SeNSE
Centre for Sensors, Instrumentation and Cyber Physical System Engineering

Recruitment Brochure
2023-24
About Us

The Centre for Sensors, Instrumentation & Cyber-Physical System Engineering (SeNSE) offers an interdisciplinary M. Tech Course in Instrument Technology as well as MS(R) and Ph.D in specialized research areas combining multiple disciplines like microelectronics, electronic circuit design, optical & mechanical instrumentation engineering to design and develop complete systems.

About M.Tech Programme

M. Tech in Instrument Technology is an interdisciplinary program offered by the centre. It is a unique amalgamation of three major disciplines; Mechanical and Mechatronics, Electronics/ Electrical and Optical Engineering. This course is one of it’s kind in India in which all the three disciplines come together to develop a sensor/instrument/system with great industrial and medical relevance.

Research Domains

There are six core areas of focus -

- Electronic system design
- Micro-opto-electro-mechanical systems
- Sensor technology and cyber-physical systems
- Advanced optical fabrication
- Optical engineering-quantum Technology
COURSES

Microelectronics and VLSI
• MOS VLSI Design
• Analog Integrated Circuits
• Introduction to MEMS Design

Embedded Intelligent Systems
• Embedded systems and applications
• Introduction to Machine Learning
• Embedded Intelligence
• Sensors and Transducers
• Operating systems
• Electronic Components and Circuits

Measurement and Instrumentation
• Laser Based Instrumentation
• Optical Components and Basic Instruments
• Instrument Design and Simulation
• Precision Measurement Systems

Mechanical Design
• Mechatronic Product Design
• Automation in Manufacturing
• Computer Aided Manufacturing (CAM)
• Material and Mechanical Design
<table>
<thead>
<tr>
<th>Project Title</th>
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<tbody>
<tr>
<td>1. Deep Learning Assisted Computational Framework in Digital Holography</td>
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<td>2. Machine learning based sensing platform for estimation of ACR in clinical samples</td>
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<td>3. AI/ML enabled SERS based sensing platform for analyte detection</td>
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<td>4. Development of a low-voltage low-power multichannel impedance sensing system.</td>
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<td>5. Development of capacitive sensor-based wristband for human computer interaction</td>
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<td>6. Current Bridge based automatic interface for grounded wide range resistive sensor</td>
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<td>7. Development of a low voltage low power wide range capacitance measurement system</td>
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<td>8. Development of a smart wiper system for waterless solar panel cleaning</td>
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<td>9. Development of FPGA based multichannel fNIRS system for brain-computer interface</td>
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<td>10. Development of resistance measurement system with PPB level resolution.</td>
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<td>11. Integrated micromachines with on-chip control</td>
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<td>12. Ultraprecision machining, Precision metrology, Artificial intelligence-based modelling for manufacturing, Space related instrumentation</td>
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<tr>
<td>13. Background oriented Schlieren imaging in liquids</td>
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<td>14. Computational Background oriented Schlieren imaging for flow visualization</td>
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<td>15. Novel data processing approaches for depth resolved thermal wave imaging for inspection of carbon fibre reinforced polymer materials</td>
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LAB FACILITIES

• Manpower Development in Instrument Technology Lab (MDIT)
• Circuits & Sensing Group
• Advanced Instrumentation Lab
• InfraRed Imaging Laboratory (IRIL)
• Laser Application and Holography Lab
• Optical Instrumentation Lab
• Optical Metrology Lab
• Optical Workshop
• Ultra-Precision Lab
PLACEMENT STATISTICS

**Batch 2020-22**
- CORE: 33%
- NON-CORE: 67%

**Batch 2021-23**
- CORE: 62%
- NON-CORE: 38%
<table>
<thead>
<tr>
<th>Faculty Profile</th>
<th>Research Areas</th>
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<tr>
<td>Prof Satish Kumar Dubey</td>
<td>Digital Holography, Laser based instrumentation for measurement and monitoring systems, Opto-electronic sensing for PoC diagnostics.</td>
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<tr>
<td>Prof Manish Kumar</td>
<td>Optical microscopy, Optical imaging, Optical systems, Bio-imaging, Fluorescence microscopy, Light sheet microscopy, Confocal microscopy, Optical instrumentation</td>
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<tr>
<td>Prof Jasleen Lugani</td>
<td>Quantum optical technologies, Integrated quantum photonics, quantum information processing, Non-linear optics, optical memories, photon pair generation, photonic processors, Integrated optics platforms, photonic circuits.</td>
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RECRUITMENT PROCEDURE

Invitation to Recruiter

Recruiter has to register with the institute

Filling of Job Notification Form (JNF) by Recruiter

Finalization of JNF and shortlisting of students

On Campus interviews
CONTACT US

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