  
**Awareness** about Road Safety and other precautions;  
Workshop on **Traffic Rules** and Signs by **Hero Motor Corp.**;  
**First Responders'** Workshop by **Muskaan** Foundation
5. Self-Defense Workshop -  
**Workshop** on Self-Defense for Women;  
**7 days** long Training Program;  
**More than 100** students trained in prime techniques to defend themselves;  
Done by professionals from **One-Karate Academy**, Jaipur

#### Off-Campus Outreach

1. Swachh Bharat Abhiyan - **Cleanliness Drives** on days of national importance inside and outside campus; **Awards** to shopkeepers to encourage cleanliness; **Ban** polythene drives and awareness rallies
2. Employment Generation Initiative - Making of **Paper Bags** using **Newspapers** based on - Swachh Bharat Abhiyan  
**Women Empowerment** - Village Women involved in making of bags  
**Digital India** - Smartphone Tracking of Sales and Making of Paper  
**Bags Jan Dhan Yojana** - Direct A/C Transfer

### Upcoming Events

1. Excursion to Haridwar on **Aviral Ganga** Plan in association with **Cognizance 2017** - Visit to Har ki Pauri - clean **Ganga Ghats**  
Spread **awareness** among tourists and other people to keep them clean
2. **National Conference** on Social Responsibility and Rural Transformation - Two days event on 9th and 10th April, sponsored by **NCRI**
3. **NSS Week** 3rd April 10th April
4. **Women** issues directed **Workshops** on Gender Sensitization, Child Sex Abuse, Breast Cancer Awareness
5. **Guest Lectures** -  
Student Responsibility towards Environment by **Anil Joshi** (renowned Environmentalist)  
Innovation in Primary and Secondary Education by **Anil Swarup** (Secretary, MHRD)
6. **Hackathon** for App and Website Development on **Social Entrepreneurship**
7. **Talk** by **Deepti Naval**, renowned actress and social activist

### 10.6 Institute Student's Club

The Students' Club Council for the year 2016-17 has been constituted as follows:

1.	Dr. Vipul Rastogi, Assoc. Professor, (Physics Deptt.), Chief Club Advisor, Students' Club	Chairman
2.	Dr. K.M. Singh, Assoc. Professor, (MIED), Dy. Chief Club Advisor, Students' Club	Member
3.	Dr. Vikram Dabhade, Associate Professor, (MMED), Club Advisor, Jawahar Unit	Member
4.	Ms. Katha Sowmya Reddy, B. Tech. (Chemical), III Yr. A-508, Kasturba Bhawan, Secretary	Member
5.	Mr. Vangala Sai Hemanth, B. Tech. (Mech.), III yr., CS-02, Jawahar Bhawan, Joint Secretary	Member
6.	Mr. Nalubola Chakrahdar, B. Tech. (CE), II yr., FS-31, Jawahar Bhawan, Indoor Secretary	Member
7.	Mr. Suyash Chandra Vishnoi, B. Tech (CE), III yr, BG-11, Jawahar Bhawan, Indoor Secretary	Member
8.	Mr. Adnan Pasha, M. Tech. (TE), II yr., AF-01, Ganga Bhawan, Snooker Secretary	Member
9.	Mr. Ankush Jindal, M. Tech. (CSE), I yr., ES-06, Cautley Bhawan, Alaknanda Secretary	Member
10.	Mr. Parth Pravin Singh, B. Tech. (Ploymer), I yr., CS-191, Rajendra Bhawan	Member
11.	Mr. Abhishek Rajput, Ph.D. (Civil), S-63, Azad Bhawan	Member
12.	Mr. Ujjwal Gahlot, B. Tech. (P&I), III yr., AS-16, Govind Bhawan	Member
13.	Mr. Jalaj Jain, M. Tech. (CTRANS), II yr., AF-20, Ganga Bhawan	Member
14.	Mr. Pranjal Khandelwal, B. Tech. (MMED), II yr., 562, Radhakrishnan Bhawan	Member
15.	Mr. Kaushal, B. Tech. (Civil), II yr., A-245, Rajiv Bhawan	Member
16.	Ms. Yashaswika Gaur, M.Sc. (Maths), I yr., S-78, Sarojini Bhawan	Member
17.	Ms. Saloni Gautam, Int. M. Tech. (GT), II yr., C-504, Kasturba Bhawan	Member
18.	Mr. Yogesh Chopda, M. Tech. (Civil) I yr., DG-18, Cautley Bhawan	Member
19.	Mr. Aditya Kumar Sinha, B. Tech. (MIED), II yr., G-98, Ravindra Bhawan	Member
10.	Mr. Vikas Solanki, B. Tech. (Civil), III yr., AF-28, Jawahar Bhawan	Member
21.	Mr. Anshul Jain, R/s, 40, Azad Wing	Member

During the year 2016-17 the following activities were organized by the different club units:-

#### **Billiards :-**

1.	Students' Club Open Singles	-	07.03.2017 to 30.03.2017
2.	Students' Club Open Doubles	-	07.03.2017 to 30.03.2017
3.	Students' Club Open Mixed Doubles	-	07.03.2017 to 30.03.2017

### **Snooker :-**

1.	Students' Club Open Singles	-	07.03.2017 to 30.03.2017
2.	Students' Club Open Doubles	-	07.03.2017 to 30.03.2017
3.	Students' Club Open Mixed Doubles	-	07.03.2017 to 30.03.2017
4.	Inter Bhawan Snooker	-	04.02.2017 to 28.02.2017
5.	Inter Year Snooker	-	22.01.2017 to 29.01.2017
6.	Snooker, Freshers' Tournament	-	22.01.2017 to 29.01.2017

### **Pool ( 8 ball and 9 ball) :-**

1.	Students' Club Open Singles	-	07.03.2017 to 30.03.2017
2.	Students' Club Open Doubles	-	07.03.2017 to 30.03.2017
3.	Students' Club Open Mixed Doubles	-	07.03.2017 to 30.03.2017
4.	Students' Club Open Girls Singles	-	07.03.2017 to 30.03.2017
5.	Inter Bhawan Pool	-	04.02.2017 to 01.03.2017
6.	Inter Year Pool	-	20.01.2017 to 04.02.2017
7.	Freshers' Tournament	-	04.02.2017 to 28.02.2017

### **Indoor Games:-**

1.	Table Tennis, Students Club Open Singles	-	07.03.2017 to 30.03.2017
2.	Table Tennis, Students Club Open Doubles	-	07.03.2017 to 30.03.2017
3.	Table Tennis, Students Club Open Mixed Doubles	-	07.03.2017 to 30.03.2017
4.	Table Tennis, Students Club Open Girl Singles	-	07.03.2017 to 30.03.2017
5.	Carom, Students Club Open Singles	-	07.03.2017 to 30.03.2017
6.	Carom, Students Club Open Doubles	-	07.03.2017 to 30.03.2017
7.	Carom, Students Club Open Mixed Doubles	-	07.03.2017 to 30.03.2017
8.	Carom, Students Club Open Girl Singles	-	07.03.2017 to 30.03.2017
9.	Chess, Students' Club Open	-	07.03.2017 to 30.03.2017
10.	Foosball, Students' Club Open	-	07.03.2017 to 30.03.2017
11.	Foosball, Students Club Open Girls	-	07.03.2017 to 30.03.2017
12.	Foosball, Students Club Open Mixed Doubles	-	07.03.2017 to 30.03.2017
13.	Table Tennis, Inter Bhawan	-	04.02.2017 to 01.03.2017
14.	Carom, Inter Bhawan	-	04.02.2017 to 01.03.2017
15.	Chess, Inter Bhawan	-	04.02.2017 to 01.03.2017
16.	Foosball, Inter Bhawan	-	04.02.2017 to 01.03.2017
17.	Table Tennis, Inter Year	-	04.02.2017 to 01.03.2017
18.	Carom, Inter Year	-	04.02.2017 to 01.03.2017
19.	Chess, Inter Year	-	04.02.2017 to 01.03.2017
20.	Foosball, Inter Year	-	04.02.2017 to 01.03.2017
21.	Table Tennis, Freshers' Tournament	-	04.02.2017 to 01.03.2017
22.	Carom, Freshers' Tournament	-	04.02.2017 to 01.03.2017
23.	Chess, Freshers' Tournament	-	04.02.2017 to 01.03.2017
24.	Foosball, Freshers' Tournament	-	04.02.2017 to 01.03.2017

Students' Club is the hub of various activities related to students on the campus. A large number of students daily visit and participate in different Indoor and Cue sports activities housed in the Club. Students' Club is central to large number of other students' activities as well viz. COGNIZANCE, SRISHTI, SANGRAM, SANKALP and THOMSO.

This year significant changes to the club premises have been done such as:-

1. New Chairs and Umbrellas have been set up outside the Students' Club for students to sit and relax. Significant efforts have been in maintaining the club lawn.
2. New flower pots have been installed and floor painting has been done to improve the club ambience.
3. New Coupon system for Snooker booking has been introduced to increase the transparency.
4. Booking system for Table Tennis has been introduced to ensure a smooth flow in the club.
5. U G Floor has been renamed to Students' Square.
6. Included all games, Inter Year and Freshers' Tournament.
7. Introduced Pool- Girls Singles in Club Opens for the first time to increase the girl participation.
8. Extension of Club timings to 11.00 P.M. while successfully organizing and maintaining the club.

## 10.7 Hobbies Club

### Overview

Hobbies Club is one of the few destinations in IIT Roorkee where students come to fulfil their hobbies in different areas. The club provides opportunities in the areas of Fine Arts, Modelling & Robotics, Artificial Intelligence & Electronics, Software Development, Philately & Numismatics, Gardening, Physics & Astronomy, Photography and Design.

### Club Council

The activities of the club started with putting the Hobbies Club Council in place. Similar to the previous constitution, a student member from any one of the nine sections was selected as the General Secretary on the basis of an interview. The selected candidate also had the role of Convenor for Srishti 2017, the annual techno hobby event. Along with this, a member from each section was selected as the Secretary for their respective section for the academic year of 2016-17. The council for 2016-17 is given in below.

**Table 1: Hobbies Club Council 2016-17**

Sl. No.	Secretary	Staff Advisor	Section
1.	Aman Malhotra	Prof. K. L. Yadav	Hobbies Club
2.	Pumendu	Dr. Vivek Pancholi	Design Studio
3.	Rahul Ratan Mirdha	Dr. Anil Gourishetty	Electronics
4.	Ujjawal Sharma	Dr. Harshit Lakra	Fine Arts
5.	Chitra Kumari	Dr. Harshit Lakra	Gardening
6.	Prasant Shekhar Singh	Dr. Abinash Swain	Models & Robotics
7.	Siddhartha Tiwari	Prof. K. L. Yadav	Philately & Numismatics
8.	Vishal Nagula	Dr. Prateek Jha	Photography
9.	Mankad Dvij Chaitanya	Dr. Anirban Mitra	Star Gazing
10.	Sopan Khosla	Dr. Sateesh K Peddoju	Web Designing

The first meeting of the council was held on 20th August 2016. Advisors and secretaries of each section were pre-intimidated to prepare and present the event calendar and roadmap of activities of their individual section.

### Information of Events and Projects

The students in Hobbies Club not only pursue their hobby, but also learn and earn academic credits for the efforts made in the respective club. There is a trend in the increasing number of proficiency holders for the past five years with this year's tally reaching to a whopping 1563.

This year for the first time we started working on extensive projects in various sections. For implementation of such projects specific funds were allocated to groups of dedicated students. These projects have been started with the aim of starting research based work in Hobbies Club IIT Roorkee. We also started with intersection projects this time to increase activities between different sections. Works were done in collaboration by participating sections.

Design Studio which was included in the club last year started functioning in various domains from this year. The section was initiated to promote Product Design and Graphic Design in the institute and provide a common platform to students interested in these fields. The member students of the section started

working on ideas and products put forth in the last academic year and completed a lot of them with impressive results.

The club publicized all its events and activities through various publicity flexes, posters, emails, notices on channel, pamphlets, social media etc. for widespread publicity among students as well as the faculty. The respective social media pages and youtube channels of each section were kept up to date for the same.

Every year a lot of projects and activities are carried out by all the sections throughout the year. The events are broadly categorized into following:

- Student Held Lectures
- Guest lectures by eminent people in each field
- Workshops
- Sky Observation Sessions
- Hackathons

### **Design Studio**

1. In its very first year of inception Design Studio has taken forward its mission of creating a design oriented atmosphere in this campus. Increasing design awareness through various initiatives, the section has also been able to support other campus groups in their branding as well as product development.
2. The Design Studio has a motto of bridging the gap between the developed technology and final products. It is very proud to announce that its very first product an ergonomically redesigned crutch (**a personal walking assistant**) got featured at the 'Inter IIT Tech Meet, 2017, IIT Kanpur'.
3. The section developed the first '**Augmented Reality Mobile App**' at IIT Roorkee called Plan-Et and very successfully organised two treasure hunts on the same, during Srishti 2017 and later in Cognizance 2017 with a participation of over 70 teams.
4. It developed some initial prototypes of a new type of windowpane which exploits its design and basic thermodynamics to keep the interiors cool.
5. Section also supported two of IIT Roorkee largest bonanzas 'The Cognizance' and 'The Thomsos' in all possible ways.
  - a. Members were instrumental in the design process of all the branding exercise for Cognizance 2017 (from flexes, posters, advertisements to almost every branding component)
  - b. Section designed the complete website and mobile app (which had an innovative feature of restricted entry using QR codes) for Thomsos, 2016.
6. Section supported some other campus groups and programs like:-
  - a. Designed the Logo and Website for Himalayan Explorers Club, IIT Roorkee.
  - b. Managed most of the design for the Institute Lecture Series.
7. Keeping in line our vision for a transdisciplinary product development, we collaborated with the Models and Robotics Section IITR, on a project for **Origami based robots**, a perfect blend of art and engineering.
8. From the beginning of the year organized various outreach program for the campus students to increase design awareness:-
  - a. Intro to Design Workshop
  - b. UI-UX Workshop
  - c. Design Camp (One month camp over whole December 2016 for students interested in design. Students got exposure to basics of graphics, design oriented programming and basic product and industrial design).
  - d. Workshop on **Human Computer Interaction**.
  - e. Organised a '**Know your Designer**' series at the end of the year comprising of experience sharing and mentorship by the best designers in this campus who were graduating this year.

### Events carried out by Design Studio in Academic Year 2016-17

Ending Date	Starting Date	Title
5/10/2016	5/10/2016	Intro Talk
24/10/2016	24/10/2016	Intro to Design Basics
26/10/2016	26/10/2016	Lecture on UI-UX
28/10/2016	28/10/2016	Lecture on Industrial Design
2/11/2016	2/11/2016	Lecture on Graphics
30/9/2016	18/7/2016	Thomso 2017
<b>25/12/2016</b>	<b>1/12/2016</b>	<b>Design Camp</b>
8/1/2017	1/12/2016	Frontend Development Camp
17/12/2016	9/12/2016	Graphic/UI-UX Camp
24/12/2016	18/12/2016	Product Design Camp
28/3/2017	9/12/2016	Cognizance 2017
24/1/2017	18/1/2017	Recruitments
5/2/2017	5/2/2017	Design 101
29/3/2017	29/3/2017	Lecture - Programming for Designers
8/4/2017	3/4/2017	Interactive session- Know your seniors

#### Electronics

##### Projects for Institute:

As a part of the Hobbies Club, we take it as our responsibility to give something back to the institute. Therefore, we have taken up the following projects that are targeted towards betterment of the Institute.

- **Interactive LED Display** : Instead of all the flexes on EC circle, for the events, we have taken up a project to create an interactive LED display that would show any recent events or screenings.
- **QA Bot** : We are developing an AI backed chat bot that will automatically handle queries about the institute, rules and regulations, campus group, hangout places etc. This will be a lot useful for 1st year students.
- **Licence Plate Detection** : To make the institute more secure, we have developed a system monitors the entry of cars/bikes in the institute. It identifies and keep a record of all the vehicles entering the gate without any manual work for smooth transport in and out of the institute.
- **Recommendation System** : Students are always confused what to take in electives. They contact their seniors with similar interest for suggestion. This project aimed at providing the best elective for a person taking all his interest and reviews of other courses into account.
- **Auditorium Empty Seat Localization** : Many a times, during any talks or presentations, it's seen that the speakers get disturbed by the late audience searching for vacant seats. To avoid that a system is proposed that will let the late comers know the whereabouts of empty seats in the auditorium. A small screen will be placed on the doors showing this graphically.
- **Projection Pool Table** : It will benefit the newcomers to learn how to play pool. It can help in judging the performance of a player too.

##### As Products:

This year we tried not to restrict ourselves to mere projects and to convert them into market products. We have selected few projects that have the capability to convert into products. This will help to create an entrepreneurial environment among students. Further it will help achieve our goal of Financial Independence. The foundation for these projects have been laid and in the coming semester, we plan to complete them as products. These projects include:

- **Smart Walking Cane** : It is a normal walking cane, but with sensors to help a person detect and avoid objects around it. The cane is also having the power to explain the scene around it. Currently we have developed a working prototype but has to be converted to a product.



- **Tempescope** : It is basically a weather box, that mimics the weather of any place as specified by the user. Currently the sole purpose of this products is as an aesthetic/decorative item. In future this project holds the key to become somewhat like an incubator where plants from any region can be grown. This may well become the solution for food shortage and crop deterioration due to climate changes like global warming.
- **Smart Farm Camera** : In order to achieve precision agriculture in India, smart and cheaper options need to be created for the farmers so that they can know their crops better and precisely. Smart Farm Camera is designed to inform the farmer about various diseases the crops may have, precise fertilizer requirements, etc.
- **Virtual Reality in military training** : The virtual reality technology, however, is allowing for a cheaper, more flexible solution, containing the horror to the visor of a headset. A VR training simulation would cost a fraction of the price of the training cabin. We are trying to do the same for our own Indian Army. Through this project we aim to make a complete prototype that would be ready to deploy whenever needed. Our design has been applauded by many professors during Shrishti and members of the army themselves have shown interest in our design.

#### **Research Based Projects:**

Some of the projects include:

- Speech Recognition
- Lung cancer detection using CT scan images
- DateTime parser in Hinglish

#### **Long Term Projects:**

From this academic session we don't want to restrict ourselves with projects that have a finite deadline. We have taken up some (research) projects that will be carried forward for a longer time.

- Autonomous quadcopter
- Control of robot using EEG signals
- Fake News Detection

#### **Competitions**

1. **Panasonic MOBIVATION:** Two teams from the active members of Electronics Section were selected among top 15 teams from a total of 225 entries in Artificial Intelligence and Hardware Modification theme. The first team constituted of Animesh Gupta, Anshul Jain and Aman Shivhare (ECE Batch 2018), the second team had Chirayu Asati and Hrituraj Singh (EE Batch 2019).
2. **Hitachi Digimize:** Got 1st prize in Digimize, a national level competition organised by Hitachi. The project was a real time optimization and artificial intelligence product. The 1st price constituted an internship in Hitachi and 1 week trip to Hitachi big data labs, USA. The team consisted of Amit Manchanda (Joint Secretary) and Abhishek Sachdeva (ECE Batch 2018).
3. **Delta Cup:** Around 6 teams were selected from IIT Roorkee for industrial training in Delta Electronics in Gurgaon. It was a 6 day training programme. Topics like drives, control, robotics etc were thoroughly discussed along with the practical implementation on a Delta kit. Further, the product ideas were selected based on ideas for final competition in China.
4. **Valeo Innovation Challenge:** At the time of writing this report, in top 24 teams out of 1628 teams from all over the world. For the semifinals the team received a funding of € 5000/- to build a prototype and the final round would be in Paris on 27th October, 2017. The team consists of Amit Manchanda (Joint Secretary), Abhishek Sachdeva, Animesh Gupta, Anshul Jain, Raghav Chawla (ECE Batch 2018)
5. **Go Green In The City:** 5 teams from Electronics Section have currently participated in the competition organised by Schneider Electric. The aim of the competition is to innovative solutions for smarter and more energy efficient cities.
6. **Eyantra** : 1 team from IIT Roorkee was selected in Eyantra competition. e-Yantra Robotics Competition (eYRC) is a unique annual competition initiated by IIT Bombay that aims to understand embedded systems with a practical outlook to help provide practical solutions to some

of the real world problems. Selected teams are given a robotic kit complete with accessories and video tutorials to help them learn basic concepts in embedded systems and microcontroller programming. Abstracts of real world problems assigned as "themes" are then implemented by the teams using the robotic kits. Mayank Gupta, Satyajeet Patel, Nikunj Agrawal, Amarthya Palreddy all from (EE batch 2018) were selected.

### **Timeline of activities conducted**

#### **[May 2016 - July 2016]**

At the end of the previous session, proper arrangements were made for the students to stay during the summer vacations. One of the Joint Secretaries also stayed in the campus during that period to guide the students. The number of students who stayed was around 20. Most of the work was done in the field of Self Driving Car. At the onset of this session, students who stayed in summer break were asked to submit their report. Based on the work during this break, future goals were set up.

#### **[July 2016 - Oct 2016]**

Suggestions were taken from the students on the Facebook open group. (<https://www.facebook.com/groups/ariesiitr/>). Suggestions included the projects which the section should undertake, various activities and workshops, any changes that need to be made, etc. This time in order to strengthen Section's brand image, we invited suggestions for section's name and website's domain name (<http://ariesiitr.com/>). Organising various lectures throughout the session is one of the prime responsibilities of the section. This series begins with an intro-talk which mainly concerns first year students. Students are introduced to various activities of the section, all the workshops it organises, achievements of members, etc. Sincere attention is paid to the feedbacks received from the attendees and efforts are made to inculcate those feedback suggestions in future. A separate lecture series targeting specifically the first year students, was launched during this period, namely Spring of Learning. As a part of this series 6 lectures were organised covering Microcontrollers, game development, neural networks, etc. Electronics Section successfully organised a Project exhibition on October 26, The projects were made by first yearites from ECE department under the guidance of Prof. Brijesh Kumar.

#### **[Nov 2016 - Jan 2017]**

The list of the projects to be undertaken this session was finalized by the end of November. Applications were invited from the students for these projects. Those who applied were interviewed to identify the ones with right motivation and pre-requisites (if any). They might be given small tasks as well for this procedure. The link of project list: ([https://docs.google.com/spreadsheets/d/162e4ah6LXXEab7L58kONjQe750NYS\\_ZzmM3aqV96h3E](https://docs.google.com/spreadsheets/d/162e4ah6LXXEab7L58kONjQe750NYS_ZzmM3aqV96h3E)). The students were asked to prepare the component requirements and timeline of their projects. Required amendments were made in the initial drafts. After the exams, during winter break, students were asked to read about the technologies and hence develop their knowledge base for the project. Some of the projects' members who were staying in campus during break had started their work on their projects. Students who went off-campus were periodically asked to ping their progress to their mentors. After the winter break, students were asked to submit their first report to make sure they follow the timeline they submitted earlier. Some more projects were added and similar procedure was followed involving timeline submission, etc. Weekly meetings were organised to discuss the progress. Few more lectures were conducted as a part of Spring of Learning involving Artificial Intelligence and Machine Learning.

#### **[Feb 2017 - mid March 2017]**

Website Launched: [ariesiitr.com](http://ariesiitr.com).

Project members were asked to submit their final reports till March 1 along with the prototype (if possible). Mock presentations and testing of projects were done. During this period till Srishti, some more projects were added. Finally the day arrived for Srishti, annual Hobbies Club Exhibition. All the projects were displayed in this exhibition. Many dignitaries were invited, some of them as Judges while others as Guests. The work of the students was highly appreciated by everyone.

### [Mid March 2017 - April 2017]

Yet another project exhibition on digital electronics was organised for the first year students of ECE department. This time also the students had done some brilliant projects. Also, to promote open culture in the campus some projects were allocated mainly for the people other than the proficiency holders. People for the same were recruited. During this time, all the financial matters were handled involving component bills, reimbursements, etc. A new management team for the Section was appointed.

### Fine Arts

#### Workshops

1. **Sketching workshop (5th Aug, 2016):** Total participation was around 50. Basic techniques of shading, hashing, 3D designs, using charcoal were taught.



2. **Origami workshop by Himanshu Agarwal (24th-25th September, 2016):** He is a Mumbai based origami artist and has a column in Limca book of records.

Basic techniques of paper folding were told on the first day of the workshop and some advance techniques like tessellations were discussed on the second day of the workshop. The average number of participation was 110 per day.



### Decoration THOMSO '16

Coordinators: Mohammed Junaid & Aayushi Neema

The team was of around 50 students excluding the coordinators. Different types of lamps in glut were crafted using papers and clothes. A graffiti was painted on a wall behind Georgia. Flexes were recrafted for different events.

### SRISHTI '17

Theme: Evolution of Gaming

Some new art forms were tried this time like:

**1. Nail & String art-** String art, or pin and thread art, is characterized by an arrangement of colored thread strung between points to form geometric patterns or representational designs such as a ship's sails, sometimes with other artist material comprising the remainder of the work. Thread, wire, or string is wound around a grid of nails hammered into a velvet-covered wooden board. This new art form was done by Bhavesh Kr Singh.



**2. Scale paper modelling-** Paper models, also called card models or papercraft, are models constructed mainly from sheets of heavy paper, paperboard, card stock, or foam. This may be considered a broad category that contains origami and card modeling. Origami is the process of making a paper model by folding a single paper without using glue or cutting while the variation kirigami does. Card modeling is making scale models from sheets of cardstock on which the parts were printed, usually in full color. These pieces would be cut out, folded, scored and glued together. Pepakura is the art of combining these model types to build complex creations such as wearable suits of armor, life size characters, and accurate weapon models.



**3. Paper-stacking art**—An image is divided into ayers according to the shades and the darkest layer is put at the bottom and lightest at top. The main wall was created using this art form showing characters from different fandoms.



Besides all these new art forms, other crafts were also made using paper modelling, clay modelling, 3D origami, thermocol shape forming etc.



### Gardening

1. The section has been instrumental in promoting the gardening activities in the IIT campus. It had been proactive with its activities, infusing and promoting the recreational spirit of nature and gardening among the students.
2. Following were the major activities organized during the year:
  - a. Plantation drive
  - b. De-weeding workshop
  - c. Pots and plant maintenance lecture
  - d. Pot painting and garden modelling workshop
  - e. Binomial nomenclature lecture
3. During Srishti, the section hosted a number of events like Plant-A-Bottle, Flower Bouquet, Rangoli competition etc.

### Philately & Numismatics

1. Started the year by developing a new collection of Coins as earlier only Stamps used to be kept as permanent collection.
2. Encouraged students coming from foreign internships to collect coins and stamps from those countries.
3. Organized an interactive session to create awareness about the section.
4. Conducted simple competitions to encourage the involvement of proficiency holders.
5. Regular meetings throughout the year to discuss the latest happening in the field.
6. Visited National Coins Exhibition of India. Collected information from the exhibition to better the exhibitions of our section.
7. Identified the people who had shown interest during Srishti-16 made them involved in the activities of the section.
8. Identified the professors and other non-proficiency holders in the campus who are collecting coins and stamps and involved them in the annual exhibition.
9. Not a single chart from the previous years were used and a whole new exhibition was put up which was informative and simple to understand.
10. New events were created and organized along with the continuation of old events. About 40-50 students participated in each of these events.
11. To improve the scope of the section frontier like image recognition are being tried to be implemented on stamps and coins with a long term vision.

### Models & Robotics

Models and Robotics Section this year aimed to pursue projects with focus on "Human Computer Interaction" and Human Robot Interaction. The journey towards this aim was started with projects like Swarm Robotics, Humanoid, Martian Harmony V2, VRGame etc.

1. We wished to provide platform for innovative students of IITR to build a robot which interacts with human and create some product in this field.
2. MaRS took part in several competitions and innovation challenges as mentioned below
  - a. A total of 3 teams from MaRS participated in the 5th Inter IIT Tech meet held at IIT Kanpur in which 18 IIT's participated actively. IIT Roorkee in total grabbed 3rd Rank among 18 IIT's participating there.  
**"Mino - The Reaction Bot"** made by MaRS bagged 1st position among all the IIT's in the Inter IIT Tech meet in the category "Human Computer Interaction". This robot is a companion which reacts on your statement and automate you complete surrounding on your voice commands.  
MaRS grabbed 5th rank in the category 'Indoor Localisation', in which a robot has to search a black box autonomously.  
MaRS in collaboration with ArES bagged 5th rank in the category 'UAV Design Challenge' by designing a aerodynamic plane.
  - b. MaRS Team Robocon IIT Roorkee, an integral part of the section had completed this year's problem statement of ABU-Robocon India "Appare" and represented IIT Roorkee in the competition and secured 12th position out of 112 participating teams.
  - c. We also had our students participating in **Texas Instruments Innovation and Development Challenge** with one team qualifying for the next round with a grant of \$200.
  - d. **E-yantra**: MaRS also participated in a competition "e-yantra" where a rover was to be designed and tested for given conditions autonomously.
3. In association with Unnat Bharat Abhiyan IIT Roorkee, we conducted a lecture on Basic Robotics for Junior High School and Senior High School students of Doon High School, Dehradun. This was done by the motive of creating interest in robotics in high school students and in return the School helped nearby village children to learn computer.
4. **3D-Printer**: MaRS members made our own 3D printer from scratch, with reduced cost of around 12k compared to available 3D printers in market which are in lacs.
5. We took forward our last year's project **"Martian Harmony - India's first Robotic Band"** on extension and added two instruments Synthesizers and Guitar to it. Probably this year the band will perform in certain coming fests in our college as well as other colleges too.

6. We started 2 very extensive projects this year, first is the '**Humanoid Robot**' which used 3D printing for the first time to build the hardware, and was showing moment in the Srishti.
7. Second extensive project was '**Swarm Robots**', bunch of robots which collaborate to perform certain task. This year they made certain pattern as instructed by visitors using their mobile phones in Srishti.
8. MaRS made their own **Graffiti Making Robot**, which draws graffiti on ground using actual paint by which we can make permanent drawings.
9. Collaborative project with other sections of Hobbies club
  - a. We collaborated with Astronomy Section to make an Auto Calibrating Telescope, which is available as a product but is very costly. In this telescope viewer just have to name the star, the telescope will automatically point to that star.
  - b. In collaboration with ArIES, we took part in Inter IIT tech meet and grabbed 5th rank.
10. A total of 200+ students actively took part in MaRS projects which were showcased during Srishti. The section showcased promising projects in various fields with practical applications in industry. Some of the notable projects were:
  - a. Swarm Robotics: Bunch of robots performing collaborative task.
  - b. Humanoid Robot: A robot like human being, which can walk and perform other task like us.
  - c. Indoor Irrigation System: An automatic robot which plants seed and take cares of irrigation automatically.
  - d. Martian Harmony V2: India's first robotic band attracted everyone during Srishti while playing 4 musical instruments.
  - e. Chess Playing Robot: Playing mind games with robots is fun, so we made a chess playing robot too.
  - f. Graffiti Maker: A product from MaRS, permanent graffiti making robot which made about 20+ drawings during Srishti.
  - g. Aim Shooting Robot: A robot for Indian military, equipped with camera and a gun will be feeding you with live images and you just give the pointer to shoot, it will automatically do the required.
  - h. Reaction Bot - Mino: A companion robot, everyone in Srishti talked to that bot, it gave reaction according to the statement. It also automates the surrounding on your voice statements.
  - i. Music Maestro: A virtual drumming addon, Visitors played drums virtually. This works by tracking your body and is also used to learn drumming.
  - j. Virtual Air Hockey: Buying a air hockey table is a costly affair so we made a virtual air hockey table using a projector, here you can play single or multiplayer air hockey.
  - k. BB 8: Very unique robot which is completely spherical but rolls to navigate anywhere without any wheels.
  - l. Swimming Fish: Attracted attention as this bot was visually like a fish and was swimming in the Hobbies club pool during srishti mimicking the real fish movement.
  - m. Indoor Localization Robot: A robot which maps its surrounding itself and can be used to optimise automatic cleaning tasks by robots in future.
11. Apart from all the projects, the other motive was to provide robotics education to the students of IITR. We conducted open lectures in areas such as:
  - a. Introduction to Robotics
  - b. Drives used in robots
  - c. Sensors and Actuators
  - d. Microcontrollers
  - e. PCB Designing
  - f. Artificial Intelligence and Machine Learning
  - g. "My First Robot" workshop for all first year interested in the field.

The lectures had an attendance of approximately 70-150 in each of them.
12. MaRS also organised two competition for Technical Trophy of IIT Roorkee
  - a. Smart Campus: Innovative ideas for smart campus and hostel was invited from students of IITR from which feasible ideas will be implemented by SAC.
  - b. CAD Designing: Students competed on designing given object in any CAD software to show their designing capabilities.

### Activities Carried out by Models and Robotics

End Date	Starting Date	Title
2/10/2016	2/10/2016	Intro Talk
24/10/2016	24/10/2016	Intro to Robocon
26/10/2016	26/10/2016	Robotics for School
28/10/2016	28/10/2016	Basic Lectures on Robot Making
2/11/2016	2/11/2016	Lecture on Microcontroller
3/11/2016	3/11/2016	Robocon Recruitment Test
9/11/2016	9/11/2016	Lecture on Actuators
5/1/2017	5/1/2017	Robotics for Freshers
15/1/2017	15/1/2017	Lecture on Sensors
18/1/2017	18/1/2017	PCB Designing
19/1/2017	19/1/2017	Robocon Interviews Phase I
22/1/2017	22/1/2017	MaRS Recruitments
5/2/2017	5/2/2017	Intro to AI/ML
29/3/2017	29/3/2017	Version Control with Git
3/4/2017	1/4/2017	Robocon Interviews Phase II

### Photography

1. The section is quite actively involved in various photoshoots around the campus.
  2. With over 1000 featured photos and 10 main photography events, the section helps students learn photography, its technical aspects and post processing.
  3. This year 225 students were enrolled as proficiency holders in the section.
- Following tables shows the work carried out by section throughout the year.

#### Work Done in Autumn Semester

SLNo	REMARKS	DATE	WORK
1	Brief Introduction for Proficiency holders about the section and its working	29 Aug 2016	Introduction Meeting for Proficiency holders
2	First lecture by the section on <b>basics of photography</b> and functioning of DSLR	18 Oct 2016	Basics of photography Lecture
3	Photo walk is conducted especially for <b>anushruti students</b> in campus to train them especially on the compositional techniques in photography	10-Sep-2016	Photo walk for Anushruti students
4	Photo collection drive has been done to collect best photos from all over the proficiency holders on <b>Monsoon Theme</b>	20 Sep 2016	Photo collection (Monsoon)
5	Photo collection drive has been done to collect best photos from all over the proficiency holders on Travel Theme	5 Oct 2016	Photo collection (Travel)
6	We have volunteered in covering Events in Thomso 2016 for all 3 days	22 Oct 2016	Thomso 16
7	Photowalk is conducted for the <b>first yearites</b> to create interest in them about photography	29-Oct-2016	Photowalk for First yearites



8	Photography section has participated in First Inter IIT cultural meet conducted by IIT Bombay and bagged <b>4 position</b> amongst all other sister IITs	18-Dec-2016	Inter IIT culturals
9	Various other events are covered by our volunteers as well, such as <b>Institute open lectures</b> , Student mentorship program, Music section events, etc.	During the whole semester	Miscellaneous

### Work Done in Spring Semester

SL. No	REMARKS	DATE	WORK/EVENT
1	To know the progress of 2 <sup>nd</sup> yearites, to resolve any queries	4-Feb-2017	Meeting for 2 <sup>nd</sup> yearites
2	Guest lecture by a Documentary Traveler Photographer whose works are published in <b>BBC Travel</b> , etc... is Held during Srishti	18-Mar-2017	Guest Lecture by Himanshu Khagta
3	Photo collection drive has been started to collect photos on various themes to exhibit them in Srishti 17	10-Feb-2017 to 10-Mar-2017	Photo collection (Srishti)
4	Photography section along with the cultural council is organizing an inter hostel competition as a part of cultural trophy (Winner- Jawahar Bhawan)	15-Feb-2017 to 20-Mar-2017	Click the Chitra
5	An on the spot <b>food Photography</b> Event during the second day of Srishti	19-Mar-2017	Food Freaks
6	We have volunteered in covering Events in Cognizance 2017 for all 3 days	24-Mar-2017 to 26-Mar-2017	Cognizance
7	Workshop on Handling and basics of photography was held again for all the photo enthusiasts in association with NSS	31-Mar-2017 to 2-Apr-2017	Sangram
8	Workshop on Handling and basics of photography was held again for all the photo enthusiasts in association with NSS	8-Feb-2017	Basics of photography lecture (open to all)
9	Special videos showing the long duration events in a short time span (Timelapse/Hyperlapses) are being made in campus to show beautiful transition of weather in spring semester	Whole spring semester	Campus Hyperlapse
10	Various other events will be volunteered like <b>Holi</b> , Sports, etc.	Whole Spring semester	Miscellaneous

### Star Gazing

Star Gazing Section a.k.a Physics & Astronomy Club IITR, a part of the Hobbies Club IITR, is a group of Science Enthusiasts of IITR who want to spread the spirit of Science, to create an environment where one can cherish and grow one's love for Science, and to provide a platform for better interaction among the Science enthusiasts on campus and the Scientific community.

Some of the major activities that were carried out by the Club during 2016-2017 are as follows:

1. The Club has organized a number of Star Parties - the Night-Sky Observation Sessions. The sky was observed both with the naked eyes and using the telescopes. A large number of people on campus have taken part in these sessions over the year and have indulged in the joy of Astronomy.

2. The Club has also continued with its Astrophotography activity and has captured a significant number of astronomical objects over the year. Some of the most often captured objects include the bands and the satellites of Jupiter, the craters of the Moon, the rings of the Saturn, the phases of the Venus, the Orion nebula, etc.
3. The Club, in collaboration with IIT KGP, organized a webinar by Dr. Cumrun Vafa (Harvard University) on "Ramanujan, Hawking, and Stringy Black Holes".
4. The Club organized 3 public talks on Special Relativity. These talks were delivered by the students and explained some of the essential features of Special Relativity rigorously.
5. One of the most crucial activities of the Club has been the meetings called Physics Journal Club meetings. In these weekly meetings, we discussed Group Theory and General Relativity in detail during the last year.
6. Further a three day event Cosmic Voyage was conducted on January during which a number of activities were carried out, namely:
  - a. Webinar by Dr. Robert Geroch (Chicago University) on "Causality Violations in General Relativity?"
  - b. Webinar by Dr. Samir Mathur (Ohio State University) on "The Blackhole Information Paradox"
  - c. Webinar by Dr. Michael Peskin (Stanford University) on "The Mysteries of the Higgs Boson"
  - d. "Ask Me Anything on String Theory" session by Dr. Aalok Misra of the Department of Physics, IIT Roorkee.
  - e. Singularity: A Physics Quiz
  - f. SUSY: A Science Scavenger Hunt
  - g. An Interactive Talk on Time Machines
  - h. Movie Screening: Einstein & Eddington
  - i. Night-Sky Observation Sessions
7. The Club organized a workshop on Messier Objects as a pre-event to the Astronomy competition in the Institute Technical Trophy. It also organized "Eyes on the Sky" - the Astronomy competition in the Institute Technical Trophy.
8. A 15 feet planetarium was built by the students for Srishti. This planetarium was then utilised to showcase the techniques of basic amateur astronomy.
9. Radio Jove, a dipolar radio antenna, was built by the members of the section last year to make observations of the Sun and Jupiter at 20.1 MHz. This project was taken further by building a second antenna of the same type which will enhance the range of observation of the Radio Jove telescope. The data from the same will be analysed here as well as uploaded to NASA where data from all such initiatives are analysed in unison, with our telescope acting as part of a world-wide interferometer telescope.
10. The 6" refractor telescope of the Club, which was a manually operated telescope, was converted into an automated telescope in collaboration with Models & Robotics Section of the Hobbies Club. The telescope can now point to any celestial body over a command from computer provided that it has been initially supplied with the true North and any two stars in the sky at the time.
11. The Club has modernized its library with an addition of 45 new books to it. The library will be made accessible to everyone from the start of the next semester.

#### Timeline of Club Activities

End Date	Start Date	Title
31/08/2016	31/08/2016	Introduction Talk
01/09/2016	31/08/2016	Welcome Star Party for Freshers
03/09/2016	03/09/2016	Web-Talk on "Ramanujan, Hawking, and Stringy Blackholes" by Dr. Cumrun Vafa (Harvard University)
24/09/2016	24/09/2016	PhysAstro Quiz
01/10/2016	30/09/2016	Star Party
06/10/2016	06/10/2016	Public Talk on Special Relativity by Students - 1
16/10/2016	16/10/2016	Group Discussion on Bell's Spaceship Paradox
19/10/2016	19/10/2016	Public Talk on Special Relativity by Students - 2
26/10/2016	26/10/2016	Public Talk on Special Relativity by Students - 3
05/11/2016	04/11/2016	Star Party

20/01/2017	20/01/2017	Web-Talk on "Causality Violations in General Relativity?" by Dr. Robert Geroch (Chicago University)
21/01/2017	21/01/2017	SUSY: The Scavenger Hunt
21/01/2017	21/01/2017	Singularity: The Physics Quiz
21/01/2017	21/01/2017	Web-Talk on "The Blackhole Information Paradox" by Dr. Samir Mathur
22/01/2017	22/01/2017	Interactive Talk on Time Machines by Students
22/01/2017	22/01/2017	"Ask Me Anything on String Theory" by Dr. Aalok Misra (Physics Department, IIT Roorkee)
22/01/2017	22/01/2017	Web-Talk on "Mysteries of the Higgs Boson" by Dr. Peskin (Stanford University)
22/01/2017	22/01/2017	Movie Screening: Einstein & Eddington
10/02/2017	10/02/2017	Star Party
28/02/2017	28/02/2017	Star Party
03/03/2017	03/03/2017	Star Party
15/03/2017	15/03/2017	Workshop on Messier Objects
17/03/2017	17/03/2017	"Eyes on the Sky": The Astronomy Competition in Institute Technical Trophy
18/03/2017	18/03/2017	Information Paradox: A Quiz on General Knowledge of Physics & Astronomy
18/03/2017	18/03/2017	Planetarium Shows
19/03/2017	19/03/2017	Movie Screening: Particle Fever
19/03/2017	19/03/2017	Star Party
10/04/2017	09/04/2017	Star Party

#### Web Designing(SDS Labs)

Web Designing section is subdivided into following :

- Software Development Section(SDS)
- Mobile Development Group(MDG)
- Programming and Algorithm Group(PAG)
- InfoSec IITR
- Data Science Group(DSG)

#### Competitions Conducted:

- **Backdoor:**
  - **BackdoorCTF 2016 (InfoSecIITR)** - SDSLabs' flagship CTF contest which witnesses massive traffic and participation from teams all around the world.
  - **n00b CTF 2017 (InfoSecIITR)** - A CTF aimed to introduce juniors to the world of information security.
  - **scytheCTF 2017 (InfoSecIITR)** - Open CTF organized as part of Cognizance 2017 (IITR's technical festival). Saw participation from top team from CTFtime.
- **Erdos:**
  - **Numberphile (PAG)** - A competition aimed to recruit second yearites. Saw huge participation from IIT Roorkee.
  - **Noobemaths 2016 (PAG)** - Beginner level contest meant for freshmen to introduce them to competitive mathematics.
  - **ENDGAME 3.0** - SDSLabs' flagship maths contest to recruit 1st yearites. Saw 300+ participation and 1400+ submissions.
  - **Project Gauss** - International level mathematics based contest hosted during Cognizance.

- **Codevillage:**
    - **Codeblitz 2016 (PAG)** - Annual contest held for recruitment of second yearites in PAG.
    - **Codecipher (PAG)**- Beginner level contest meant to introduce freshmen to competitive programming.
    - **Codeblitz 2017** - SDSLabs' contest to recruit first yearites.
    - **Insomnia 2017 (PAG)** - PAG's flagship contest which witness participation from top teams and best competitive programmers in the world. Held during Cognizance.
  - **Srishti Competition (Under various fields)**  
Competitions under the fields of:
    - Static Website
    - Dynamic Website
    - Networking and Desktop Applications
    - Machine Learning
    - Mobile Development
    - Game Development
- were conducted during Srishti 2017.
- **DroidWars (MDG)** Conducted mobile development workshop where students were given hands on experience with the tools and guides of mobile app development. Following were the topics covered:
    - Android studio and ADB setup.
    - Activities, toasts, camera, notifications etc.

#### Applications Launched :

- **SDSLabs Search** : Based on YaCy search technology, it is a peer-to-peer search engine that indexes all of SDSLabs' database, public pages under IITR domain. Allows one to search for virtually anything from movies/books to research citations. <https://search.sdslabs.co.in>
- **Enroute** : A fun and addictive new addition to SDSLabs Gaming portal. <https://enroute.sdslabs.co>
- **Join SDSLabs'** : very own recruitment portal, with details, dates and problem statements for the ones that wish to be a part of the group. <https://join.sdslabs.co>
- **Music-DNA (MDG)** A user-friendly music player with unique FFT visualization which has more than 10K downloads. <https://play.google.com/store/apps/details?id=com.sdsmg.harjot.MusicDNA>
- **Hitball (MDG)** Compete for the highest score by playing this unique mobile game. Hit the ball so that it remains in the air and keep it in the air as long as possible. <https://play.google.com/store/apps/details?id=com.sdsmg.cycle&hl=en>
- **TastyToast (MDG)** TastyToast is an Android Library which helps a user to get rid of their native Android Toast. TastyToast has over 1.4K stars on GitHub <https://github.com/yadav-rahu/TastyToast> Demo app showing use of TastyToast is available here <https://play.google.com/store/apps/details?id=com.demo.tastytoast>
- **Swipper (MDG)** An android Library for custom views to control brightness, volume and seek through swipe-able gestures. These views could easily replace the conventional volume/brightness/seek controls that we have in music player, video player or gallery apps. <https://github.com/sdsmg/Swipper>

#### Apps currently being worked upon :

- **Muzi V2** IIT Roorkee's very own music streaming app, with features to create personalized playlists, discover new artists and new music.
- **Beast** A networking application that can manage deployment and management of containerized challenges (for backdoor) and provides usage metrics/monitoring.
- **Codevillage and Backdoor (Admin Panels)** Building web interface for admins to manage aforementioned competitions effectively. This includes being able to add/edit problems/challenges, issue notifications and post updates and monitor user activity.
- **Cerebro** A website to hold Machine Learning competitions like backdoor does for information security.
- **SDS Labs OAuth** An application for third party login for client to login via SDSLabs API.
- **Forsit** Extending the common Recommendation engine platform for Backdoor. This includes recommending similar challenges based on the technique of tag matching.
- **FLINGit (MDG)** FLING it is an Android Game in which player purpose in life is to survive as long as

possible by jumping over one pipe to another. Missing any pipe or coming in contact with a Black hole will lead to game over. Currently FlingIt is available in beta and can be played here: <https://play.google.com/store/apps/details?id=com.sdsmgd.flingit&hl=en>

- **Citadel (MDG)** Citadel is a free book sharing platform, built with the motive to enrich the reading culture in the campus and bring together enthusiastic readers. User can request for the book(s) she/he likes, meet up with the owner and make the transaction. <https://play.google.com/store/apps/details?id=com.sdsmgd.bookshareapp.BSA>
- **Splitter (MDG)** An android game in which we have to pass through obstacles. Also, presented in Srishti using Kinect Technology to play game using hand gestures. <https://github.com/sdsmgd/Splitter>
- **Liener (MDG)** An android app to load hyperlinks behind the curtains seamlessly and show it using chat heads. <https://github.com/sdsmgd/liener>
- **Hoodang (MDG)** Hoodang is a modified version of famous android game ping-pong. The only difference Hoodang has over native ping pong game is in terms of better UI and awesome powerups. <https://github.com/yadav-rahul/hoodang>

#### Events Concluded :

- Lecture Series during Srishti
  - Intro to Bash and Git : An event which witnessed huge attendance owing to fact that Bash and Git are two indispensable tools for any software developer. The lecture aimed to make the attendees familiar with these tools (with live demo).
  - Intro to Infosec : Live demo of basic vulnerabilities in web applications and binary (executable) programs.
  - Intro to Game Theory
  - Intro to Data Science
  - Intro to Mobile Development
- HTML, CSS, JS, PHP Lectures
- Intro to Mobile Development and Intro to Game Development (MDG)
- Intro to Competitive Programming (PAG)
- **Winter of Code** - A short programme during the inter vacations aimed to introduce freshers to the format of GSoC i.e. working on a specific project under a deadline and strict guidelines. The result was, a lot of innovative applications built in under a month by freshers with limited introduction to programming prior to the programme.

#### Miscellaneous :

- **Cognizance Website** : Building the official website for Cognizance-17, IITR tech fest. A fully functional, secure, dynamic and responsive website complete with registration and payment features.
- **Cognizance Mobile App (MDG)** An android app to browse through the events according to categories and departments as per your interest for Cognizance-17. The app will tell you which events are more popular, which are starting soon. If you wish to attend an event you can see the route on the map and get the directions to the venue of the event. You'll also be notified in advance for your favorite events.
- **Internal Game Development Hackathon** One of whose result was the addictive Enroute game.

#### Achievements:

- **CodeFun.Do (SDSLabs and MDG)** A 24-hour hackathon that includes building an application from scratch that is based on a innovative and marketable idea. The competition is organized only in select few of India's top colleges.
  - Top 3 in online round Both
  - Winners and runners up of final round
  - Winners represent IIT Roorkee at the national round at Microsoft, Hyderabad.
- **Panasonic Mobivation (MDG)** : Panasonic's Innovation contest is an "OPEN INNOVATION" challenge for "technical" students in leading technical schools.
  - Secured 1st Rank overall and won a cash prize of INR 1 Lakh.
  - Secured 1st Rank in Software Category and won a cash prize of INR 40K.
- **InOut (SDSLabs and MDG)**
  - InOut is India's largest Hackathon
  - 2 team from SDSLabs and MDG got selected

- One Team finished in Top 7
- **InterIIT Tech Meet (SDSLabs)**
  - Participated in competition "Stock Market Analysis"
  - Bronze medal winners
- **GS Quantify (SDSLabs)** A Machine Learning based competition by Goldman Sachs.
  - Team Renegades from SDSLabs were finalists from IIT Roorkee.
- **Smart India Hackathon (MDG)** World's Biggest Hackathon organized by Indian Government under the aegis of Shri Narendra Modi. Got selected for the Grand Finale for Ministry of Road Transport and Highways. Represented IIT Roorkee in the Grand Finale in Nagpur.
- **ICPC Regionals (PAG) ACM ICPC** is annual multi-tiered competitive programming competition among the universities of the world. 8 teams from PAG got selected for ACM ICPC Regionals. 3 teams from PAG got selected for ICPC India Finals. - SnackDown 2k16 6 teams from PAG in top 250 in Elimination Round.
- **108 Hackathon** Organized by TNHSP and IIT Madras, The Emergency Services Hackathon brings you the opportunity to innovate and have a positive impact on the current structure of the 108 Emergency Services in Tamil Nadu.
  - Secured 4th place and won a cash prize of INR 10K.

#### Timeline of Activities by Web Designing Section

Ending Date	Starting Date	Title
5/8/2016	5/8/2016	Intro Talk
8/8/2016	8/8/2016	Lecture on HTML
23/8/2016	23/8/2016	Lecture on CSS
8/9/2016	8/9/2016	Lecture on Mobile Development
11/9/2016	11/9/2016	Numberphile - Math competition for freshers
15/9/2016	15/9/2016	Lecture on Javascript
17/9/2016	17/9/2016	Lecture on Current Design Practices
30/9/2016	30/9/2016	Codeblitz - Coding Competition
7/10/2016	7/10/2016	Lecture on Adobe Photoshop/Illustrator
15/10/2016	15/10/2016	Codecipher - Coding Competition for freshers
25/10/2016	25/10/2016	Lecture on Competitive Programming
4/11/2016	4/11/2016	Lecture on Intro to Information Security
10/11/2016	10/11/2016	Minor project submission
6/1/2017	2/12/2016	Winter of Code
9/1/2017	9/1/2017	Codeblitz - Coding Competition
12/1/2017	12/1/2017	noobCTF - CTF for freshers
15/1/2017	15/1/2017	Endgame - Math competition for recruitments
24/1/2017	21/1/2017	SDS Recruitments
15/2/2017	31/1/2017	Droid Wars - Mobile Development Workshop
9/3/2017	4/2/2017	Cognizance Website Development
10/3/2017	19/2/2017	Cognizance Mobile App Development
15/3/2017	15/3/2017	Lecture on git + bash
16/3/2017	16/3/2017	Lecture on Game Theory
19/3/2017	19/3/2017	Lecture on intro to data science
19/3/2017	18/3/2017	Insomnia - Coding competition part of Cognizance
20/3/2017	19/3/2017	ScythCTF - part of Cognizance
22/3/2017	21/3/2017	Project Gauss - Math competition during Cognizance
6/4/2017	5/4/2017	backdoorCTF - Annual Flagship CTF
8/4/2017	8/4/2017	Final Project Submissions



The 58th Annual Techno Hobby Exhibition, Srishti 17 was conducted during 18-19 March 2017. The working team and committees for organizing the event was formulated as early as January 2017 and a roadmap was established. Continuing the trend of the previous year, entries were invited from colleges and schools outside IITR. The inauguration ceremony was held inside Hobbies Club premises with the Chief Guest Prof. P. K. Ghosh, Deputy Director, IIT Roorkee. The event witnessed a footfall in thousands, with exhibition of about 250 projects and 42 events including competitions, guest lectures, quizzes and hackathons both online and offline. In spite of the torrential uproars from time to time, the two day exhibition was proven to be a grand success owing to the fact that the gloomy weather didn't dampen the spirit of participation within the campus premises. The event was covered by multiple media channels and newspapers.

Each section had selected their best projects and gave away the prizes in each category.

#### **Section Trophy Winners**

The following were adjudged the section trophy winners for 2016-17:

1. **Design Studio** - Phanendra Jangid
2. **Electronics** - Vaibhav Garg
3. **Fine Arts** - Prikshat Dadhwal
4. **Modelling & Robotics** - Rohit Kumar Agarwal
5. **Photography** - Yash Khajanchi
6. **Star Gazing** - Harshil Mittal
7. **Web Designing** - Utkarsh Gupta

#### **10.8 CULTURAL COUNCIL**

##### **Dhun**

The Music Section organized Musical Events "Dhun" on 11<sup>th</sup> April, 2016.

##### **The Valedictory Function**

The valedictory function of Cultural Council was organized on 16<sup>th</sup> April, 2016 MAC Auditorium. Certificates and mementoes were given to the sectional Secretaries and members of passing out batch (2015-16). A new student executive body for the session (2016-17) was installed.

##### **Orientation Program 2016**

The students of Music section performed Kulgeet & National Anthem for "Orientation Program" on 24<sup>th</sup> September 2016 at Convocation Hall. An entertainment programme for 01 hour was given by Cultural Council to welcome new students.

##### **Independence Day Fortnight Celebration**

Cultural Council organized "Independence Day Fortnight Celebration" from 09<sup>th</sup> to 12<sup>th</sup> August 2016

### **Independence Day**

The students of Music section performed Kulgeet & National Anthem on August 15<sup>th</sup>, 2016 as a part of Institute activity

### **Kavyanjali**

Kshitij Magazine Section organized a poetry festival "Kavyanjali" on 23<sup>rd</sup> September 2016

### **Thomso 2016**

Choreography and Dance Section performed in Thomso 2016

### **Annual Institute Convocation**

The students of Music section performed Kulgeet & National Anthem for "Convocation – 2016" on 29<sup>th</sup> September 2016 at Convocation Hall.

### **Gandhi Jayanti**

Students of Music section performed Bhajan on 2<sup>nd</sup> October, 2016 as a part of Institute activity.

### **Workshop**

Music Section organized a workshop for Dholak and Tabla training from 17-20 October 2017.

### **Pehla Nasha**

The Music Section organized "Pehala Nasha" on October, 27<sup>th</sup> 2016, in which only the fresh students of the session 2016-17 performed.

### **Debate and Quiz**

- A. Literary Section organized a Debate and Quiz for 1<sup>st</sup> year students at LH-1 in DOMS on 01<sup>st</sup> August 2016.
- B. Literary Section organized a Debate and Quiz for all students at LR-1 in DOMS on 05<sup>th</sup> November 2016.
- C. Literary Section participated in a Debate and Quiz (The Prof. Ghanshyam Singh memorial Debate) from 20<sup>th</sup> to 30<sup>th</sup> October 2016 at "The Literary and Quiz Committee of National Law University Delhi.

### **Inter IIT Cultural Meet**

Music, Choreography and Dance, Dramatics and Cinematic Section participated in "Inter IIT Cultural Meet" in IIT Bombay from 18<sup>th</sup> to 22<sup>nd</sup> December 2016. Republic Day

### **Republic Day**

Students of Music section performed Kulgeet & National Anthem on January 26<sup>th</sup>, 2017 as a part of Institute activity.

### **Verdict**

Dramatics Section performed a stage play "Verdict" by Agatha Christie on 12 & 13 February, 2017 at O.P.Jain Auditorium.

### **Workshop**

Cinematic Section organized a workshop "Pre Production Film Making" from 18-19 March 2017.

### **ALL MY SONS**

Dramatics Section organized a stage play "All My Sons" on 30<sup>th</sup> March 2017 at Multi Activity Centre (MAC) Auditorium.

### **JASHN**

The Choreo/Dance Section organized a dance event "JASHN" on 06<sup>th</sup> March 2016.

### **Cinematics Section**

The Cinematics Section organized two (02) workshop one on Screenwriting and Vfx, and one on essentials of Photography and released two (02) videos including a tour of the campus.

### **Literary Section**

Literary Section participated in the Inter IIT-IIM quizzing competition, Nihilanth, and finished 6<sup>th</sup> overall out of 25 colleges. and three teams of the section qualified in the top 10 of the Tata Crucible Campus Quiz. The section conducted various quizzes over the year, and IITR's annual fests including Thomso, Cognizance, Sangram, etc.



### **Kshitiz Magazine**

Kshitiz Magazine Section Published Two Volumes of Kshitiz Magazine.

### **Watch Out News Agency Magazine**

Watch Out News Agency Magazine Section Published Two Volumes of Watch Out News Agency Magazine.

### **10.9 Educational Cinema Club**

This year cinema Club screened latest as well as classical Bollywood movies. We also arranged content of Hollywood movies and hopefully from the next session we will screen Hollywood movies.

In autumn semester we screened four movies (Madaari, Pink, Rustom, M.S. Dhoni; The Untold Story) and two events – 1. Quizaday, Online event 2. BOX OFFICE in Thoms'o'16. In the event there were 200+ participants. For all movies screening there were 2 shows and 3000+ audience.

In spring semester we screened seven movies including two classical movies (Dangal, OK Jannu, Kahaani 2, Kaabil, Raees, Jolly LLB2, A Wednesday). In this semester we screened movie everyweekends and two movies on Monday also for NSO people. For Raees Screening we hired sound system as our PA system was not working. After this movie PA system was not working for one month so we didn't screen any movie during that time. We purchased 8 movies contents (4 Hollywood movies and 4 classical movies) that will screen in next.

In this year, we observed many students and faculties and staff members show their affection towards our group. Every movie show was full of convocation hall.

We were really thankful towards DOSW for their support for each group activity.

### **10.10 Himalayan Explorers Club**

This year HEC IIT Roorkee was successful in organizing 34 events, including 26 treks and a few more adventures; which is more than the last few years. We focused on more participation from the undergraduate section of IIT Roorkee, we succeeded on our goal. For the first time, HEC (having a support capacity of 80 students) took around 200 students on off-campus activities simultaneously. We really never wanted enthusiasm to scatter due to less capacity of the club.

Since, we publish HEC's Magazine each year giving details of each event we do throughout the year, this report will contain only briefing of events.

So the first event of the year was Green Yatra to Dhanaulti with the motto of Go Green and travel green, which was led by the Club's Joint Secretaries. Every Semester Hec organizes Skating camp of one week and so our next event was skating camp, more than 100 participants came and learned how to do skating. Our entire team members helped this event to become successful. Then after mid term 5 treks were organized on the same day, out of which 3 were boy's trek and 2 were girl's trek. Details of all the treks are mentioned in the magazine. After that in the month of September we organized paragliding trip to manali, this trip is one of the most liked by the people of IIT-R. Now it was time for long treks and we organized long treks namely; Roopkund, Hampta Pass and Bali Pass. In the month of October, we organized rafting trip to Rishikesh, which is also most loved and adventurous trip, more than 60 participants came and we made this trip as an awesome memory for the people who joined us.

In the month of November, winter was approaching and end term examination as well, we planned snow treks that too long treks immediately after etc. We organized many long treks out of which 2 were boy's trek and one was girl's trek. Then we had winter vacation, this time was utilized for purchasing of trekking equipment for the club, things like sleeping tent, sleeping bags and rucksacks. Details of the equipment is clearly mentioned in the budget booklet of the club. After, vacation all team members came back to college with fresh enthusiasm to do more adventurous stuff. We organized one more time skating camp for one week in the month of January and again we got huge participation. This is most likable on campus event so we put all our efforts to make it a better experience for the IIT R people. We do adventure and nature is the next home for such people, and we are nature loving people, we sow many plants each year in different Bhawans on Plantation Day. We did the same and we called chief guest Mr. Naveen Gulia, he is very respected and adventures person, he can be seen as a source of inspiration for all of us, being disabled he has done so many things which scares many of us. He was felicitated in front of our Dean of Student Welfare Prof. D.K. Naureal. We tried to sow around 20 plants in different bhawans. Since, it was February end, mid term was over and mountains was full of snow and breathtaking scenery so it was calling us, we then planned five short snow treks and we tried our best to make this as unforgettable experience for the participant. It is mandatory that girl's treks will be joined by at least one

faculty of IIT R, so for girls treks many faculty members joined us and helped us to organize the treks successfully. HEC is very grateful to them.

It was month of March, it is suitable time for any marathon or race, we organized our annual cycle race on 04 of March 2017. It is the most anticipated event of the campus. HEC annual cycle race is one of its kind. On the morning of Saturday, 4 March around 300 cycles were lined up to ride the 18 kms (for girls) and 36 km route through some of the Roorkee most spectacular scenery that includes Solani aqueduct and Piran Kaliyar as a backdrop. It is very big on campus event and it took many sleepless nights of our team members to make it achieve a great success. All the winners were declared and they were promised to be felicitated in our Annual Club.

Now it was time of last but not the least, Annual Club Day. On this day all the members are awarded for all the hard work they put to run the club smoothly, and all the winners of the different events are awarded with certificates and promised cash money are distributed as a token of appreciation by our Dean of Student Welfare. Club's day signifies the end of the session but gives energy and motivation to the new members, to work better and carry the legacy.

### **10.11 Students Affairs Council (SAC)**

The work of the Students' Affairs Council (SAC) and Students' Senate for the year 2016-17.

1. Worked towards gender equality by implementing extended hostel timing for girls students so that they can work on their projects, assignments, etc.
2. Successfully led the demand for Student representatives in the Senate and various Department level committees like DAPC/CAPC/DACCAC. The representation will effectively improve the Student-Institute Administration communication in various academic activities.
3. Significant contribution in energy conservation by installation of 1200 LED tube lights in all the hostels. The procurement was done under the Prime Minister UJALA scheme which is a joint venture of Ministry of power and PSUs (Public sector units).
4. Contributed in restructuring of Dean of Students' Welfare Organization and thereby providing opportunities to students to take lead and learn administrative qualities.
5. Contributed in the extension of the library timing by convincing the Institute administration and explaining the need for such revision in the timing.
6. Introduced several election reforms which include presidential debate for Institute level positions, 1 year prior experience for the post of general secretary of hostel affairs and 3 deputy general secretaries to assist hostel affairs.
7. Ensured regular screening of movies.
8. Proposed and contributed in the extension of the Mess facilities of KIH Mess, which serves both veg and non-veg food, suitable for both dining and partying.
9. Promoted Bhawan (Hall of Residence) culture by introducing by General Championship which includes Inter-Bhawan Sports, Cultural and Technical Trophy to promote Bhawan (Hall of Residence) culture in the Institute.
10. Promoted "Swachh Bharat Abhiyan" in IITR focusing on maintenance of cleanliness through installation of dustbins and proper and efficient working of the workers involved in cleanliness of campus.
11. Conducted weekly surveys for ensuring a proper check on the Bhawan level affairs, activities and initiatives like Maintenance Work, Quality of food, Cleanliness and Hygiene issues etc.

### **10.12 International Student's Activities**

This year, 114 (One Hundred Fourteen) International students were registered in various postgraduate and Ph.D. Programmes. The Institute is proud of imparting education to the students from various countries of Asia and Africa in different disciplines of Science and Engineering. The international students stay in hostels along with other students and take part in the extra-curricular activities of the Institute.

### **10.13 Training & Placement Office**

The placement and training activities continue to grow under the guidance of Professor-in-Charge, Training and Placement. A student core placement team and the Placement Advisory Council consisting of student representatives from the final year academic programmes and the faculty in-charge from each academic department work round the year to look after smooth execution of the activities.

The progress in placement over the years, as can be seen from the bar chart given below has been made possible due to following initiatives:

- More than 2800 companies were invited for campus placement
- We have managed to achieve 1167 job offers despite of low market scenario across the globe
- Proactive approach in inviting companies
- Multiple sessions of campus recruitment on each day
- Complete computerization of the placement process
- Active co-operation and participation by the students in assisting the companies during their stay in campus
- New companies hired interns from the campus – PricewaterhouseCoopers Pvt. Ltd., VE Commercial Vehicles Ltd., Bidgely Technology Pvt. Ltd., Bayer CropScience Limited, Nokia Solutions and Networks, Health Care at Home India Pvt Ltd., NeenOpal Intelligent Solutions Pvt. Ltd., Webstaff Co. Ltd., KPIT Technologies, NTCB, Rupeek Fintech Pvt. Ltd., JSW Steel Ltd., Techture, Indus Valley Partners, etc.
- We have managed to achieve 309 summer intern offers
- Major MNC's like Mercedes-Benz Research and Development India Pvt. Ltd., Fermyon Technologies India Pvt. Ltd., Bajaj Auto, Societe General Solutions, GE Digital, VMWare Software India Pvt. Ltd., Bidgely Technologies Pvt. Ltd., Schlumberger Software, EMC, Oxane Partners, Tesco, Edelweiss, Exicom Tele-Systems Limited, MathWorks India Pvt. Ltd., Tata Communications Ltd., Ford, Vizury Interactive Solutions, FlyNava Technologies Pvt. Ltd., Center For Development of Advanced Computing, Bharat Dynamics Limited, Amplus Energy Solutions Pvt. Ltd., Kanodia Technoplast Limited, Omax Autos Ltd., JohnDeere India Pvt. Ltd., The Hi-Tech Robotic Systems Ltd., Indian Oil Coporation Ltd. (R&D Centre) and etc. visited the campus for the first time.
- 80 companies have visited first time in campus this year.
- We managed 22 companies in a day in campus.
- More than 703 A Category job offers received i.e. CTC > Rs. 7.0 lacs
- Personal visits to companies and establishing relationships and contacts at the highest level
- Special mails were sent to all our alumni to reconnect and contribute towards placements

Since the start of 'on-campus recruitment' for the session 2016-2017, from 1<sup>st</sup> December 2016, 246 companies visited the campus.

Year wise A category job offers and total teams participated in campus recruitment



Many big names visited the institute for the first time. Companies like ANEL Emirates General Contracting LLC, Keliton Tech, Headout, Edfora Infotech Pvt Ltd., Busigence Technologies LLC, Vonken Technologies Pvt. Ltd., HSBC Software Development (India) Pvt. Ltd., Oliver Wyman India, Chegg India Pvt. Ltd., Indus Valley Partners, Edelweiss, JK Technosoft Ltd., ExxonMobil, Amplus Energy Solutions Pvt. Ltd., SynapseIndia Outsourcing Pvt. Ltd., CGI, FlyNava Technologies Pvt. Ltd., P2 Power Solutions Pvt. Ltd., Novocura (Mfine), 1mg Technologies Pvt. Ltd., Advanced Technology Consulting Service Pvt. Ltd., Bridgecon Infra Consultant, Omax Autos Ltd., Kanodia Technoplast Limited, Ford, Relaxo Footwears Limited, Oilmax Energy Pvt. Ltd., Vizury Interactive Solutions, EMC, SAP Labs, Huhtamaki PPL Ltd., Essel Propack Ltd., Afflatus Gravures Pvt. Ltd., KPIT Technologies, Rohit Surfactants Pvt. Ltd. (RSPL Group), Vishveshwarya Group of Institutions, Uflex Chemicals and many others recruited for the first time from IIT Roorkee. Some other key companies that visited the campus were Microsoft (Redmond), Samsung Research India, Schlumberger, Shell, Reliance Industries Ltd., ITC Ltd., American Express India, Qualcomm India Private Ltd. They were indeed impressed by the technical knowledge and the quality of students and did recruit a significant number of students. This year's placement session also had a healthy and uniform participation from various sectors like Finance, Core engineering, FMCG (Fast Moving Consumer Goods), Construction, IT, R&D, Oil/Energy etc.

Besides IT, core engineering was also as popular among the students. Regular recruiters like Qualcomm, Tata Steel, SRF Ltd., Tata Motors, Eaton, Texas Instruments etc. followed the same trends as the past few years and hired students for their operations pertaining to core engineering.

Some of the firms which have hired students for their overseas operations are Microsoft – Redmond, Works Applications Co Ltd., Shimizu Corporation, ANEL Emirates General Contracting LLC. A total of 12 offers were made by these companies. The list of companies is given in Appendix 1.

A glance at overall placement statistics in the following table and the figure clearly reflects that the campus placement for the year 2016 - 17 has been quite satisfying across all the academic programmes.

Academic Programme	Number of students registered for placement	Number of offers made*
B.Tech/B.Arch	788	668
IDD	116	89
IMT	53	44
IMSc	32	26
M.Tech/MURP/M.Arch	402	256
M.Sc	54	9
MBA	55	54
Ph.D	36	21
<b>Total</b>	<b>1536</b>	<b>1167*</b>

\* Including students who opted other career opportunities including off-campus jobs.



The branch/discipline wise placement statistics of undergraduate and postgraduate students is given in Appendix 2.

The Training and Placement office was also able to secure significant number of offers for the mandatory summer internships of the pre-final year students from companies such as ITC Ltd., Schlumberger Asia Services Ltd., Microsoft, Reliance Industries, Goldman Sachs, Amazon, Qualcomm India Private Ltd, Wipro, Adobe Systems India Pvt. Ltd., Samsung Engineering Labs, Shell, Shree Cement Ltd., Jindal Stainless Limited, Eaton, Citi Group, American Express India, PricewaterhouseCoopers Pvt. Ltd., VE Commercial Vehicles Ltd., Bidgely Technology Pvt. Ltd., Bayer CropScience Limited, Nokia Solutions and Networks, Health Care at Home India Pvt Ltd., NeenOpal Intelligent Solutions Pvt. Ltd., Webstaff Co. Ltd., KPIT Technologies, etc. among others. A total of 309 internships were arranged by the office.

Overall, the placement session 2016 - 17 heading to on a successful note.

## Appendix 1

### Company List

S. No.	Name of Company/Organization/Institute
1	1mg Technologies Pvt. Ltd.
2	Accenture Services Pvt. Ltd.
3	Accenture Services Pvt. Ltd. (System Integration)
4	Adobe Systems
5	Advanced Technology Consulting Service Pvt. Ltd.
6	Affine Analytics
7	Afflatus Gravures Pvt. Ltd.
8	Ajay Kumar Garg Engineering College
9	Alethe Labs India Pvt. Ltd.
10	Amazon
11	American Express India
12	Amity University Madhya Pradesh
13	Amplus Energy Solutions Pvt. Ltd.
14	Analytics Quotient
15	Andritz Hydro Pvt. Ltd.
16	ANEL Emirates General Contracting LLC
17	Applied Materials
18	ASC Infratech
19	Atkins India
20	Axtria India Pvt. Ltd.
21	B&S Engineering Consultants Pvt. Ltd.
22	Bajaj Auto
23	BeeHyv Software Solutions Pvt. Ltd.
24	Bharat Dynamics Limited
25	Bharti Airtel
26	Bidgely Technologies Pvt.Ltd.
27	Bigtree Entertainment Pvt. Ltd. (BookMyShow)
28	BRIDGECON INFRA CONSULTANT
29	Bristlecone
30	Busigence Technologies LLC
31	Caim India
32	Capgemini
33	Capital One Financial Services (India) Pvt. Ltd.
34	C-DOT
35	Center For Development of Advanced Computing
36	Centre for Science of Student Learning
37	Centre for Social Responsibility & Leadership
38	CGI
39	Chegg India Pvt. Ltd.
40	Cilicorp Services India Pvt. Ltd.
41	CloudXLab.com Inc
42	Codalyze Technologies Pvt. Ltd.
43	Cognizant Technology Solutions

44	Contata Solutions Pvt. Ltd.
45	Cubastion Consulting Pvt. Ltd.
46	Cypress Semiconductor
47	D.E. Shaw India Software Pvt. Ltd.
48	D.P. Jain & Co. Infrastructure Pvt. Ltd.
49	Dar Al-Handasah Consultants (Shairs & Partners) India Pvt. Ltd.
50	Denfab Engineers Pvt. Ltd.
51	Diginext Education
52	Directi
53	DIT University
54	Doubtnut(Class 21A Technologies Pvt. Ltd.)
55	Droom
56	Eaton India Innovation Center LLP
57	Edelweiss
58	Edfora Infotech Pvt Ltd.
59	Edgeverve Systems Limited
60	EMC
61	Essel Propack Ltd.
62	Exicom Tele-Systems Limited
63	EXL Services Pvt Ltd.
64	ExxonMobil
65	Feedback Infra Pvt. Ltd.
66	Fermyon Technologies India Pvt. Ltd.
67	Finisar Technology India Pvt Ltd.
68	FlyNava Technologies Pvt. Ltd.
69	Ford
70	Futures First info services Pvt Ltd.
71	Fuzzy Logix
72	Galgotias University
73	GE Digital
74	Geo Environment
75	GLA University, Mathura
76	Gogol Hydro
77	Goldman Sachs
78	Grappus Technologies Private Limited
79	Hatch Associates India Pvt. Ltd.
80	HCL Technologies
81	Headout
82	Health Care At Home India Pvt. Ltd.
83	Hero Motors Ltd.
84	Hindustan College of Science & Technology
85	HKBK COLLEGE OF ENGINEERING
86	HSBC Software Development (India) Pvt. Ltd.
87	Huawei Technologies
88	Huhtamaki PPL Ltd.
89	Hyundai Motor India Limited
90	i3 Consulting
91	IBM
92	IBM Research
93	ICICI Bank
94	ICICI Lombard GIC Ltd.
95	ICICI Securities
96	IFTM University, Moradabad
97	iNautix Technologies India Pvt. Ltd.
98	Indian Oil Coporation Ltd. (R&D Centre)
99	Indian Oil Corporation
100	Indus Valley Partners

101	InfoStretch Corporation(India) Pvt. Ltd.
102	Infosys Limited -Tech Analyst
103	Infosys Ltd.
104	Innoplexus Consulting Services Pvt. Ltd.
105	Intercontinental Consultants & Technocrats Pvt. Ltd.
106	Interviewbit
107	Inteva Products India Automotive Pvt. Ltd.
108	ISGEC Heavy Engineering Ltd.
109	ISRO
110	ITC Ltd.
111	Itron
112	Jindal Stainless Limited
113	JK Technosoft Ltd.
114	JohnDeere India Pvt. Ltd.
115	Johnson Controls India Pvt. Ltd.
116	Kanodla Technoplast Limited
117	Kellton Tech
118	KIIT University
119	KLA Tencor Software India Pvt. Ltd.
120	Knowledge Podium Systems Pvt. Ltd.
121	KPIT Technologies
122	KPMG
123	L&T Construction
124	Larsen & Toubro Ltd.
125	Mahindra & Mahindra Ltd.
126	Maruti Suzuki India Ltd.
127	Marvell
128	Mastercard Advisors
129	MathWorks India Pvt. Ltd.
130	Mazars
131	Mercedes-Benz Research and Development India Pvt. Ltd.
132	Metti
133	Microsoft
134	Microsoft - Redmond
135	MIDHANI
136	MIT Pune
137	MM University
138	Nagarro Software Pvt. Ltd.
139	National Engineering Industries Ltd.
140	Next Education India
141	Novocura (Mfine)
142	Nucleus Software
143	nVidia Graphics
144	Oilmax Energy Pvt. Ltd.
145	OLA
146	Oliver Wyman India
147	Omax Autos Ltd.
148	ONGC
149	Oracle
150	Oracle US
151	Oxane Partners
152	Oxigen Online Services
153	P2 Power Solutions Pvt. Ltd.
154	Pareng Power Pvt. Ltd.
155	Parul Institute of Engineering & Technology
156	Pay Pal India Pvt Ltd.
157	Paytm

158	Piramal Foundation for Education Leadership
159	PwC Pvt. Ltd.
160	Qualcomm India Pvt. Ltd.
161	Reckitt Benkiser
162	Relaxo Footwears Limited
163	Reliance Industries Ltd.
164	Reliance Jio Infocomm Limited
165	Rivigo Services Pvt. Ltd. - Operation
166	Rivigo-Software
167	Rohit Surfactants Pvt. Ltd. (RSPL Group)
168	Ruptub Solutions Pvt Ltd. (Treebo Hotels) - BA
169	Ruptub Solutions Pvt Ltd. (Treebo Hotels) - Software
170	Samsung R & D, Bangalore - Developer
171	Samsung R & D, Bangalore - R&D
172	Samsung R&D Institute India - Delhi (SRI - Delhi )
173	Samsung R&D Institute India - Noida
174	SAP Labs
175	Sarda University
176	SCA Technologies India Pvt. Ltd.
177	Schlumberger - Software
178	Schlumberger Asia Services Ltd.
179	Sears IT and Management Services Pvt. Ltd. - BA
180	Sears IT and Management Services Pvt. Ltd. - OA
181	Sears IT and Management Services Pvt. Ltd. - Software
182	Secure Meters Limited
183	SGI Pune
184	Shapoorji Pallonji Engineering & Construction
185	Sharda Group of Institutions
186	Shell India Market Pvt. Ltd.
187	Shimizu Corporation
188	Shiv Nadar University
189	Sjain Ventures Limited
190	Slabs Engineering Pvt. Ltd.
191	Smartprix Web Private Ltd.
192	SMEC India Pvt. Ltd.
193	Societe General Solutions-Software
194	Sokrati Technologies Pvt. Ltd.
195	Soulflower
196	SPECTRUM Techno Consultants Pvt. Ltd.
197	SRF Ltd.
198	SS Supply Chain Solution Pvt. Ltd.
199	Stat Decision Labs
200	Steel Strips Wheels Limited
201	Subros Ltd.
202	Suzlon
203	Synopsys India Outsourcing Pvt. Ltd.
204	Synopsys India Pvt. Ltd.
205	S.R. Patel Engineering College
206	Tata Communications Ltd.
207	Tata Motors Ltd.
208	Tata Steel Ltd.
209	TCS - Digital
210	TCS - Research
211	TCS BPS
212	TCY Learning Solutions P. Ltd.
213	Tecture
214	Teerthanker Mahaveer University



215	Teevra Edutech Pvt. Ltd. (SpeedLabs)
216	Telstra
217	Tesco Bengaluru
218	Texas Instruments
219	Thapar University, Patiala
220	The Hi-Tech Robotic Systems Ltd.
221	Thermo Fisher Scientific
222	Thornton Tomasetti (India) LLP
223	TransBit Technologies Software Pvt. Ltd.
224	Uflex Chemicals
225	Unitedhealth Group
226	vConstruct Pvt. Ltd.
227	Vedanta
228	Veritas
229	Vignan's Foundation for Science Technology and Research
230	Virtusa Consulting Services
231	Visa Inc.
232	Vishveshwarya Group of Institutions
233	Vizury Interactive Solutions
234	VMWare Software India Pvt Ltd.
235	Vodafone India Ltd.
236	Voith Hydro
237	Vonken Technologies Pvt. Ltd.
238	Walmart Labs
239	Wipro Limited
240	Works Applications Co Ltd.
241	Xion Multiventures Pvt. Ltd.
242	XLPAT IT Consultants Pvt. Ltd.
243	Zemoso Technologies Pvt. Ltd.
244	ZS Associates India Pvt. Ltd.
245	ZS Associates Pvt. Ltd. - BOA
246	ZS Associates Pvt. Ltd. - DAA

# 11. Central Facilities

11.1 Estate and Works

11.3 Hindi Cell

11.2 Institute Hospital

11.4 Material Management Section

## 11.1 ESTATE AND WORKS

The following major works carried out by the Estate & Works during 2016-17 are as follows.

Sl.No.	Name of Works	Physical Progress
1.	Sewerage System and STP at Roorkee and Saharanpur Campus	Work of STPs under Progress
2.	Development of Pseudo-Dynamic Testing Facility at the Department of Earthquake Engineering	Completed
3.	Married-cum-Transit Accommodation	80% completed
4.	Construction of Lecture Hall Complex – II	40% Completed
5.	Student Activity Centre	50% Work Completed
6.	Construction of Boy's Hostel	59% work Completed
7.	Development of Tinkering Lab in Old Library Building including Civil, interior, electrical and air conditioning work.	Completed
8.	Development of TIDE Lab in Old Library Building including Civil, interior electrical, air conditioning and installation of Lift work.	Completed

## 11.2 INSTITUTE HOSPITAL

<b>OPD Patients</b>		<b>Indoor Patients</b>	
Total Number of Visits made by the Patients	132085	New Admissions	930
<b>Emergency Patients</b>		Referred	99
Total Number of Visits made by the Patients	8743	Discharged after Treatment	771
<b>Physiotherapy Unit</b>		Death	01
Total Number of Patients	11841	<b>Gynecology</b>	
Traction (Lumber/Cervical)	2441	Minor Operation (D&C etc.)	09
Heat (SWD/IPR/PWB/HD)	3000	Copper T inserted	01
Stimulation (IFT/TENS/MS)	3400	Total no. of Birth (Live Child)	01
Ray's (US/Laser)	2000	Excision of Vaginal Cyst	Nil
Other's (Exerciser/ Massager/ Cold Pack)	1000	LSCS	Nil
<b>Pathology Reports</b>		Normal Delivery	01
Blood Sugar	5994	Vaginal Hysterectomy	Nil
Blood Sugar (with Accucheck Glucometer)	260		
Urea	1719		
Creatinine	2178		
Uric Acid	1530		
Serum Billirubin	1598		
SGOT	1833		
SGPT	74		
Serum Amylase	89		
Lipid Profile	1690		

Serum Cholestrol	58
Montoux Test	22
Sodium /Potassium	230
Complete Blood Count (CBC) MS9	5332
Hb (Hemoglobin)	409
AEC (Absolute Eosinophill Count)	318
GBP	102
Blood Grouping & Rh typing	219
MP (Malaria Parasite)	1252
WIDAL	402
ESR	708
Dengue (IgG, IgM)	550
RA Factor	202
CRP (C-Reactive Protein)	319
HbA <sub>1c</sub>	713
HBsAg	131
VDRL	58
Urine Gravindex Test (UPT)	170
Urine Examination (RE/ME)	1290
STOOL Examination (RE/ME & Occult Blood)	81
T <sub>3</sub> & T <sub>4</sub>	591
TSH	722
PRL (Prolactin)	-
HIV	112
HCV	120
Platelet Count	72
Ketone Bodies	21

**1. Conference on Gynecology attended by the Medical Officers of the Hospital:**

An annual conference on Obstetrics and Gynecology (AICOG-2017) was attended by the Medical Officer of the Institute Hospital. The conference was held at Ahmedabad in the month of January 2017. The experts from all over India participated in the conference and delivered lectures on better health management of the pregnant females.

**2. Pulse Polio Camp:**

Pulse Polio Camp under National Pulse Polio Programme are organized regularly as per schedule. The Staff of the institute hospital is continuously providing their services into this programme of national interest.

**3. Blood Donation Camps:**

A Blood Donation Camp in coordination with NSS, IIT Roorkee was organized at the Institute Hospital on the 05<sup>th</sup> of February 2017. Donors from IIT community consisting of Students, Employees and Faculty, donated the Blood during the camp. The donated Blood was collected by the Blood Bank of Himalayan Institute of Medical Sciences, Jolly Grant, Dehradun, Govt. Hospital Roorkee and Indian Medical Association, Dehradun.

### 11.3 HINDI CELL

*Officers: 02, Publications: 01 & Annual Hindi Magazine 'MANTHAN'*

**1. Background**

Since the very beginning of University Of Roorkee (Now IIT Roorkee) Dr.Chandrika Prasad, Head, Department of Mathematics, Dr.R.S.Mittal, Head, Department of Earth Sciences, Dr. K.K.Singh, Professor, Department Earth Sciences, and Dr. R.K.Goel, Reader, Department of Earth Sciences had been associated with the scientific & technical Hindi Terminology Creation work as specialist.

Besides this the faculty have also made a great contribution towards the progress of Official Language, by working as members of Official Language committees, creating Hindi Scientific Literature and by contributing papers on Scientific and Technological topics in Hindi. They have also been active in making computers more suitable for Hindi work. Many scientific reports on various topics have been published in Hindi also

In 1965 a seminar was organized in University of Roorkee on the topic 'Vaigyanik kaaryo me Hindi ka prayog' in which, 04 research papers were presented in Hindi.

After two years again a Hindi seminar was organized in Roorkee university, in which the number of Hindi papers presented went up to 06.

A huge exhibition (in the Senate Hall of the University) was organised on the topic 'Hindi ka Badhata Hua Prayog', which went on for 5 days and attracted several thousand people.

With the success of this exhibition again another Hindi seminar was organized, which was inaugurated by the then Vice-chancellor, Shri Mulk Raj Chopra, and a total of 12 papers were presented in this seminar.

In 1978 an all India Hindi seminar was organized in the university of Roorkee in which 44 Hindi papers were presented by the participants from different parts of India. Total 250 delegates attended this seminar including Vice-Chancellors of five Universities, Directors of 2 national laboratories and many famous scientists. The quality of the papers presented in this seminar was so high that a special issue of the journal of the Institution of Engineers was published to include these papers. The seminar was inaugurated by Dr. Atma Ram, a famous scientist, the Chairman of National Committee for Science and Technology on 22 August 1979, another Hindi seminar was organized in the Q.I.P. Centre of University of Roorkee on the topic 'Hindi Madhyam me Takneekee Shiksha, ek kaalbaddh yojana'. 11 senior professors presented paper in Hindi in this seminar.

From July 5 to 7, 1984 University of Roorkee organized one more All India Seminar under the chairmanship of the then Vice-chancellor Professor Bharat Singh. The topic of this All India Hindi Seminar was 'Urja Sansadhan- Vikas evam Pariyojanaayen'. Total 35 experts presented their papers in the seminar.

From September 23 to 24, 2009 IIT Roorkee organized an All India Workshop on 'Computer and Hindi' with participation of a total of 123 delegates from all parts of India.

Since 1980, the Institute has been organizing Hindi Day every year on 14 September. The list of eminent Hindi Scholars who have visited as Chief guests of this function is as follows:-

<u>S.No.</u>	<u>Year</u>	<u>Name of the Chief Guest</u>
1	1980	Acharya Kishori Das Vajpayee
2	1982	Pandit Shreenarayan Chaturvedi
3	1983	Dr. Kshem Chandra Suman
4	1984	Dr. Vidya Nivas Mishra
5	1985	Shri Viyogi Hari
6	1986	Dr. Ram Kumar Verma
7	1987	Shri Amrit Lal Naagar
8	1988	Shriyut Shreelal Shukla
9	1989	Pandit Seetaram Chaturvedi
10	1990	Dr. Vijayendra Snatak
11	1991	Dr. Kshem Chandra Suman
12	1992	Shri Akshay Kumar Jain
13	1993	His Excellency Gyaneer Zail Singh
14	1994	Dr. Ved Pratap Vaidik
15	1995	Dr. Amba Prasad Suman
16	1996	Shri Rajendra Avasthi
17	1997	His Excellency Prof. Siddheshwar Prasad
18	1998	Dr. Naamvar Singh
19	1999	Shri Vishnu Prabhakar
20	2000	Dr. Shyam Singh Shashi
21	2001	Dr. Gopal Das Neeraj
22	2002	His Excellency Shri B. Satyanarayan Reddy
23	2003	Dr. Ratnakar Pandey and Special Guest Prof. Bansh Bahadur Tripathi
24	2004	Acharya Rammurthy Tripathi
25	2005	Shri Prabhakar Joshi
26	2006	Dr. Laxmimal Singhvi
27	2007	Dr. Kanahiya Lal Nandan

28	2008	Dr. Som Thakur
29	2009	Dr. Narendra Kohali
30	2010	Dr Yogendra Nath Sharma 'Arun'
31	2011	Shri Kuber Datt and special guest Shri Shyam Sushil
32	2012	Dr. Vishnu Datt 'Rakesh'
33	2013	Sh. Giriraj Kishore and Special Guest Dr. Kunwar Bechain
34	2014	Smt. Chitra Mudgal and Special Guest Prof. Mahaveer Agrawal
35	2015	Dr. Kedarnath Singh
36	2016	Prof. Girishwer Mishra

#### **Implementation Committee of Official Language**

After conversion of the University of Roorkee into an IIT, in 2002 an 'Institute Official Language Implementation Committee' was constituted under the chairmanship of the Director IIT Roorkee for the purpose of successful implementation of the provisions of the Constitution relating to the Official Language. The progress of Official Language is being monitored regularly by the committee by holding meetings after every three months. More than 57 meetings of this committee have been held till 31 March, 2017. At present following are the members of 'Institute Official Language Implementation Committee':-

1	Professor Ajit Kumar Chaturvedi	Director	Chairman (ex-officio)
2	Professor P.K. Ghosh	Dy. Director	Member(ex-officio)
3	Professor Nagendra Kumar	Chairman Hindi Cell	Member (ex-officio)
4	Professor D.K. Nauriyal	Dean Students' Welfare	Member(ex-officio)
5	Professor Rama Bhargav	Dean Adminidtration	Member(ex-officio)
6	Professor B.K. Mishra	Dean Faculty	Permanent Special Invited (ex- officio)
7	Professor PramodAgrawal	Dean Academic	Permanent Special Invitee (ex-officio)
8	Professor U.P. Singh	Dean Finance and Planning	Permanent Special Invitee (ex-officio)
9	Professor Sandeep Singh	Dean Alumni& International Relations	Permanent Special Invitee (ex-officio)
10	Professor ManoranjanParida	Dean SRIC	Permanent Special Invitee (ex-
11	ProfessorYuvraj Singh Nagi	In-charge Saharanpur Campus	Member (ex-officio)
12	Professor R. Balasubramanyam	Head Computer Centre	Member(ex-officio)
13	Dr.G.D. Ransinchung R.N.	Professor, Department Of Civil Engineering	Member(Non HindiSpeaking)
14	Shri PrashantGarg	Registrar	Member(ex-officio)
15	Shri C. Jay Kumar	Librarian, Mahatma Gandhi Central Library	Member(ex-officio)
16	Ms.BibiMorium	Assistant Registrar, Materials Management	Member(ex-officio)
17	Joint Director (O.L.)	MHRD	MHRDRepresentative
18	Shri ParagChaturvedi	Official Language Offier	Member/ Secretary (ex-officio)

#### **Awards and Honors**

For doing maximum official work in Hindi, every year some Institute Employees are encouraged & awarded under many schemes approved by BOG.

On 19 September, 2016 on the occasion of Hindi Week finale, following employees were awarded for their commendable contribution in the development and use of Hindi for official purposes:-

**"Scheme to encourage original Hindi noting/ drafting in official work"**

1	Shri Gopal Upadhyay	Junior Suptd., Estt. 'A' Section	1 <sup>st</sup> Prize
2	Smt. Sharmishtha Tyagi	Senior Assistant Estt. 'B' Section	1 <sup>st</sup> Prize
3	Smt. Mamta Gupta	Senior Assistant Estt. 'B' Section	2 <sup>nd</sup> Prize
4	Shri Rakesh Sakhuja	Senior Assistant Pension Section	2 <sup>nd</sup> Prize
5	Shri Braj Mohan	Junior Suptd., Computer Centre	2 <sup>nd</sup> Prize
6	Shri Vinod Kumar	Senior Assistant Estt. 'B' Section	3 <sup>rd</sup> Prize

**Hindi Essay Competition**

1	Shri Arvind Gautam	Junior Suptd., N.C. Nigam Guest House	1 <sup>st</sup> Prize
2	Shri Ramveer Singh	Suptd., Metallurgical & Materials Engg.	2 <sup>nd</sup> Prize
3	Shri Pravesh Ku. Sharma	Junior Suptd., A.H.E.C. Deptt.	3 <sup>rd</sup> Prize

**Hindi Translation Competition**

1	Dr. Krishan Mohan Singh	Prof., Mechanical & Industrial Engg.	1 <sup>st</sup> Prize
2	Shri Vivek Vyas	Research Scholar	2 <sup>nd</sup> Prize
3	Shri Avadh Kishor Sharma	Institute Student	3 <sup>rd</sup> Prize
4	Shri Naveen Agraval	Institute Student	3 <sup>rd</sup> Prize

**"Incentive on Passing Hindi 'Praveen' exam"**

1	Prof. M. Perumal	Professor (Hydrology)
2	Prof. M. Shanker	Professor (Chemistry)
3	Sh. D. Prasad	Tech. Officer (ICC)
4	Smt. Margreat Cilankoti	Asst. Registrar (Director Office)

**"Incentive on Passing Hindi 'Pragya' exam"**

1	Dr. Ram Krishna Peddini	Professor (Chemistry)
2	Dr. P. Jeevanandam	Professor (Chemistry)
3	Dr. Apurba Ku. Sharma	Professor (Mech. & Industrial Engg.)
4	Dr. A. Ramesh	Professor (Management Studies)
5	Dr. P. GopiNath	Professor (Nanotechnology)

**"Prof. Asha Kapoor Official Language Excellence Award"**

"Prof. Asha Kapoor Official Language Excellence Award" worth while 10,000/- Rs. has been established by former professor of the institute, Prof. Asha Kapoor for non-teaching officers/employees, who do appreciable work in Hindi. In the year 2016, first time, this award was given to following participant for excellent work done in Hindi on 19<sup>th</sup> September, on the occasion of closing ceremony of Hindi Week.

S.No.	Awardee	Office	The implementation year
1	Shri. Suresh Sani, Junior Suptd.	General Section	2015-16

**Published Articles In Manthan's 13 Issue**

S.No.	Title of the Article	Writer	Position
1	"Diet Before Playing and Glycogen Loading"	Dr. Alok Kumar Pandey, Sports Officer, Sport Council	1 <sup>st</sup>
2	Increase in Power of Concrete Structures by FRP Sheets and Plates	Sh. Harish Chandra Arora Dr. Umesh Kumar Sharma Dr. Anupam Chakravati & Sh. Rahul Kumar	2 <sup>nd</sup>
3	Hindi in Technology and Technology in Hindi	Brajesh Kumar, B.Tech. Third Year	3 <sup>rd</sup>

**Participation in Conferences/ Symposiums/ Workshops/ Meetings etc.**

Name	Name of Conference/ Symposium/ Workshop/ Meeting attended	Place	Date
Prof. Nagendra Kumar Chairman Rajbhasha Cell & Sh. Parag Chaturvedi Officer (O.L)	22 <sup>nd</sup> Half Yearly meeting of Haridwar Town Official Language Implementation Committee (TOLIC)	Hotel Ganga Rivera, Bypass Road, Haridwar	03.08.2015-16
Prof. Nagendra Kumar Chairman Rajbhasha Cell & Sh. Parag Chaturvedi Officer (O.L)	Hindi Coordinators meet of Haridwar Town Official Language Implementation Committee (TOLIC)	Hotel Vinayak Grand, Shivalik Nagar, Bahadabad Road, Haridwar	09.01.2017
Prof. Nagendra Kumar Chairman Rajbhasha Cell & Sh. Parag Chaturvedi Officer (O.L)	23 <sup>rd</sup> Half Yearly meeting of Haridwar Town Official Language Implementation Committee (TOLIC)	National Institute of Hydrology, Roorkee	20.01.2017

### Events Organised

Sl. No.	Event	Chief Guest	Date
1.	International Mother Tongue Day Samaroh	Prof. Nand Kishore Pandey Director of Kendriya Hindi Sansthan, Agra	21.04.2016
2.	Bharat Ratn Pt. Govind Ballabh Pant Jayanti	Prof. P.K. Ghosh Dy Director	10.09.2016
3.	Hindi Pustak Pradarsani	Prof. Girishwer Mishra, Famous writer and Psychologist	19.09.2016
4.	Hindi Divas Samaroh	Prof. Girishwer Mishra, Famous writer and Psychologist	19.09.2016
5.	Rajbhasha Prize Distribution	Prof. P.K. Ghosh Dy Director	19.09.2016
6.	International Mother Tongue Day Samaroh	Padmashri Prof. Debi Prasann Patnayak Prof. Chandrabhanu Patnayak (Guest of Honour)	28.03.2017

Hindi Classes held for registered non Hindi speaking employees of the Institute under correspondence course of Hindi language (27<sup>th</sup> Session)

Name of the Course	Date of the Class	Total number of the classes
PRABODH	06.10.2016, 13.10.2016, 20.10.2016, 27.10.2016, 03.11.2016, 10.11.2016, 17.11.2016, 29.12.2016, 05.01.2017, 12.01.2017, 19.01.2017, 02.02.2017,	12
PRAGYA	21.10.2016, 04.11.2016, 18.11.2016, 19.11.2016, 24.11.2016, 30.11.2016, 07.12.2016, 14.12.2016, 21.12.2016, 04.01.2017, 11.01.2017, 18.01.2017, 01.02.2017, 08.03.2017, 15.03.2017, 29.03.2017	16

Hindi Typing Classes held for registered employees of the Institute under correspondence course of Hindi typing (51<sup>th</sup> Session)

Name of the Course	Date of the Class	Total number of the classes
Hindi Typing	11.05.2016, 18.05.2016, 01.06.2016, 02.06.2016, 15.06.2016, 16.06.2016, 22.06.2016, 23.06.2016	08

### Other Hindi Workshops

S. No.	Name of Workshop	Date
1	Voice Typing Workshop for officers	24.05.2016
2	Voice Typing Workshop for employees	14.09.2016
3	A workshop related to Hindi Timahi Report	16.09.2016
4	Unicode Workshop	28.09.2016
5	Unicode Workshop	04.03.2017

### Achievements

1. For the year 2015-16, TOLIC Haridwar awarded Rajbhasha Shield and Certificate to Indian Institute of Technology Roorkee on 20.01.2017 in 23<sup>rd</sup> meeting of TOLIC for successful implementation of Official language in the Institute.



2. In the year 2016-17, RajbhashaPrakosth successfully conducted online Hindi language exams (Praveen and Pragya) on 24<sup>th</sup> and 25<sup>th</sup> May, 2016 in the Institute Computer Centre. From Central Hindi Training Institute, New Delhi, Sh. Vikram Singh was the observer. Following faculty members of the Institute appeared in the exam-

1. Prof. M. Perumal, Prof. (Hydrology)	- Praveen
2. Dr. M. Shanker, Prof. (Chemistry)	- Praveen
3. Sh. D. Prasad, Tech. officer (ICC)	- Praveen
4. Smt. Margreat Cilankoti, Asst. Registrar (Director Off.)	- Praveen
5. Dr. Ram Krishna Peddiniti, Prof. (Chemistry)	- Pragya
6. Dr. P. Jeevanandam, Prof. (Chemistry)	- Pragya
7. Dr. Apurab Ku. Sharma, Prof. (Mech. And Ind. Engg.)	- Pragya
8. Dr. A. Ramesh, Assistant Prof. (Management Studies)	- Pragya
9. Dr. P. Gopinath, Assistant Prof. (Nano Technology)	- Pragya

#### **Other Activities**

1. In the year 2016-17, two batches of Hindi Classes were conducted for International students of institute from August to October and January to March, in which, Hindi Class was conducted every Friday in the evening from 6:00 p.m. and every Saturday in the morning from 10:00 a.m..
2. On 19<sup>th</sup> September, 2016, on the occasion of closing ceremony of Hindi Week, A Hindi Kavya Sandhya was organized for employees and students of the institute. In this programme, two poets, Harjeet Singh 'tuktuk' the student of Electrical Engg. and Dr. Smt. Varija are the poets of national level and their poems are broadcast in the programmes named 'Wah-Wah Kya Baat Hai' and in other T.V. channels.
3. In Golden Jubilee programme of C.B.R.I. and in another programme of C.S.I.R., Prof. Dharmendra Singh, IIT Roorkee delivered his lectures on Engg. Subjects in Hindi.
4. Prof. Arun Kumar, A.H.E.C., IIT Roorkee has been appointed the member of "Prakratik Urja Puraskar Yojna" committee of Hindi by Ministry of Power, Government of India.

### **11.4 MATERIAL MANAGEMENT SECTION**

Material Management Department process purchase cases above rupees fifty thousand and dispose off cases above rupees fifteen thousand. The assigned job starts from the time of receiving purchase indent for goods and services from the departments to processing of payment in respect of the entire Institute except Works. The different works related to purchase done by Material Management Section include preparation of Tender Notice/ Enquiry Letters for publishing in Newspaper/uploading in Institute website/sending to vendors, opening of Technical Bid(s), preparation of Technical Comparative Statement, opening of Financial Bid(s), preparation of Financial Comparative Statement, preparation of Purchase Proposal to obtain approval of the Competent Authority, preparation and dispatch of Purchase Order, issue of Road Permit and CDEC, processing to open LC or Sight Draft through bank, maintenance Central Assets Register with necessary entries etc. The works related to Disposal of goods include receiving of request with details of the goods to be disposed from the department(s), obtaining recommendation of Institute Technical Committee and Institute Disposal Committee, obtaining approval of the Competent Authority, actual disposing off through auction etc.

Total Purchase Order value during FY 2016-17 from Material Management Department which includes liveries items, printing & stationery and Repair & Maintenance Approx Rs.20 Cr.

Besides the above, following Rate Contract were also processed and finalized by Material Management Department during FY2016-17:-

1. Clearing & Forwarding Agent
2. Furniture
3. Local Purchase of Medicines
4. Bulk Purchase of Medicines
5. Privatization of KIH Mess

12.1	Technology Incubation and Entrepreneurship Development Activity (TIEDA) Centre	12.2	Alumni Affairs
		12.3	Anushruti

### 12.1 TECHNOLOGY INCUBATION AND ENTREPRENEURSHIP DEVELOPMENT ACTIVITY (TIEDA) CENTRE

**Technology Incubation and Entrepreneurship Development Society (TIEDS)**, registered under Societies Registration Act 1860, has been set up to promote innovation and entrepreneurship among the Faculty, Research Scholars, and Students/Alumni of IITR.

- TIEDS runs and manages a Business Incubator "Technology Innovation & Development of Entrepreneurship Support" (TIDES) Centre at IIT Roorkee to facilitate incubation of new enterprises with innovative technologies by incubating them at TIDES Centre.
- Recognized as a leading Incubator by Govt. of India
- TIDES Centre provides office space, infrastructure facilities, mentorship, networking, IPR/legal advice, technical support/access to labs & interns to incubated companies.
- Now, TIDES has moved into newly renovated TIDES Centre in Old Library Building
- Physical Infrastructure: Total space – 10,000 sq. ft., Work Space Size – 8000 sq ft
- The start-up company is incubated for up to two years, with review-based financial support.
- The Centre has secured funding from Department of Science & Technology (DST), Ministry of Electronics & IT (MeitY) and IIT Roorkee. TIDES Centre has also received in-principle approval for funding from NSTEDB, DST under NIDHI-SSS (Seed Support System).
- The TIDES Centre team is led by: Director Ajit Chaturvedi (Chairman and Director IIT Roorkee); Prof. M Parida (Dean SRIC); Dr Sanjeev Manhas, ECE Dept. (faculty-in-charge); Mr. Neeraj Gupta (CEO); Mr. Manish Singhal (Manager); and other members from academia and industry.
- Boosted the culture of entrepreneurship in IIT Roorkee.
- Brought together the entire fabrication, simulation, computational and analytical facilities of IITR
- TIDES has a mentor network of successful professionals and entrepreneurs through Alumni network, Industry and collaborators.

#startupindia

#### TIDES Ecosystem



### Startups Incubated

- Log9 Materials - Produce & sell Nano-materials, IPR and Technology Transfer
- Positive Ventures - Platform for policies, schemes of Govt. of India & Indian states.
- Madcloud Education Labs - Provide quality education for all competitive exams organized in India
- Contree - Mobile app to manage and settle group payments on the go with bank transfer
- Spacetime (Transport.co.in) - Online and mobile marketplace platform to connect loads/goods with trucks.



**Startups under pre-incubation:** Dhirghadhi Technologies, SSF BioReactors, Prago Technologies

### Events Organized



Summer Entrepreneurship Camp during May-July 2017 with 12 start-ups and ~45 members - Offered co-working space, Mentoring & Training, Expert Talks and opportunity for complete incubation.

### Future Plans:

1. SRIC Office & TIDES Centre will invite applications for identifying research projects incubation and commercialization. TIDES will provide support to - commercialize & monetize the research project, design a business model, and identify & pursue IPR protection.
2. TIDES Centre will call applications for pre-incubation program for providing financial support, or seed fund, to develop working prototypes of novel, innovative technologies.
3. TIDES will collaborate with Uttarakhand Govt. for developing a prosperous startup ecosystem
4. TIDES will partner with EIL to facilitate incubation of Startups and to provide them assistance in executing projects that showcase their innovative ideas under the EngSUI initiative launched by EIL.
5. TIDES will partner with PSUs and companies for sponsoring & setting up incubation focussed on dedicated technology areas.
6. TIDES Centre will develop an additional space of 2000 sq ft. for housing IoT Lab & Incubatee space.
7. Pitching TIDES startup for angel investment.

## 12.2 ALUMNI AFFAIRS & INTERNATIONAL RELATIONS

The office of Dean Alumni Affairs organised various activities in the Institute for strengthening and forging the bonds between the alumni and Institute fraternity. The year 2016-2017 saw some important visits and get together of our alumni.

Following are the important events that have taken place during the period April 1, 2016 to March 31, 2017.

### 1. DISTINGUISHED ALUMNI AWARDS 2016

The Distinguished Alumni Awards will be presented to Five Alumni's who have made major contribution in their respective fields on Alumni Day i.e. Nov. 25, 2016. The recipients of the Distinguished Alumnus Awards for the year 2016 were:

- (i) **Shri Raj Singh** (B.E. Electrical Engg., 1968) Founder & Managing Director, Redwood Venture Partners, California, USA under the category Entrepreneurship
- (ii) **Shri Mangu Singh** (B.E. Civil Engg., 1979), Managing Director, Delhi Metro Rail Corporation Ltd. under the category Corporate Development/ Administration + Engineering & Services.
- (iii) **Shri Mohinder L. Nayyar** (B.E. Mechanical Engg., 1966) ASME Life Fellow at Council on Standards and Certification under the category Engineering & Services.
- (iv) **Shri Ashoke Kr Mukherjee** (B.E. Electronics & Communications, 1965) Director, SONODYNE INTERNATIONAL PVT. LTD under the category Corporate Development.
- (v) **Air Marshal Pramod Vasant Athawale** (B.E. Electrical Engineering, 1972) PVSM, AVSM, VSM (retd), under the category Administration.

### 2. AWARDS/SCHOLARSHIPS

The following new scholarships have been initiated by our alumni for the benefit of the students:

#### I. RAMKUMAR AWARD FOR OUTSTANDING TEACHING AND RESEARCH.

Dr. Rakesh Agrawal, (B.E. 1974 E&C), Distinguished Alumni of IITR 2010 instituted a prize "Ramkumar Prize for outstanding Teaching and Research", which carries a cash prize of Rs. 2,00,000/- per year to an outstanding faculty member of IIT Roorkee (on the basis of performance in teaching and research). This year the award is given to Dr. Partha Roy, Professor, Dept. of Biotechnology.

#### II. CELEBRATING LIFE AWARDS

Prama Jyoti Foundation is deeply connected with IITR for the last 6 years and have instituted 39 annual awards and special travel grant for the students of IITR. Shri Ravi Sharma, founder of Prama Jyoti Foundation and alumnus IIT Roorkee 1984 batch, announced and started a new category of annual awards named as 'Celebrating Life Awards'. Five awards of Rs. 21,000/- + Rs. 4,000/- for trophy, each to be given on Alumni Day i.e. 25th November 2016. The recipients of this year awards were:

- |                                  |  |
|----------------------------------|--|
| I. Student of the Year           | - Ms. Ankita Puwar, B.Tech. Electrical Engg. |
| II. Sports Person of the Year    | - Ms. Tanvi Sharma, B.Tech. E&CE             |
| III. Social Activist of the Year | - Mr. Somesh Mohapatra, B.Tech, MMED         |
| IV. Artist of the Year           | - Mr. Jishnu Prakash, B.Tech. Chemical Engg. |
| V. Architect of the year         | - Ms. Deva Shree Saini, B.Arch. 5th Year     |

#### III. ENCORE AWARDS

The Alumni's of 1989 Batch, IIT Roorkee has instituted an award in the name "Eighty Nine Class of Roorkee Endowment (ENCORE)" by donating an initial amount of Rs. 42,18,000/- (Rupees Forty Two lacs and Eighteen Thousand only). This year following students are selected for the prize by the donors:

1. Encore Award (for 4th Year Students, 2 males and 1 female), Rs 50,000 each
  - I. Ms. Prarthana Narayanan, Mechanical Engineering
  - II. Mr. Sopan Khosla, Computer Science & Engineering
  - III. Mr. Rahul Sunil Jain, Physics Deptt.
2. Encore Merit-Cum-Means Award (for 2nd Year Students, 3 males and 2 females), Rs 30,000 each
  - I. Mr. Gaurav Kumar, Civil Engineering
  - II. Mr. Harsh Jindal, IMT Geological Technology
  - III. Ms. Shreya Singh, Electrical Engineering

- IV. Ms. Apoorva Agarwal, Chemical Engineering
- V. Mr. Ankit, Production & Industrial Engineering

#### IV. MANOJ JAIN AWARD FOR EXCELLENCE IN HUMAN VALUES

The Legacy Force of UOR-81 Trust instituted an award titled 'Manoj Jain Award for Excellence in Human Values' as a memorial and tribute to their dear friend Late Er. Manoj Jain, Mechanical 1981 batch. The awardees were short listed based on 10 values - honesty, courage, compassion, integrity, forgiveness, love, knowledge, discipline, faith, principles and leadership. The award carries Rs. 50,000/- plus shield & certificate

After an exhaustive selection procedure the following student was selected for 2016 as winner of the 'Manoj Jain Award for Excellence in Human Values' :-

- i. Mr. Navindu, B.Tech. 4th Yr., Production & Industrial Engg.

#### V. ANOOP SINGH KHURANA, SQUASH CHAMPIONSHIP

Shri Rajendra Kumar Bahuguna instituted a scholarship "Anoop Singh Khurana , Squash Championship", which carries a cash award of Rs. 50,000/- per year for winner and runner up of the squash tournament for Boys. Winner - Rs. 30,000/- and Runner up - Rs. 20,000/- .

Amount of Rs. 7,50,000/- has been received for this purpose.

#### VI. IIT ROORKEE ALUMNI ASSOCIATION RESEARCH AWARD

The IITR Alumni Association, Roorkee instituted "IIT Roorkee Alumni Association Research Award" which carries a cash award of Rs. 1,00,000/-, a medal and citation to be given annually to a young alumnus of IIT Roorkee or the erstwhile University of Roorkee for outstanding Applied Research/Innovation.

Amount of Rs. 15,00,000/- has been received for this purpose

#### 3. MEMORANDUM OF UNDERSTANDING

- 1) Memorandum of understanding was signed between IIT Roorkee and School of Engineering and Architecture, Lucerne University of Applied Sciences Arts, HSLU, Switzerland on 19th April 2016 for promotion of exchange of students, faculty members, visiting international scholars, graduate student exchanges, collaborative research and other mutually agreed educational programs.
- 2) Memorandum of understanding was signed between IIT Roorkee and Royal University of University (RUB), Thimphu, Bhutan on 19th September 2016 for promotion of exchange of students, faculty members, visiting international scholars, initial focus in Engineering & Technology with special attention in area of Water Technology, Infrastructure Development, Himalayan Studies, Power Engineering, Renewable Energy and Environment.

#### 4. TRAVEL GRANT AWARD

Under this scheme a token travel grant of Rs. 10,000/- per student has been given to 20 UG/PG/Ph.D. students for presenting their research papers in Conferences held in India during the period (1 April 2016 to 31 March 2017) from funds donated by Alumni for this purposes, as per details given below:

UG/PG/Ph.D.	National Conferences within India
No. of UG Students	2
No. of PG Students	4
Ph.D.	14
<b>Total</b>	<b>20</b>

#### 5. STUDENTS' CAREER DEVELOPMENT FUND

Under this scheme a maximum amount of of Rs. 50,000/- per student has been given to 61 UG/PG/Ph.D. students for presenting their research papers in Conferences held outside India during the period (1 April 2016 to 31 March 2017), as per details given below:

UG/PG/Ph.D.	Conferences Abroad
No. of UG Students	5
No. of PG Students	4
Ph.D.	52
<b>Total</b>	<b>61</b>

## 6. IITR ALUMNI ASSOCIATION

The Association as on 31 March, 2017 has 32679 registered alumni as life members. The Association has a substantial presence in a large number of cities in India as well as abroad, and has 13 local chapters. During the year 2016-2017, Prof. Prem Krishna (1959), Former Professor, Civil Engineering Department, IIT Roorkee and Dr. Achal Kumar Mittal (1986), Sr. Principal Scientist and Group Leader, Structural Engineering Group, CSIR-CBRI, Roorkee were the President and Honorary Secretary of the IITR Alumni Association. For the year 2017-2018, Er. B.K. Chaturvedi (BE Mechanical 1969) and Dr. R. D. Garg (BE Civil 1989) Associate Professor in Civil Engineering Department, IIT Roorkee have been nominated as the President and Honorary Secretary respectively. Other members were elected to the Executive Committee 2017-18 through online elections held in March 2017.

Jubilee Alumni Meets 2016 were celebrated with great enthusiasm. Silver Jubilee function for the 1991 & B.Arch. 1992 pass outs batch on November 11-13, 2016 and Golden (1965 batch & B.Arch. 1966) & Diamond (1955 batch) Jubilee functions were celebrated on November 23-25 2016. 105 Diamond & Golden Alumni and 135 Silver Jubilee Alumni participated in the meets along with their families. This year Ruby Jubilee (40 years) for 1976 batch and Coral Jubilee (35 years) for 1981 batch were celebrated on November 5-6, 2016 & November 18-20, 2016 respectively. Some of the alumni visited the campus for the first time after graduating from the erstwhile University of Roorkee. The Jubilee Alumni along with their families enjoyed their stay in the campus, recalling with nostalgia, They were felicitated and presented with mementos in the O. P. Jain Auditorium of Civil Engineering Department.



On November 12, 2016, the 67th Annual General Body Meeting of the Association was held in O.P. Jain Auditorium of Civil Engineering Department and was attended by over 200 members. The President, IITRAA welcomed the members and the Jubilee Alumni who had graced the function.

On November 25, 2016 the IIT Roorkee celebrated "The Alumni Day" near the Institute Flag in Main Building Lawns which commemorated the Foundation Day of Thomason College and Charter Day of University of Roorkee. Five Distinguished Alumni Awards were presented. The Diamond and Golden Jubilee alumni also graced this function.

## 12.3 ANUSHRUTI

Month & In charge	Objectives	Details											
April 2016 Mrs. Mukta Gupta	02.04.16 ENT Doctors Meet	Uttarakhand State Association of Otolaryngologist India organized ENT doctors meet at Radisson Hotel. School students of Anushruti went there to perform a cultural dance. In this event Principal Mrs. Parvati Pandey with teachers Mrs. Neelam Madhok, Mrs. Renu Singh and Mrs. Monika Saini were also present. The association donated Rs. 10,000 to the school.											
	22.04.16 Craft Activity (Paper bag & File cover making)	As a part of monthly craft activity students prepared paper bags, file cover and pen holders. The activity was divided into two groups. Principal judged the competition. The name of the winners are given below- <table border="1"> <thead> <tr> <th>Position</th> <th>Junior Group</th> <th>Senior Group</th> </tr> </thead> <tbody> <tr> <td>First</td> <td>Ikra Malik</td> <td>Bharat</td> </tr> <tr> <td>Second</td> <td>Ayesha</td> <td>Satish</td> </tr> <tr> <td>Third</td> <td>Sakib</td> <td>Ritik</td> </tr> </tbody> </table>	Position	Junior Group	Senior Group	First	Ikra Malik	Bharat	Second	Ayesha	Satish	Third	Sakib
Position	Junior Group	Senior Group											
First	Ikra Malik	Bharat											
Second	Ayesha	Satish											
Third	Sakib	Ritik											
May 2016	10.05.16 Inauguration of Smart Board by Rotary club Midtown	IIT Roorkee Director Prof. Pradipta Banerji inaugurated the smart board donated by Rotary club Midtown. On this occasion the school President Mrs. Anusuya Banerji, Prof. Sandeep Banerji, Rotary club Head Prof. Mujib Malik and all the Rotarians were present.											
	10.05.16 Medical Camp	A medical camp was also organized by Rotary Club on the same day. The team of Dr. Sanjev Garg (ENT), Dr. Manjula, Dr. Sudhir Chowdhary and Dr. Gopal examined the health of students. Health tonics and medicines were distributed among students.											

<p><b>Mrs. Meenakshi Kandiyal</b></p>	<p><b>13.05.16 Craft Activity Through School competition</b></p>	<p>Anushruti school organized class competitions, based on different activities which were as given below - From pre Nursery to UKG students did tearing and pasting From class V to XII students made greeting cards.</p> <table border="0"> <tr> <td>Position</td> <td>Junior Group</td> <td>Senior Group</td> </tr> <tr> <td>First</td> <td>Tannu</td> <td>Shazia</td> </tr> <tr> <td>Second</td> <td>Samreen</td> <td>Rahul</td> </tr> <tr> <td>Third</td> <td>Manisha</td> <td>Riya</td> </tr> </table>	Position	Junior Group	Senior Group	First	Tannu	Shazia	Second	Samreen	Rahul	Third	Manisha	Riya
Position	Junior Group	Senior Group												
First	Tannu	Shazia												
Second	Samreen	Rahul												
Third	Manisha	Riya												
<p><b>July 2016 Mrs. Shrishti Tyagi</b></p>	<p><b>04.07.16</b></p>	<p>In month of July quarterly exams were conducted.</p>												
<p><b>August 2016 Mrs. Asha Mehta</b></p>	<p><b>05.08.16</b></p> <p><b>Story Telling With Sign language By Kumaon Literary Fest</b></p>	<p>Kumaon Literary Festival founder Mr. Sumant Batra organized a story/ poem / singing with sign language workshop in our school with the coordination of Shruti Bhatt and Project Chaiman Mrs. Mona Verma. His team included Mr. Jerry Pinto ( story teller) from Mumbai , Abha lyenger (story teller) Delhi , Fauzia (for poem and singing) and Michael (Sign Language Translator) from Noida.</p> <p>Mrs. Anusuya Banerji and Dr. Gaurav Raheja were available from the beginning. All the guests were welcomed by the Anushruti staff and students.</p> <p>Students not only watched the presentations but also participated enthusiastically. They got exposure on how to create story , how to choose the protagonist , subject and how to add humour naturally. Teachers were also amazed to see the approach of story tellers. Teachers and Students both found that storytelling can be so much fun and this is easy with the help of sign language translator and promised to continue story telling thereafter.</p> <div> </div> <div> </div>												

Month & In charge	Objectives	Details
	<b>24.08.16</b> <b>Anushruti Students Visit to Star Key Company Delhi</b>	Parents took their wards to Star Key Company, Delhi to collect Hearing Machines sponsored by the company on their own. 
	<b>26.08.16</b> <b>27.08.16</b> <b>28.08.16</b>  <b>Painting Workshop Architect Department</b>	3 Days painting workshop was organized for Anushruti students by Mrs. Anusuya Banerji (President Anushruti School) in the school campus under supervision of Mrs. Ila Gupta (Head of Architecture Department). Students from Architecture department were also invited to give their valuable inputs to our students as it was based on Raza's art work which is geometrical in nature. Students were thoroughly involved in the workshop. It needed lot of concentration and time. Each painting was prepared by two students and by the end of the session the students completed 6 paintings. 

#### School Events between April 2016 to August 2016

S.No	Date	Workshop Themes	ORGANISER
1	22-04-16	Craft making Competition	Anushruti IIT ROORKEE
2	10-05-16	Medical Camp & Inauguration of smart class	Rotary club
3	05-08-16	Story Telling through sign language	Kumaon Literary Fest, under Bhagidari project
4	26-08-16 To 28-08-16	Raja Painting Workshop	President Mrs. Banerji, Head of Architect Department Mrs. Ila Gupta including PhD. Scholars.

Sl.No	Date	Visitors	Place
1	19.05.16	S.K.Jagwani	New Delhi
2	02.06.16	Ronil Kumar	Faridabad
3	02.06.16	Mona Verma	Haridwar
4	02.06.16	Rajeev Jain	Faridabad
5	13.07.16	Dr.Nishi	Maharashtra
6	13.07.16	Veenu Sachdeva	Kolkata



7	13.07.16	Smriti Kanna Chakraborty	Kolkata
8	05.08.16	Jerry Pinto	Mumbai
9	05.08.16	Sumant batra	Dehradun
10	05.08.16	Fauzia	Dehi
11	05.08.16	Abha Iyengar	Dehi
12	05.08.16	Michal	Noida
13	13.08.16	MeenakshiSundar	Mumbai
14	13.08.16	Baruna Roy Chowdhary	Kolkata

<b>SEPTEMBER</b>	<b>03.09.16</b> <b>Photo walk</b>	A photo walk workshop was conducted by I.I.T students namely Yash, Borish, Kuldeep etc
	<b>6.09.16</b> <b>visit</b>	Mrs. Darshana M. Dabral JS & FA MHRD New Delhi visited Anushruti campus with Ms. Usha Banerjee
	<b>24.09.16</b> <b>Workshop on National Education Policy</b>	A one day workshop on "National Education Policy" was held with the collaboration of ABN Mr. Mayur Dixit S.D.M Roorkee was guest of honor and Mrs. Anasuya Banerji was chief guest. Mr. Brijpal Rathore, Dy. education officer, Mr. Ratnesh Kumar Singh Dy. treasury officer Haridwar, Mrs. Nita Ganguly, Dr. Anoj Raj, Head faculty of education Himgiri Zee University were special invitees.
	<b>24.09.16</b> <b>Sports competition</b>	USSD organized a sports competition on 24 sep 2016 at Raipur sports college Dehradun.
	<b>27.09.16</b> <b>(BHOR) organized a rally</b>	BHOR (IITR) students organized a rally for deaf awareness at IIT campus
<b>OCTOBER</b>	<b>02.10.16</b> <b>Gandhi Jayanti</b>	On the occasion of Gandhi Jayanti a program was organized by Shri Padeep Batra at Jadugar road.
	<b>3.10.16</b>	A new management committee is formed on 3 <sup>rd</sup> Oct 2016.
	<b>7.10.16</b>	A Samsung refrigerator gifted by TIDC
	<b>12.10.16</b>	Mrs. Mona Verma AMC member organized KLF at Jim Corbett Nainital and invited Anushruti teachers for displaying products made by students.
	<b>15.10.16</b>	A drawing competition organized by Inner wheel club at Anushruti.
	<b>17.10.16</b>	Diamond Jubilee Alumni Mr. F.N Goyal donated a cheque of Rs. 75000/-. On his 75 <sup>th</sup> birth Anniversary and successful completion of tongue operation.
	<b>21.10.16</b>	The students of DOMS in support of Anushruti conduct "The silent canvas event" within the campus of IIT Roorkee.
	<b>22.10.16</b>	On the eve of Deepawali, a fair was organised at NIH in which Anushruti students Daksh, Manisha, Aradhya and Sarfa took part in fancy dress competition and got many prizes.
	<b>28.10.2016</b>	Deepawali puja and a small get together for president Mrs. Anasuya Banerji was organized at Anushruti and Durga Puja committee donated cycles to 10 girls of Anushruti on the same day.
<b>NOVEMBER</b>	<b>03.11.16</b> <b>Dengu and Chikungunia workshop</b>	Medical Awareness program was organized at Anushruti. Dr. Alok Anand, IIT Hospital was the main speaker and the topic was Dengue and Chikungunya. Its causes and prevention. Dr. (Ms) Madhulika was also present. Dr. Alok spread awareness among teachers and parents about this fever through ppt.
	<b>13.11.16</b>	<b>Silver Jubilee Alumni Meet</b> About 200 silver jubilee Alumni visited Anushruti School.

<b>Mrs. Renu Singh</b>	<b>25.11.16</b>	<b>Golden jubilee Alumni Meet.</b> About 300 Golden jubilee Alumni visited Anushruti School.
	<b>30.11.16</b>	<b>Hemoglobin Test</b> Dr. Madhulika along with team of 3 persons from civil Hospital organized a medical camp at Anushruti. Then teachers and students were made aware about the disease Thalassemia, its causes and prevention. They took blood samples of all the students for Hb count. Ikra's blood sample was sent to lab for Thalassemia, being low Hb count. Report was normal.
	<b>03.12.16</b>	A Yoga camp was organized at Anushruti by Mr. Malik (Yoga Trainer). He taught various asans and how to keep body fit and strong.
	<b>05.12.16</b>	A workshop was conducted by Dr. (Ms) Sunali, Audiologist and speech therapist at Anushruti. She discussed with teachers and parents about deafness, its causes and prevention of hearing loss and anatomy of the ear. Mrs. Surinder Randhawa interpreted the whole workshop to children through sign language.
<b>DECEMBER</b> <b>Mrs. Neelima Agarwal</b>	<b>29.12.16</b>	Anushruti participated in Roorkee Invitational Inter School Athletic Meet-2016 organised by ABN from Dec29, 2016 to Dec31, 2016. 12 schools participated in this event in which our student Rashmi in U-19 category won silver Medal in shot-put.
<b>JANUARY</b> 2017 <b>Miss. Purnima Negi</b>	<b>26.01.17</b>	Anushruti school celebrated Republic day which was duly attended by respective Management members and President Mrs. Charu Chaturvedi. She hoisted the national flag on the school building and a cultural dance programme performed by students at main building IIT Roorkee.
<b>FEBRUARY</b> <b>Mrs. Monika Saini</b>	<b>01.02.17</b>	On the eve of Basant Panchami a celebration and competition was performed at Anushruti. On this occasion Saraswati the "Goddess of Education" was worshiped
	<b>07.02.17</b>	A health checkup camp was organized by Doctors Association Roorkee at Anushruti. The main purpose was to maintain proper health and hygiene. Dr. Sudhir Chaudhary, Dr. Bhargava, Dr. Sanjeev garg, Dr. Priyank Rastogi, Dr. Vikas, Dr. Gopal, Dr. Sangeeta Garg etc conducted the medical camp. Other eminent person from Rotary Club also attended the camp.
	<b>08.02.17</b>	Dr. Mathias Nadaluti a deaf person from France along with Dr. Mrs. Randhawa visited school and interacted with students to aware them on the usage of English Grammar elements. His PhD was on accessibility of airports in France and Spain. He taught Spanish in Gallaudet.
<b>MARCH-17</b> <b>Mrs. Neelam Madhok</b>	<b>03.03.17</b>	Anushruti school conducted a management meeting on 16.03.17 for the new admissions. Mrs. Randhawa madam, Mona madam came with Mr. Hall (member of advisory board) at Anushruti and discussed problem regarding students and their teaching technique strategies.
	<b>16.03.17</b>	In the inaugural program of Hotel Riyo (Haridwar) was held where Anushruti school also exhibited their stitching and art products made by students.
	<b>29.03.17</b> <b>ANNUAL RESULT</b>	Mrs. Charu Chaturvedi, President of Anushruti IITR was the chief guest of annual result distribution programme 2016-17 at Anushruti. As per schedule the result day of Anushruti school (Social initiative of IIT Roorkee) took place. To grace the occasion as chief guest who the wife of IIT Director and the school president Mrs. Charu Chaturvedi visited the school. Other guests include Dr. SP Gupta, Mrs. Ila Gupta & Dr. Vipin Kumar Gupta also came to bless the students. On that day parents were also invited by the school to witness the achievements of their wards.

## Appendices

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A1 Details of Awards

A3 On Campus Recruitment

A2 Hostel Accommodation on the Campus

### A1- DETAILS OF AWARDS CONVOCATION – 2016

#### 1. President's Gold Medal

##### **Aashiq Muhamed, B.Tech. (Mechanical Engg.)**

For obtaining highest C.G.P.A. amongst the B.Tech./B.Arch./IDD/Int. M.Sc./Int. M.Tech. passing out students entered through JEE having good character.

#### 2. Director's Gold Medal

##### **Pratik Jaykumar Toshniwal, Int. Dual Degree (B.Tech. Chemical Engg.) & M.Tech. (HE)**

For the best all-rounder other than sports amongst the B.Tech./B.Arch./IDD/Int. M.Sc./Int. M.Tech. passing out students entered through JEE having good character and having CGPA  $\geq 9.0$ .

#### 3. The President of India, Dr. Shankar Dayal Sharma Gold Medal

##### **Jain Pallav Anil, B.Tech. (Prod. & Ind. Engg.)**

For excellent performance in academics, extra-curricular activities including social service and having good character amongst all passing out UG and PG students.

#### 4. Dr. Jai Krishna Gold Medal

##### **Kuber Dutt Sharma, IDD (B. Tech. (Computer Science & Engg.) & M. Tech. (IT))**

For the best student in B.Tech./B.Arch./IDD/Int. M.Sc./Int. M.Tech. Courses for outstanding performance in Academics and Sports who does not get any other Gold Medal.

#### 5. Institute Silver Medals

For obtaining the highest C.G.P.A. amongst the students undergraduating/IDD Programme in their respective disciplines as follows:

<b>S. No.</b>	<b>Name of Student</b>	<b>Programmes</b>
I	Abhishek Dutta	B. Architecture
II	Prem Prakash	B. Tech. (Biotechnology)
III	Himanshu Tyagi	B. Tech. (Chemical Engg.)
IV	Abhiraj Sharma	B. Tech. (Civil Engg.)
V	Ankur Garg	B. Tech. (Computer Sciences & Engg.)
VI	Akshit Budhraj	B. Tech (Electronics & Communication Engg.)
VII	Chhavi Choudhary	B. Tech. (Metallurgical & Materials Engg.)
VIII	Ankur Dua	B. Tech. (Production & Industrial Engg.)
IX	Wardah Salman Akhtar	B. Tech. (Pulp & Paper Engg.)
X	Pratik Jaykumar Toshniwal	IDD (B. Tech. (Chemical Engg.) & M.Tech. (HE))
XI	Sajal Rustagi	IDD (B. Tech. (Computer Science & Engg.) & M.Tech. (IT))
XII	Subhash Sahni	IDD (B. Tech. (Electrical Engg.) & M.Tech. (PE))
XIII	Samarth Vasishtha	IDD (B. Tech. (E & CE) & M.Tech. (WC))
XIV	Sunit Arora	IDD (B. Tech. Process Engg.) & MBA
XV	Saraf Chinmay Mangesh	Int. M. Tech. (Polymer Science & Technology)
XVI	Abhishek Reja	Int. M. Tech. (Geophysical Technology)
XVII	Ankit Bhandari	Int. M. Tech. (Geological Technology)

XVIII	Abhishek Seth	Int. M.Sc. (Applied Mathematics)
XIX	Alman Khan	Int. M.Sc. (Physics)
XX	Rashmi Kothari	Int. M.Sc. (Chemistry)
XXI	Lilly Kumari	B.Tech (Electrical Engg.)
XXII	Vaishnavi Shukla	B.Tech. (Polymer Science & Technology)

#### 6. Bachelor of Technology/Bachelor of Architecture

##### Institute Medal

For Best Project in Engineering & Architecture amongst the undergraduate students in their respective disciplines as follows:

S. No.	Name of Student	Programmes
I	Siddarth Agrawal	B. Architecture
II	Arshad Ali Shaikh	B. Tech. (Biotechnology)
III	Himanshu Tyagi	B. Tech. (Chemical Engg.)
IV	Aman Agarwal	B. Tech. (Civil Engg.)
V	Ankur Garg	B. Tech. (Computer Science & Engg.)
VI	Mehak Gupta	B. Tech. (Electrical Engg.)
VII	Ashish Dwivedi	B. Tech (Electronics & Communication Engg.)
VIII	Prakhar Agrawal	B. Tech. (Mechanical Engg.)
IX	M. Karthick	B. Tech. (Metallurgical & Materials Engg.)
X	Oshin Tyagi	B. Tech. (Production & Industrial Engg.)
XI	Divyanshu Jaiswal	B. Tech. (Pulp & Paper Technology)
XII	Nehal Ramesh Nupnar	B.Tech. (Polymer Science & Technology)

#### 7. Himanshu Tyagi, B.Tech. (Chemical Engg.)

Prem Prakash Gupta Medal for the student obtaining highest C.G.P.A. in B.Tech. (Chemical) final year.

#### 8. Abhiraj Sharma, B.Tech. (Civil Engg.)

Madhusudan Dayal Mithal Medal for obtaining highest C.G.P.A. in B.Tech. (Civil).

#### 9. Lilly Kumari, B.Tech. (Electrical Engg.)

Dr. G. Pande Medal for the girl student for standing first amongst the girl student in all B.Tech./B.Arch. courses.

#### 10. Abhiraj Sharma, B.Tech. (Civil Engg.)

Rai Bahadur Sohan Lal Bhatia Medal for obtaining highest C.G.P.A. in B.Tech. (Civil).

#### 11. Aashiq Muhamed, B.Tech (Mechanical Engg.)

Dr. A.N. Khosla Medal for the student obtaining highest C.G.P.A. in all B.Tech. Courses.

#### 12. Aashiq Muhamed, B.Tech (Mechanical Engg.)

Smt. Shashi Krishna Medal for the student obtaining highest C.G.P.A. all B.Tech./B.Arch. courses.

#### 13. Wardah Salman Akhtar, B.Tech. (Pulp & Paper Tech.)

Federation of Paper Traders Association of India Medal for obtaining highest C.G.P.A. in B.Tech.(Pulp & Paper).

#### 14. Mehak Gupta, B.Tech. (Electrical Engg.)

Smt. Kaushalaya Arya Cash Prize of Rs. 4000/- for the next best girl student in B.Tech/B.Arch. IV year.

15. **Ankur Garg, B.Tech. (Computer Science & Engg.)**  
Dr. A.S. Arya Cash Prize of Rs. 4000/- for the second best student (boy) in B.Tech./B.Arch. Final year.
16. **Aman Agarwal, B.Tech. (Civil Engg.)**  
Brig. Harish Chandra Cash Prize of Rs. 1000/- for the B. Tech., Civil Engg. Final year student on the basis of the best Design (Project).
17. **Harshit Garg, B.Tech. (Civil Engg.)**  
Sri M.A. Rao Cash Prize of Rs. 1000/- for the student standing second in order of merit in B.Tech. (Civil Engg.) Final Year.
18. **Krishma Gupta, B.Tech. (Civil Engg.)**  
Sri M.A. Rao Cash Prize of Rs. 1000/- for the best girl student obtaining highest C.G.P.A. amongst girl student in B.Tech Civil.
19. **Jain Pallav Anil, B.Tech. (Prod. & Ind. Engg.)**  
Sri M.A. Rao Cash Prize of Rs. 1000/- for having all round best performance in studies and sports in B.Tech.Courses
20. **Lilly Kumari, B.Tech. (Electrical Engg.)**  
Laxmi Devi and Shri Banadri Das Cash prize of Rs. 5000/- for the best and outstanding girl student with excellence in academics amongst all girls in B.Tech. /B.Arch. courses.
21. **Aman Agarwal, B.Tech. (Civil Engg.)**  
Tara Chand Kanti Devi Cash Prizes of Rs. 2500/- to the best student doing best design project in B. Tech. (Civil)
22. **Lilly Kumari, B.Tech. (Electrical Engg.)**  
Late Smt. Kailash Devi Goyal W/o Sri Kanhaiyalal Goyal of Firozabad Memorial Cash Prize of Rs. 5000/- for the student obtaining highest CGPA in B.Tech.(Elect.) final year.
23. **Abhiraj Sharma, B.Tech. (Civil Engg.)**  
"Prabhakar Swarup Civil Engineering Award" of Rs. 10000/- to a student of B.Tech Civil IV year who obtained highest CGPA in B.Tech Civil IV year.
24. **Himanshu Tyagi, B.Tech. (Chemical Engg.)**  
Prem Prakash Gupta Cash Prize of Rs. 5000/- for the student obtaining highest C.G.P.A. in B.Tech.(Chemical) final year.
25. **Aastha Dua, B.Tech. (Electrical Engg.)**  
Durga Award of Rs. 5000/- to a girl student for outstanding proficiency including character, conduct and excellence in academics performance, extra-curricular activities and social services.
26. **Chhavi Choudhary, B.Tech. (Met. & Mat. Engg.)**  
Mrs. Lella Saxena Memorial Cash Award of Rs. 5000/- For the student who obtains highest CGPA in B.Tech. Metallurgical & Materials Final Year.
27. **Abhishek Dutta, B. Arch.**  
Everest Award of Excellence of Rs. 10,000/- for the student who obtains highest CGPA in B.Arch. Final Year.
28. **Chhavi Choudhary, B.Tech. (Met. & Mat. Engg.)**  
G.P. Bagchi Metallurgical & Materials Engineering Cash Prize of Rs. 5000/- for highest CGPA to Final Year student of Metallurgical & Materials.
29. **Mehak Gupta, B.Tech. (Electrical Engg.)**  
Prof. Ranvir Singh Shastry" Cash Prize of Rs. 6000/- to a girl student B.Tech. Final Year Who obtains 2<sup>nd</sup> highest CGPA.
30. **Aastha Dua, B.Tech. (Electrical Engg.)**  
"Om Bala Thapar" Cash Prize of Rs. 12000/- for the best all round girl student in the B.Tech. Degree Programme.
31. **Lilly Kumari, B.Tech. (Electrical Engg.)**  
"Col. Bajpai" Cash Prize of Rs. 5000/- for the girl student obtaining highest CGPA. Amongst girls students in undergraduate Programme

32. **Abhiraj Sharma, B.Tech. (Civil Engg.)**  
"Shri Shiv Nandan Swaroop and Avadh Narayan Bhatnagar" Cash Prize of Rs. 10000/- to a student of B.Tech. Civil Final Year Batch topper.
33. **Lilly Kumari, B.Tech. (Electrical Engg.)**  
"Smt. Rama Devi Krishna Bhatnagar" Cash Prize of Rs. 10000/- for the girl student amongst girl students in all Branches undergraduate Programme.
34. **Pratik Jaykumar Toshniwal, Int. Dual Degree (B.Tech. Chemical Engg.) & M.Tech. (HE)**  
"Kedar Nath Agarwala, I.S.E. Memorial" trophy and Cash Award of Rs. 5000/- for Academics Excellence and outstanding Community Service.
35. **Harshit Garg, B.Tech. (Civil Engg.)**  
"Vinay Krishna Cash Prize" of Rs. 5,000/- for a student of B.Tech., Civil Engg. final year who obtained second highest CGPA.
36. **Himanshu Tyagi, B.Tech. (Chemical Engg.)**  
"Astha Mukul Dixit Prize" of Rs. 5,100/- for the best Engineering Project in Final year of B.Tech. Chemical Engg
37. **Krishma Gupta, B.Tech. (Civil Engg.)**  
"Prof. (Mrs.) Renu Bhargava Cash Award for Excellence in Environmental Engineering" of Rs. 11,000/- to a girl student obtaining highest Marks/Grade in compulsory Environmental Engineering subjects in B.Tech. (Civil Engineering and securing overall CGPA 8.0 or above after final year.
38. **Abhishek Dutta, B. Arch.**  
"Architect Yash Pal Gupta Award of Excellence" of Rs. 10,000/- for a passing out student of B.Arch.
39. **Jain Pallav Anil, B.Tech. (Prod. & Indl. Engg.)**  
Sarojini Naidu Cup for work and play.
40. **Lilly Kumari, B.Tech. (Electrical Engg.)**  
"Air Cmdr Shyam Chand Mehra Scholarship" of Rs. 10,000/- to a girl student of B.Tech 4<sup>th</sup> year for obtaining highest CGPA in B.Tech. Electrical Engg.

**M.Tech./M.Arch./M.U.R.P. M.Phil./M.Tech(ES)/M.Sc.**

1. **Seelam Naga Poojitha, M.Tech. (Hydraulic Engg.)**  
Tara Chand Kanti Devi Cash Prizes of Rs. 3000/- to the best student of M.Tech.(Civil)
2. **Ravi Prakash, M.Tech. (Geotechnical Engg.)**  
Tara Chand Kanti Devi Cash Prizes of Rs. 2000/- to the best student of M.Tech.(Geotech)
3. **Aalok, M.Tech. (Structural Dynamics)**  
The Indian Service of Engineers Cash Prize of Rs. 2000/- for standing first in class in "Structural Dynamics"
4. **Jyoti Agarwal, M.Tech. (Soil Dynamics)**  
The Indian Service of Engineers Cash Prize of Rs. 2000/- for standing first in class in "Soil Dynamics"
5. **Hardik Jain, M.Tech. (Instrumentation and Signal Processing)**  
Late Smt. Uma Goyal, W/O Sri Uday Shankar Goyal Memorial Cash Prize of Rs. 2500/- for obtaining highest CGPA in M.Tech.(Electrical) Final Year.
6. **Hardik Jain, M.Tech. (Instrumentation and Signal Processing)**  
Dr. Jai Krishna Medal for obtaining highest CGPA in all M.Tech. Courses.
7. **Hardik Jain, M.Tech. (Instrumentation and Signal Processing)**  
Laxmi Devi and Shri Banadri Das Cash Prizes of Rs. 5000/- for the best and student with excellence in academic amongst all the student in M.Tech. Engg. /M.Arch. Courses.
8. **Shikha Rani, M.Tech. E& CE (Microelectronics and VLSI)**  
Late Sri Kanahiya Lal Goyal F/O Sri Uday Shankar Goyal Cash Prize of Rs. 2500/- for obtaining highest CGPA in M.Tech. (E&C) final year.
9. **Naved Alam, M.Tech. (Computer Science & Engineering)**  
Goyal Cash Prize of Rs. 1500/- for obtaining highest CGPA in M.Tech. (CSE).

10. **Sabah Parvaze, M.Tech. (Hydrology Surface water)**  
Puran Mal Gupta Medal for obtaining highest CGPA in courses M.Tech.(Hydrology)
11. **Aakanksha Shukla, M.Tech. (Water Resources Development)**  
Dr. A.N. Khosla Medal for obtaining highest CGPA in M.Tech. WRD courses in various specializations in WRD.
12. **Sakshi Gupta, M.Tech. (Water Resources Development)**  
Dr. P.S. Nigam- Nirmla Cash Prize of Rs.1000/- for the best project in M.Tech. WRD
13. **Dharmveer Yadav, M.Tech. (Environmental Engg.)**  
Kathpalia Award of Rs. 5000/- for the best dissertation in M.Tech. (Environment Engg.) (Civil) in the area of Environment Aspects.
14. **Sabah Parvaze, M.Tech. (Surface Water)**  
Kathpalia Award of Rs. 5000/- for the best dissertation in M.Tech. (Environment Engg.) (WRD) in the area of Environment Aspects.
- 15(a). **Jasveer Kaur, M.Tech. (AHES)**  
Bihar Hydro Awards of Rs. 10000/- for a candidate obtaining highest C.G.P.A. in M.Tech. (AHEC) II year to be shared between the two.
- 15(b). **Aditi Garg, M.Tech. (AHES)**  
Bihar Hydro Awards of Rs. 10000/- for a candidate obtaining highest C.G.P.A. in M.Tech. (AHEC) II year to be shared between the two.
16. **Sayantani Banerjee, M.Sc. (Chemistry)**  
Dr. A. N. Khosla Medal for obtaining highest CGPA in M.Sc./M.Tech. (Science) Courses.
17. **Sayantani Banerjee, M.Sc. (Chemistry)**  
Smt. Sushilavati Khosla Medal for the girl student obtaining highest CGPA in M.Sc./M.Tech. (Science) courses.
18. **Sayantani Banerjee, M.Sc. (Chemistry)**  
G. Pande Medal for the girl student for obtaining highest CGPA in M.Sc. final year Examination
19. **Sayantani Banerjee, M.Sc. (Chemistry)**  
Dr. Hari G. Garg Cash Prize of Rs. 5000/- for obtaining highest CGPA in M.Sc. Chemistry final year.
20. **Mayank Gupta, M.Tech. (Geomatics)**  
Amba Prasad – Kalawati Memorial Cash Prize of Rs. 5000/- to a student for obtaining highest CGPA in M.Tech. (Geomatics).
21. **Anahata Ramachandra, M.Tech. (Infrastructure Systems)**  
“(Late) Shri Ravi Mohan Mangal” Cash Prize of Rs. 25,000/- p.a. to a student of M.Tech. (Infrastructure Systems) of center for Transportation Systems (CTRANS) on the basis of highest CGPA in M.Tech. (Infrastructure Systems)
22. **Harprinderjot Singh, M.Tech. (Transportation Engg.)**  
Sunita Bahadur Memorial Gold Medal Award” Gold Medal to a student of M.Tech (Transportation Engineering) of Civil Engineering Department on based on highest CGPA in M.Tech. (Transportation Engineering).
- 23(a) **Jasveer Kaur, M.Tech. (AHES)**  
Electro Steel Cash Awards of Rs. 10000/- for best dissertation in M.Tech. (AHES) II year to be shared between the two.
- 23(b). **Aditi Garg, M.Tech. (AHES)**  
Electro Steel Cash Awards of Rs. 10000/- for best dissertation in M.Tech. (AHES) II year to be shared between the two.
24. **Gazal Gupta, M.Tech. (EMRL)**  
Electro Steel Cash Awards of Rs. 10000/- for best dissertation in M.Tech. (EMRL) II year to be shared between the two.

## **A2 - HOSTEL ACCOMMODATION ON THE CAMPUS**

Co-ordinating Committee of Bhawans (CCB) takes care of the overall management of all the hostels and messes under the Chairmanship of Dean of Students Welfare/Associate Dean of Students Welfare (Mess) respectively. There are 13 bachelor hostels for boys and girls, providing accommodation to under graduate, post graduate and Ph.D. students. Married hostels are also available for married students. All bachelor hostels have their own messes. Bhawan and Mess councils are constituted for each Bhawan under the Chairmanship of the Chief Warden with the Warden, Asstt. Warden and elected students representatives as members to ensure smooth functioning of the Bhawans and messes. Previous year the kitchen of almost all Messes have been modernized to cater to the growing needs of the students. With this set up the students of the Institute are enjoying their meals in different messes which have improved the hygiene and cleanliness within the messes. 10 messes have also been provided cold chambers.



### A3- ON CAMPUS RECRUITMENT

**Table Showing Placement of Undergraduate and Postgraduate students  
Branch-wise**

S. No.	Degree	Effective Placement	Total Offers
1	Architecture and Planning	13	13
2	Biotechnology	25	25
3	Chemical Engg.	79	81
4	Civil Engg.	68	68
5	Computer Science Engg.	68	75
6	Electrical Engg.	122	129
7	Electronics & Communication Engg.	66	78
8	Production & Industrial Engg.	50	51
9	Mechanical Engg.	61	65
10	Metallurgical & Materials Engg.	76	76
11	Polymer Science and Technology	4	4
12	Pulp & Paper Technology	3	3
<b>Total B.Arch/B.Tech</b>		<b>635</b>	<b>668</b>
<b>IDD</b>			
1	B.Tech (Chemical Engineering) and M.Tech (Hydrocarbon Engineering)	24	25
2	B.Tech (Computer Science & Engineering) and M.Tech (Information Technology)	4	4
3	B.Tech. (Electrical Engineering) and M.Tech. (Power Electronics)	11	12
4	B.Tech (Electronics & Communication Engineering) and M.Tech (Wireless Communication)	16	16
5	B.Tech. (Process Engineering) and M.B.A.	11	11
6	IDD Civil Engineering with specialisation in Structures	10	10
7	Metallurgy Dual	11	11
<b>Total IDD</b>		<b>87</b>	<b>89</b>
<b>IMT</b>			
1	Int. M.Tech Geological Technology	20	21
2	Int. M.Tech Geophysical Technology	22	23
<b>Total IMT</b>		<b>42</b>	<b>44</b>
<b>IMSc</b>			
1	Int. M.Sc. (Applied Mathematics)	18	18
2	Int.M.Sc. (Physics)	5	5
3	Int. M.Sc. (Chemistry)	3	3
<b>Total IMSc</b>		<b>26</b>	<b>26</b>

<b>M.Arch/MURP/M.Tech</b>			
1	AHEC	20	20
2	Hydrology Engg.	0	0
3	Earthquake Engg.	22	27
4	Packaging Technology	7	7
5	WRDM	2	2
6	SSEM Engg. (Physics)	7	7
7	Advance Chemical Analysis	1	1
8	Disaster Mitigation and Management	2	2
9	Infrastructure Systems	2	2
10	Nanotechnology	0	0
11	Architecture and Planning	14	15
12	Chemical Engg.	20	20
13	Civil Engg.	24	27
14	Computer Science Engg.	38	45
15	Electrical Engg.	28	28
16	Electronics & Communication Engg.	18	20
17	Mechanical & Industrial Engg.	26	26
18	Metallurgical & Materials Engg.	6	6
19	Pulp & Paper Technology	1	1
<b>Total M.Arch/MURP/M.Tech</b>		<b>238</b>	<b>256</b>
<b>M.Sc/MCA</b>			
1	M. Sc. Appl. Geology	2	2
2	M. Sc. Physics	1	1
3	M. Sc. Chemistry	1	1
4	M. Sc. Maths	4	4
5	M. Sc. Biotechnology	1	1
<b>Total M.Sc/MCA</b>		<b>9</b>	<b>9</b>
<b>MBA</b>			
1	Management Studies	54	54
<b>Ph.D</b>			
1	Civil Engg.	4	5
2	Electrical Engg.	3	4
3	Electronics & Communication Engg.	2	2
4	Mechanical & Industrial Engg.	5	5
5	Metallurgical & Materials Engg.	1	1
6	AHEC	2	2
7	Physics	1	1
8	Mathmatics	1	1
<b>Total Ph.D</b>		<b>19</b>	<b>21</b>

A = Job Offered  
B = Effective Placement

Grand Total of A = 1167  
Grand Total of B = 1110

## PUBLICATION AND OUTREACH ACTIVITIES

In addition to undergraduate and postgraduate teaching, the faculty members of the Institute are also actively involved in research, and the dissemination of the knowledge gained through it. This is manifested in the large number of publications in refereed journals, several books and participation in various national and international conferences, participation conference/seminars/symposium and Internships by IIT Roorkee students. The detail is available at the link given below:

<https://www.iitr.ac.in/Main/uploads/File/publicationandoutreachactivities.pdf>

Sl. No.	Department/ Centre	Publication	Participation Conference/ Seminars/ Symposium	Internships by IIT Students
1.	Architecture and Planning	01	96	129
2.	Biotechnology	03	101	-
3.	Chemical Engineering	09	103	131
4.	Chemistry	17	104	133
5.	Civil Engineering	25	105	-
6.	Computer Science & Engineering	35	107	134
7.	Earthquake Engineering	39	108	134
8.	Earth Sciences	42	109	-
9.	Electrical Engineering	46	112	-
10.	Electronics and Communication Engineering	48	113	-
11.	Humanities and Social Sciences	50	113	-
12.	Hydrology	52	115	134
13.	Management Studies	53	117	-
14.	Mathematics	55	118	-
15.	Mechanical and Industrial Engineering	59	119	-
16.	Metallurgical and Materials Engineering	65	120	-
17.	Paper Technology	71	121	-
18.	Physics	75	121	134
19.	Water Resources Development & Management	81	123	134
20.	Alternate Hydro Energy Centre	85	125	-
21.	Centre for Transportation System	88	126	135
22.	Centre of Nano-Technology	90	127	-
23.	Centre for Disaster Mitigation and Management	93	127	135
24.	Institute Instrumentation Centre	94	-	-

## **Editorial Committee**

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## **Cover Design**

Dr. Mahua Mukherjee

## **Translation Assistance**

Dr. Nagendra Kumar

Sri Prag Chaturvedi

## **Indian Institute of Technology Roorkee**

**Roorkee - 247 667**

Telephone	:	01332- 285270
Fax	:	01332-285822, 273560
Email	:	deanfap_f@iitr.ac.in
Website	:	www.iitr.ac.in

## कुल गीत

जयति जयति विद्या संस्थान,  
हिम गिरि शृंगों से अभिनंदित,  
गंगा जल करते कल गान । ॥ जयति ॥

शिक्षा आदर्शों में उन्नत,  
जीवन शिल्पी भू रचना रत,  
'श्रमं विना न किमपि साध्यम्' व्रत,  
यन्त्र कला कौशल अभियान । ॥ जयति ॥

जन जीवन प्रासाद उठाकर,  
सेतु बांध भू खण्ड जुड़ाकर,  
अंतरिक्ष में यान उड़ाकर,  
नव युग को देता आह्वान । ॥ जयति ॥

सर्जन हित जीवन नित अर्पित,  
धरा स्वर्ग शोभा कर निर्मित,  
वैज्ञानिक युग पट में मूर्तित,  
भू पर लाता स्वर्ण विहान । ॥ जयति ॥

नयी प्रेरणा से दीपित मन,  
नव स्वप्नों से हर्षित लोचन,  
नए सत्य की उर में धड़कन,  
ध्येय राष्ट्र जीवन कल्याण । ॥ जयति ॥

(रचयिता-श्री सुमित्रानन्दन पन्त)

