



GOPALAN COLLEGE OF ENGINEERING AND MANAGEMENT

Accredited by NAAC with B+ Grade, An ISO 9001: 2015 Certified Institution

Affiliated to V.T.U., Belagavi, Approved by AICTE, New Delhi.

DEPARTMENT OF AERONAUTICAL ENGINEERING

Laboratory Details

Sl. No	Name of the Laboratory	Carpet Area (Sq. mt.)	Major Equipment's	Purpose/Research areas
1	Propulsion Lab	102m ²	1. Low speed cascade wind tunnel 2. Forced Convective heat transfer over a flat plate 3. propeller test rig 4. nozzle flow Set Up 5. pre mixed flame with compressor 6. Bomb calorimeter with oxygen cylinder 7. Free jet & wall jet set-up	Students and researchers use the propulsion laboratory to conduct experiments related to aircraft engines, force measurements through wall jets and measurement of speed of flame propagation.
2	Structures Lab	102m ²	1. Wagner beam and shear strength attachment 2. Beam test set up with various end conditions 3. Column test Apparatus 4. Vibration of beam set up with Computer 5. Advanced Vibration setup 6. Pin-on-Disc wear testing Machine 7. LabView-2021 Software 1. Shear centre test rig 2. Vibration beam setup *Modernization of Aircraft structures lab	The objective of aircraft structures laboratory is to make the students understand the various principles involved in the aircraft structural design. The laboratory is equipped with Beam Test setup, Wagner beam, vibration of beam equipment and Shear Center Test setup. Students can determine the load distribution in the structural members and learn the causes for deformation produced in a structural component. This immensely helps the students to enrich their knowledge in the design of various aircraft structural components, namely, wing, fuselage, landing gear, and control surfaces, etc.
3	Aerodynamics Lab	102m ²	1. Subsonic Wind Tunnel 2. Smoke Generator	Aerodynamics Laboratory is established to provide hands-on experience and practical learning on various aerodynamic concepts, mainly in the areas of force/moment measurement techniques and flow visualization

				techniques.
4	Energy conversion and fluid mechanics laboratory	102m ²	<ol style="list-style-type: none"> 1. Multi cylinder Petrol Engine test rig with eddy current dynamometer with cooling water 2. 4 Stroke single cylinder Petrol Engine test rig 3. Abel flash point Apparatus 4. Pensky Martins Apparatus 5. Boy's gas calorimeter 6. Bomb Calorimeter 7. Torsion viscometer 8. Calibration of Venturi meter 9. Calibration of Rectangular notch apparatus 10. Verification of Bernoulli's equation 	Fluid mechanics lab offers training to undergraduate students in flow measurements and visualizations. The main goal is to train students in the field of fluid machineries, flow transition, turbulence, aerodynamics and control of fluid flows.
5	Simulation Lab/ Design Modeling Analysis Lab/ Computer Aided Aircraft Drawing	96 m ²	<ol style="list-style-type: none"> 1. 35 Computers (i5 processor with 4GB RAM) 2. ANSYS Multiphysics 3. MATLAB Software 4. Solid Edge Software 	This is a lab where the students get opportunity to familiarize various modelling, drafting and analysis software packages such as AutoCAD, CATIA, SOLIDWORKS, Autodesk INVENTOR, ADAMS, Hypermesh, MSC Patran, MSC Nastran, Scilab, FEAST etc. The design and analysis experience gained through CAD lab mould our students capable of contributing meaningfully in the design/analysis of payload/satellite structures in various space projects at institute level.
6	Measurements and Metrology Lab	102m ²	<ol style="list-style-type: none"> 1. Pressure Gauge 2. Thermocouple 3. LVDT 4. Load cell 5. Optical Projector 6. Toolmaker Microscope. 7. Autocollimator 8. Gear tooth micrometer 9. Slip Gauges 	The main objective of this lab is to cater the needs of UG curriculum as well as to support various engineering measurements/inspection requirements at GCEM AERO. The major facilities include Vision inspection system, Minor measuring instruments, Instruments for measuring geometrical features, Optical measuring systems etc.
7	Material Testing Lab	102m ²	<ol style="list-style-type: none"> 1. Universal Testing Machine 2. Hardness Testing Machine - Vicker's, Brinell, Rockwel 3. Fatigue Testing Machine 	The objective of strength of materials lab is to provide a platform for students and

			4. Torsion Testing Machine	researchers to explore various materials characteristics. The lab is equipped with material testing equipment's such as, universal testing machine (UTM), torsion testing, fatigue testing, hardness testing machines, creep testing, Impact testing, spring testing, vibration testing etc.
8	Skill Labs		1. Gopalan Research Innovation & Training Centre (GRIT) <ul style="list-style-type: none"> a. Pre-Pilot training b. Drone piloting c. Design & Development of Drones d. Advanced Computing software for Aerospace 	This is a course to learn to fly an airplane, using the same lessons given in a flight school, where every pilot starts their journey to becoming a pilot. During the course, you are expected to perform the skills and practice maneuvers after examples are given.
9	Department Clubs		1. Aeromodelling club 2. Astronomy club	Aeromodelling is the art of designing, building and flying miniaturized aircrafts (powered or non-powered). One can build a model plane from any material like Paper, Balsa wood etc. With the immense scope of creativity and interdisciplinary nature, it gives a person chance to develop a complete system with people across various departments and specialization.

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