Centre for Sensors, Instrumentation and Cyber Physical System Engineering (SeNSE)

Placement Brochure (2020-2021)
The Centre for Sensors, INstrumentation and Cyber-physical System Engineering (SeNSE) - formerly known as IDDC - offers an interdisciplinary M. Tech Course in Instrument Technology and Ph.D in specialized research areas combining multiple disciplines – microelectronics, optics, electronic circuits and mechanical engineering – to design and develop complete systems. In keeping with modern trends, industrial/societal expectations vis-a-vis the national goals, two more research areas - Sensors Technology and Cyber Physical Systems - have been included in its theme and the centre has been renamed as SeNSE. The Centre has made significant contribution through various sponsored R&D projects in developing Sensors/Systems for defense, medical and industry. It aims to achieve the national goals and foster excellence in state-of-the-art technologies. There are six core areas of focus - optical engineering, electronic system design, advanced optical fabrication, micro-opto-electro-mechanical systems, sensor technology and cyber-physical systems - across three application domains - defense, medical and industrial applications.

“The post graduate students of SeNSE contribute towards sponsored R&D activities via their Masters Thesis projects.”
- Prof. Satish Kumar Dubey

M.Tech in Instrument Technology
List of Courses

Electrical and Electronics
- Sensors and Transducers
- Electronic Tech. For Signal Conditioning
- Instrument Design and Simulation
- Biomedical Electronics

Mechanical
- Mechatronic Product Design
- Automation in Manufacturing
- Computer Aided Manufacturing
- Machining Processes and Analysis
- Experimental Methods

VLSI & Embedded system
- MOS/VLSI Design
- Analog Integrated Circuits
- Introduction to MEMS Design
- Embedded systems and applications

Optical Instrumentation
- Precision Measurement system
- Optical components and Basic Instruments
- Laser Based Instrumentation
- Display Devices and Technology

Computer Science
- Introduction to Machine Learning
- Operating Systems

Lab Facilities in SeNSE

Computational Lab: Equipped with state of the art machines with CAD and Simulation software to design and simulate various prototypes.

Manpower Development in Instrument Technology (MDIT) Lab: Equipped with best facilities in electronics design and instrumentation.

Advanced Instrumentation Lab: Equipped with complete range of instruments to carry out DSP based system design.

Laser Application and Holography Lab: Equipped with state of the art facility to develop the sensors and Laser based instruments for industrial and medical applications.

Optical Metrology Lab: Works in opto-electronic and opto-mechanical area for precision measurement and monitoring systems.

Apart from these laboratories in SENSE, students are also encouraged to use laboratories in other Departments like Automation Lab, Computer Aided Manufacturing Lab (ME Dept), VDTT Lab (EE Dept)
SENSING AND CONTROL

● Laptop based test measurement and diagnostic equipment for field guns (Ministry of defense, India)

MICROCONTROLLERS

● Development project on design and development of automated radio relay link establishment system (Ministry of defense, India)

● Developing remote operation of anti-aircraft machine gun mounted on commander’s cupola tank (Army Technology board)

● Development and automation of ksharsuthra preparation (CCRAS, Ministry of Health)

DSP AND COMMUNICATION

● Mobile communication to improve monitoring of heart disease and diabetes (UKIERI British council division)
OPTICS

- Development of optical system based on Rayleigh scattering to artificially reproduce natural light and visual appearance of daylight (Havells India Pvt Ltd)

- Digital Holographic Microscopy for cellular diagnostics (SigTuple Technologies Pvt Ltd)

- Development of explosive detection system using surface enhanced Raman scattering (SERS) process (DST, Govt. Of India)

- Digital topographic techniques for contouring of diffused objects and for measurement of temperature in gaseous flames (DST, Govt. of India)

- Design and development of digital speckle pattern Interferometer for measurement and monitoring of Vibrations (Aeronautical R&D Board (Ministry of Defence))

- Testing of micro optics using digital holographic interferometry (DRDO, ministry of defense, India)

- Development of optical measurement techniques for slow land mass displacement to predict landslide (IITD-FIRP)

- Swept source optical coherence scanning microscopy for 3d surface profilometry and tomography (DST, Govt. of India)
Electronic and VLSI
- Time Domain Reflectometry
- Development project on design and development of automated radio relay link establishment system
- Developing remote operation of anti-aircraft machine gun mounted on commander’s cupola tank

Mechanical
- Laser Based Micromachining
- Development of Wire EDM System
- Online Identification of forces exerted by a machine using Labview

Optics
- Development of specialized optical components by replication process
- Colorimetric Detection of analytes via Machine Learning

Control and Automation
- Development of Industrial Automation system using PLC
- Development of Automation system for Orthopaedic Plate Bending Machine
- Development and automation of ksharsuthra preparation

Communication
- Swarm Coordination between multiple robots
PAST RECRUITERS

BOSCH

DRDO

NATIONAL INSTRUMENTS

Honeywell

TOSHIBA

Reliance Industries Limited

SIEMENS

TATA

SAMSUNG

MAXLINEAR

BHARAT ELECTRONICS

ITAAAS

BHEL

Qualcomm

DELTAC

OOGC

APPLIED MATERIALS

HITACHI

Inspire the Next

MEDIATEK

TVS

INFINEON

Famic Technologies Inc.

CYPRESS

EVM

CISCO

TATA CONSULTANCY SERVICES

......and many more
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