CENTER FOR LASERS AND PHOTONICS

The Center for Lasers and Photonics (CELP) is an interdisciplinary center of excellence that combines cutting-edge technology from engineering and theoretical advances in science to create new horizons in the field of photonics science and engineering.

The faculty in CELP belong to six different parent departments (EE, ME, AE, PHY, CY, and CE) and pursue research in the fields of nano-biophotonics, ultrafast optics, quantum optics and related fields. The Center has research infrastructure worth several crores funded by agencies such as DST, DRDO, CSIR, MHRD etc.

Our alumni are working in prestigious organizations such as DRDO, BEL, MathWorks etc. Many of our alumni have chosen to pursue PhD in reputed international and national universities

Students' Placement Office

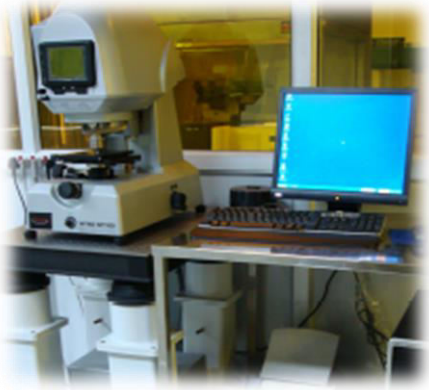
SPO IITK

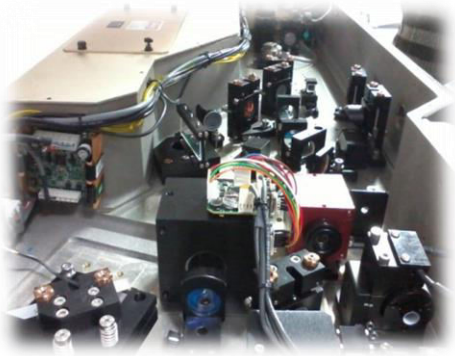
Infrastructure and Facilities

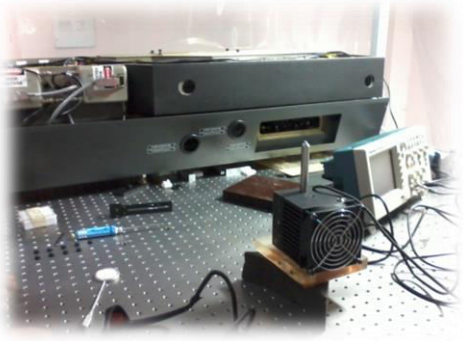
1.Laboratories well equipped with modern instruments and software.

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

2.Departmental Library







Resources @CELP

- Laser Scanner
- Mach-Zhander Interferometer
- Tunable laser (1270-1650nm)
- Laser Induced Fluorescence setup.
- CO_2 Laser Facility
- Holography Setup

Resources of other department used by CELP

- Lamp Anneal system (850C in 5s)
- Optical Surface Profiler
- Reactive Ion Etch System (Methane Chemistry)
- Micro-Raman Facility
- Andor CCD-Spectrograph System
- 80 Ghz sampling oscilloscope
- High Speed BW Camera
- Inverted microscope
- Particle Image Velocimetry

Course Details

Semester 1	Semester 2	Semester 3	Semester 4
LT 601- Introduction to Lasers	LT 611- Laser Systems and Applications	Thesis 16 Credits	Thesis 16 credits
LT 631- Introduction to Coherent and Laser Optics	LT 680 – Laser Technology Laboratory Techniques		
PG open Elective 1	PG Open Elective 1		
PG Open Elective 2	Thesis 4 Credits		

*PG electives can only be chosen from level 6/ level 7 courses from any department.

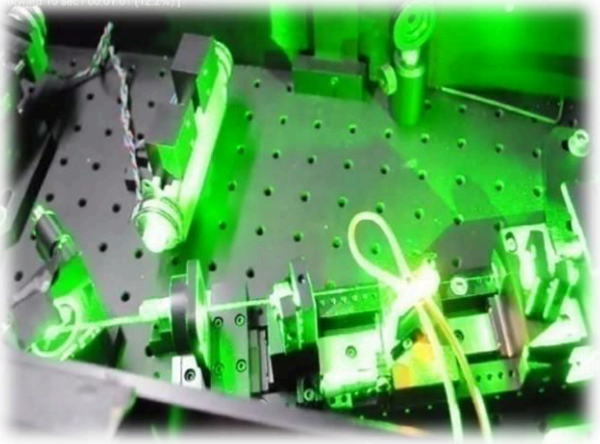
Elective courses usually taken by students

PHY-647 Electronics	EE-612 Fiber Optic Systems–I	EE-617 Fiber Optic Systems-II	EE-629 Digital Switching
LT-671 Semiconductor Lasers	EE-644 Optical Communication	EE-608 Video and Image Processing	PHY-641 Elements of Bio and Medical Physics
EE-641 Advanced Engineering Electromagnetics	EE-624 Information Theory and Coding	EE-673 Digital communication Networks	PHY-644 Quantam Electronics
EE-639 Non Linear Fiber Optics	AE-698 Virtual Instrumentation (Lab View)	EE-647 Microwave Measurements	EE-646 Photonic Networks& Switching
PHY-643 Lasers and Laser Spectra	EE-614 Solid State Devices I	EE-616 Semiconductor device Modeling	EE-607 Wavelet Transform for Signal and Image Processing
PHY-646 Coherent Optics	EE-618 IC Fabrication Techniques	PHY-646 Coherent Optics	EE-630 Simulation of Modern Power Systems

Research @ CELP

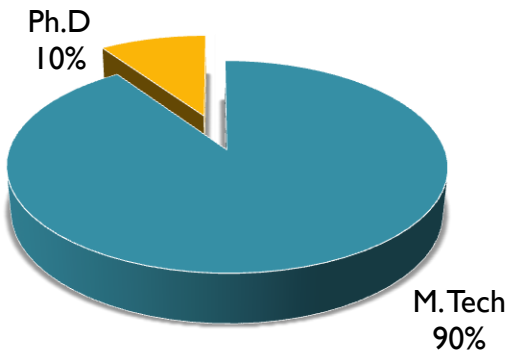
Ongoing Thesis Work

- IR Imaging through fog using Laser Scanner
- Fiber Lasers/Amplifiers for WDM/DWDM communication
- Mode locked fiber laser for ultra-short pulse generation
- Chaos in secure optical communication.
- Super continuum generation and its study in
- 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



Students Profile

Students Ratio



M tech(GATE Qualified)
2 Year Program

- Compulsory departmental courses
- Elective (PG)
- M. Tech, Thesis (36 Credits)

PhD (Selected through Interview)
5 Year (tentative) Program

- PhD Electives
- PhD Thesis (48 credits)

Student Exposure

The graduating M.Tech students are all from engineering backgrounds for last few years, with an overwhelming majority being from Electronics and Communication Engineering contributes to the R&D fields of fiber optics and photonics.

Through multiple course work and internships students develop skills in both simulation based modeling and experimentation. Students of this particular stream has knowledge of programming and modeling skills on the platforms like - **Lab-View, MATLAB, Simulink, Model based C Programming.** Adding to their skills acquired in under graduate level like **C programming, Java, HTML, VHDL , Verilog programming etc.**

Students worked in internships at different CSIR (Council of Scientific and Industrial Research) labs like Fiber Optics and Photonics Division at Central Glass and Ceramic Research Institute(CGCRI) & Central Electronics Engineering Research Institute (CEERI) for internships and testing and measurement based works.

Department Alumni

Alumni of our department are working in various reputed concerns world wide. To name a few :

- LASTEC, DRDO, New Delhi
- Scientist C. ISRO, Bangalore
- Director R&D Lead at GE Global Research
- Assistant Professor, IISER, Kolkata
- Research Scientist, IISC Bangalore
- McAfee
- Founder ,Director at Onella Technologies
- Senior Scientist, DRDO
- M.D Stratbeans Consultant Private Limited

From the desk of SPC

It is my pleasure to bring out this placement brochure of this unique, one of the oldest, interdisciplinary programs in the country. The M.Tech program in Laser Technology (LT) [Now renamed "Photonic Science and Engineering" (PSE)] at IIT Kanpur had been initiated to develop technical manpower in a multidisciplinary area of Lasers and Laser applications. It was found to be a necessity when the "Centre for Laser Technology [Now renamed as Centre for Lasers and Photonics]" was established quarter of a century ago. This being an overtly selective program from the point of induction to the point of their graduation, none of our Alumni have suffered till date in terms of their placement even during the toughest of the recession times. We are very proud to have produced some of the best scientific and technical manpower working in this area in the country. In fact, our students have been in the recent past been in great demand also in the instrumentation and software industry. They have been dually prepared both for higher education, research and industrial aptitude. As a result, alumni from our program are present across the globe in both industry and academics. We also undertake an awareness session for the students for the placement process to ensure that they are aware of the needs of the companies visiting the campus, with respect to their own specialized skills and are available to interact with them as and when required. This way we ensure that the recruitment process is most effective and yet possible with minimum time and effort on your part. Our students had been our best ambassadors and we look forward to a sustained relationship with your organization through these alumni who are potentially your employees. I would earnestly urge you to visit our campus and meet the students.

Prof. Utpal Das

Student Placement Coordinator (CELP)

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