



# Summer Internship Programme

Indian Institute of Space Science and Technology

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Faculty Supervisor	Topic, Project, Period	Eligibility
<a href="#">Dr. Prathap C</a> Email: prathapc@iist.ac.in	<p><b>Topic code and title:</b> AE1 Gaseous mixture filling automation</p> <p><b>Project description:</b> Fuel and air mixture are prepared in a constant volume chamber using partial pressure method. Presently it is happening in a manual mode. It needed to automated using solenoid valve, flow control valve, absolute pressure transducer, and national instruments data acquisition devices to a accuracy of 1 mbar. Labview will be used or any other software that controlling software has to be used. Experimental work</p> <p><b>Period</b> 2 months</p>	6th sem B.Tech Mechanical/ ECE/Instrumentation
<a href="#">Anup S</a> Email: anup@iist.ac.in	<p><b>Topic code and title:</b> AE2 Stress analysis using finite element method (2 students)</p> <p><b>Project description:</b> Stress analysis using finite element method (FEM) is a computational tool employed to find out the mechanical response of structures under various types of loading. By applying the material properties &amp; boundary conditions, the stress components, strain components, displacements etc can be found out. In this internship we will use FEM software to find out the stress, strain distributions in such components.</p> <p><b>Period</b> 2 months</p>	6th sem B.Tech/2nd Sem M.Tech s
<a href="#">Anish Kumar</a> Email: anishkumar@iist.ac.in	<p><b>Topic code and title:</b> AE3 Crack-induced oscillations in rotating disc</p> <p><b>Project description:</b> This study aims to explore the phenomenon of crack-induced oscillation in a rotating disk with an eccentrically mounted mass, intended to mimic the blade of a turbine (for rocket it will be pump). The central focus lies in understanding the combined effect of the eccentric mass and Coulomb friction at the blade hub on the dynamics of the rotating disk. The findings of this investigation hold significant relevance in the design and optimization of gas turbine system in turbojet or (micro-pump systems for fuel injectors in cryogenic engines.)</p> <p><b>Period</b> 2 months</p>	M.Tech/PhD students
<a href="#">Rajesh</a> Email: rajeshsadanandan@iist.ac.in	<p><b>Topic code and title:</b> AE4 Design and implementation of combustion test rig control using Labview</p> <p><b>Project description:</b> Investigate how the pollutant emissions of biogas flames vary with equivalence ratio</p> <p><b>Period</b> 2 months</p>	6th sem B.Tech/2nd Sem M.Tech s
<a href="#">Rajesh</a> Email: rajeshsadanandan@iist.ac.in	<p><b>Topic code and title:</b> AE5 Optical diagnostics in two-phase flows</p> <p><b>Project description:</b> In two-phase flows (say mixture of water and air) it is important to know the volume occupied by the gaseous phase. In this internship the student will use optical diagnostic method like shadowgraph technique to estimate the void fraction. The work involves both experimental and image processing. The student should be ready to get his/her hands dirty and should also have resonable programming skills (in Matlab programming)</p> <p><b>Period</b> 2 months</p>	4th or 6th sem B.Tech/2nd Sem M students
<a href="#">Rajesh</a> Email: rajeshsadanandan@iist.ac.in	<p><b>Topic code and title:</b> AE6 Spatial resolution enhancement using optical diagnostic methods</p> <p><b>Project description:</b> In line of sight imaging, for example, photos of flames or sprays using DSLR camera, the image is sharp at the lens focal point and everywhere else its blurred. So the spatial resolution in the direction of depth is compromised. The objective of this work is to see if this spatial resolution can be enhanced using optical methods. The work is experimental</p>	4th or 6th sem B.Tech/2nd Sem M students

and students should have good understanding of basic photography (effect of aperture, exposure time, lens focus etc). They should also have reasonable knowledge of optics (different type of lenses, lens arrangements to get focusing, diverging or parallel beams etc).

**Period** 2 months

<p><a href="#">Aravind V and Dr Yedhu from M/s Specrule Scientific</a> Email: aravind7@iist.ac.in</p>	<p><b>Topic code and title:</b> AE7 Digital Two-Color Ratio Pyrometry <b>Project description:</b> A DSLR camera will be used to obtain the temperature of a hot body emitting grey-body radiation using two-color-ratio pyrometry. The project will involve some experimental work as well as development of post-processing code that will automate the process of temperature estimation. <b>Period</b> 2 months</p>	<p>MSc/MTech Physics/Photonics/Op Students, or BTech Electronics/Co Science students in their last two y Programming skills required.</p>
<p><a href="#">Aravind V and Dr Yedhu from M/s Specrule Scientific</a> Email: aravind7@iist.ac.in</p>	<p><b>Topic code and title:</b> AE8 Interferometric Mie Scattering <b>Project description:</b> One-dimensional interferometric Mie scattering will be conducted to measure the flow velocity in a high-speed air flow seeded with fine acetone particles. Wavelength correction strategies using a single-camera configuration will be experimented. <b>Period</b> 2 months</p>	<p>MSc/MTech Physics/Photonics/Op Students or BTech Mechanical/Aer Engineering students in their last t Experience with MATLAB is prefer</p>
<p><a href="#">Dr. Prathap C</a> Email: prathapc@iist.ac.in</p>	<p><b>Topic code and title:</b> AE9 Design and development of Gas dynamics probe <b>Project description:</b> In supersonic tunnel facilities, it is important to measure the exit temperature and pressure using stagnation probe. It involves heat tranfer, and flow analysis using ANSYS package <b>Period</b> 2 months</p>	<p>6th sem B.Tech Mechanical/ Aeros</p>
<p><a href="#">Dr. Prathap C</a> Email: prathapc@iist.ac.in</p>	<p><b>Topic code and title:</b> AE10 unsteady pressure analysis of spherical flames <b>Project description:</b> In constant volume spherical flame experiments, unsteady pressure is measured to understand the heat release rate. It also provides information about the flame transition to turbulent. Detailed unsteady pressure-time analysis is required to map that transition for different sets of fuels. Python or MATLAB based programming is needed <b>Period</b> 2 months</p>	<p>6th sem B.Tech Mechanical/ Aeros</p>
<p><a href="#">Anish Kumar</a> Email: anishkumar@iist.ac.in</p>	<p><b>Topic code and title:</b> AE11 Modelling and simulation of MEMS &amp; NEMS devices <b>Project description:</b> <b>Period</b> 2 months</p>	<p>6th sem B.Tech Mechanical/ Aeros other related subjects</p>