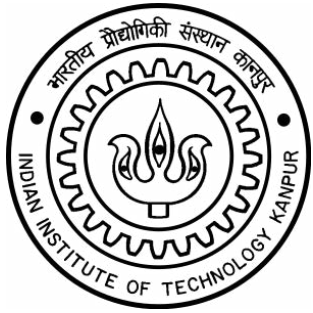
Information Brochure

CENTRE *for* LASERS & PHOTONICS



INDIAN INSTITUTE OF TECHNOLOGY KANPUR

CENTRE FOR
LASERS AND PHOTONICS

The Centre for Lasers and Photonics (CELP) at IIT Kanpur is an interdisciplinary centre of excellence that combines cutting-edge technology from engineering and theoretical advances in science to create new horizons in the ever growing field of Photonics.

The faculty in CELP belong to six different parent departments (Electrical Engineering, Mechanical Engineering, Aerospace Engineering, Physics, Civil Engineering, and Chemistry) and pursue research in the fields of Optical Communication, Laser Fabrication, Semiconductor Photonic Devices, Optical Imaging, Ultrafast Optics, Quantum Computing, Material Processing, LiDAR/Laser Scanning, Biophotonics and related fields. The centre has research infrastructure funded by agencies such as DST, DRDO, CSIR, MHRD etc.

Our alumni are working in prestigious organizations such as Texas Instruments, GE, Mathworks, Tata Steel, Sasken, Niksun, DRDO, BEL to name a few.

INFRASTRUCTURE AND FACILITIES

LABORATORIES :

- Optical Communication Laboratory
- Optoelectronics and Nanofabrication Laboratory
- Photonics Laboratory
- Ultrafast Laser Laboratory
- Femto-second Laser Fabrication Laboratory
- Microfluidics And Sensor Laboratory
- Crystalline Fiber based Photonics Device Laboratory
- Bio-photonics Laboratory

RESOURCES AND FACILITIES :

- CO_2 Laser Facility
- Photolithography System
- Reactive Etch Ion System
- Tunable laser (1270-1650nm)
- Optical Surface Profiler
- Lamp Anneal System
- Femtosecond, Nanosecond & Picosecond pulsed lasers
- Micro-Raman Facility
- Andor CCD-Spectrograph System
- Speciality Fibers
- Arc Fusion Splicer
- High Speed BW Camera
- Optical Waveguiding Setup
- Mach-Zehnder Interferometer

CENTRE FOR
LASERS AND PHOTONICS

COURSE DETAILS

SEMESTER : 1

- LT 601- Introduction to Lasers
- LT 631- Introduction to Coherent and Laser Optics
- PG open Elective 1
- PG Open Elective 2

SEMESTER : 2

- LT 611- Laser Systems and Applications
- LT 680 – Laser Technology Laboratory Techniques
- PG Open Elective 3
- Thesis 4 Credits

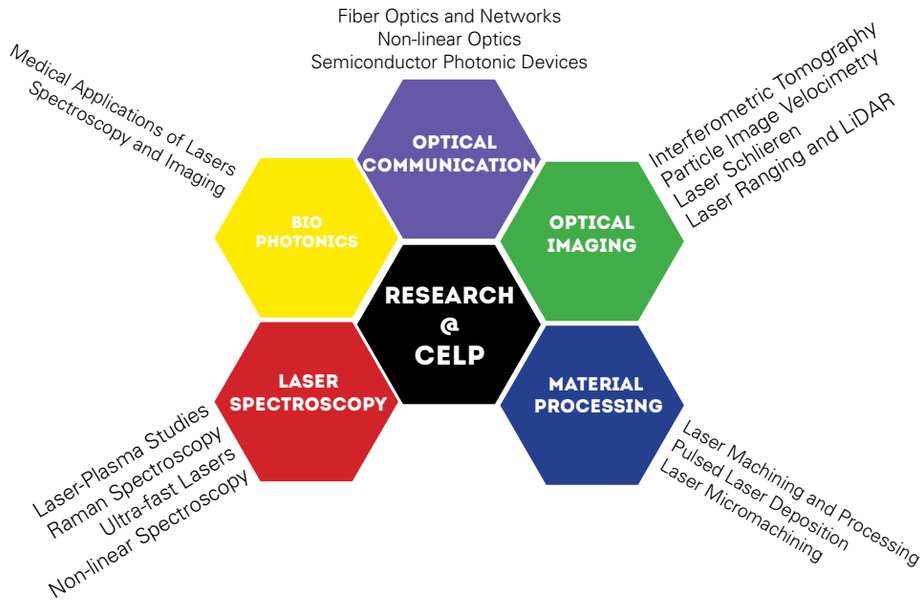
SEMESTER : 3 & 4

- Thesis 16 Credits in each semester

ELECTIVE COURSES
USUALLY TAKEN BY STUDENTS

- EE-646 Photonic Networks & Switching
- EE-644 Optical Communcation
- EE-612 Fiber Optic Systems-I
- EE-629 Digital Switching
- PHY-647 Electronics
- EE-639 Non Linear Fiber Optics
- EE-614 Solid State Devices I
- EE-618 IC Fabrication Techniques
- EE-617 Fiber Optic Systems-II
- AE-698 Virtual Instrumentation (Lab View)
- PHY-646 Coherent Optics
- EE-608 Video and Image Processing
- EE-673 Digital Communication Networks
- EE-616 Semiconductor Device Modeling
- EE-629 Digital Switching
- PHY-641 Elements of Bio and Medical Physics
- PHY-644 Quantum Electronics
- PHY-646 Coherent Optics

RESEARCH @ CELP



ONGOING RESEARCH WORK :

- Fiber Lasers/Amplifiers for WDM/DWDM communication
- Mode locked fiber laser for ultra-short pulse generation
- Chaos in secure optical communication
- Photonic crystal fibers
- Laser Ranging and LiDAR
- Imaging Growth of Protein Crystals
- Digital Holography
- Multi-photon Imaging
- Quantum Entanglement and Squeezing
- Quantum Key Distribution
- Femto-second laser written Optical Waveguide

Dr. Bharat Lohani
Student Placement Coordinator (CELP)
Email: blohani@iitk.ac.in

Student Exposure

The graduating M.Tech students in the past few years have mostly engineering background with majority being from Electronics and Communication area, thus enriching the R&D in fiber optics and photonics.

Through multiple course work students not only develop strong theoretical fundamentals of the field but also acquire experimentation skills through a specially designed laboratory course. Students of this programme also have knowledge of programming and modeling skills on platforms like - Lab-View, MATLAB, Simulink, Model based C programming which adds to their skills acquired in under graduate level such as C/C++, Java, HTML/PHP, VHDL, Verilog programming etc.

An extensive one year thesis component of the programme gives the students necessary exposure to the current research going on in the field of photonics and gives them a chance to apply their skills acquired during course work to the research challenges. The research work done by students as a part of their thesis sometimes leads to publications in reputed journals.

Students Profile

BATCH 2013

M.TECH. (GATE QUALIFIED)
2 Year programme
Compulsory departmental courses
Electives (PG)
M. Tech. Thesis (36 Credits)

PH.D. (SELECTED THROUGH INTERVIEW)
Ph.D. Electives
Ph.D. Thesis (48 credits)

From the desk of SPC

It is my pleasure to bring out the placement brochure of this unique and one of the oldest interdisciplinary programmes in the country. The M.Tech. programme in Photonics Science and Engineering (PSE) [Previously "Laser Technology Programme" (LTP)] at IIT Kanpur had been initiated to develop technical manpower in the area of Photonics and Laser applications. It was found to be a necessity when the Centre for Lasers and Photonics [Previously "Centre for Laser Technology"] was established quarter of a century ago. This being an overtly selective programme from the point of induction to the point of their graduation, our alumni have been much sought after by the industry and scientific organizations. We are very proud to have produced some of the best scientific and technical manpower working in this area worldwide. In fact, our students in the recent past have been in great demand also in the instrumentation and software industry. I would like to emphasize that our students are specially trained for higher education, research and industrial aptitude. As a result, alumni from our programme are contributing across the globe in both industry and academics. We also arrange awareness sessions for the students to make them aware of the needs of the companies visiting the campus with respect to their own specialized skills. Our intention is to ensure that the recruitment process goes smoothly and you are able to recruit with minimal time and efforts. Our students are our best ambassadors and we look forward to establishing a sustained relationship with your organization. I take this opportunity to invite your organization to IIT Kanpur to recruit our students, who, I strongly believe will prove invaluable assets to you.

Department Alumni

McAfee
Texas Instruments
इसरो isro
MathWorks
TATA STEEL
GE Global Research
sasken
ciena
लेजर विज्ञान एवं प्रोद्योगिकी केन्द्र
Laser Science And Technology Centre
सी-डॉट
C-DOT

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