Indian Institute of Technology, Kanpur is one of the premier institutions established by the Government of India in 1959 with the aim to provide meaningful education, to conduct original research of the highest standard and to provide leadership in technological innovation for the industrial growth of the country. Beginning humbly in the borrowed building of Harcourt Butler Technological Institute with 100 students and a handful of faculty members, now the IIT Kanpur has its own sprawling residential campus with 6000 students, 350 faculty members and around a 1000 supporting staff. The combined achievements of its faculty, students and alumni spread across the globe are awe-inspiring and the Institute has gained a legendary reputation.

The department of Aerospace Engineering at Indian Institute of Technology, Kanpur, is a leading provider of the cutting-edge education and research in aerospace sector. The department has versatile faculty with vast expertise in the broad areas of Aerodynamics, Structural Analysis, Propulsion and Combustion, and Flight Mechanics and Control. The ambience of research in the department is highlighted by several bold research initiatives like industrial wind-tunnel testing, autonomous rotary vehicles, micro air vehicles, advanced materials and damage, fire safety, atomizers and combustion of unconventional fuels, supersonic and hypersonic flows, advanced computational mechanics, aircraft stability and control amongst others. And this culture of research percolates down to the post-graduate and undergraduate curriculum, which our students have embraced enthusiastically.

The curriculum is a vibrant mix of mathematical modelling of physical phenomena, analysis and strong hardware-based validation. We continue to innovate, and have been pioneers in implementing the progressive hands-on learning through facilities like aeromodelling and flight laboratory, where students can make their ideas fly. Aerospace graduates undergo a rigorous training that is a unique blend of myriads of courses like: Smart structures, Virtual instrumentation, Finite element methods, Post flight data analysis of Hardware-in-loop simulations, Helicopter dynamics, Supersonic Air-breathing and rocket combustion, Turbulence and transition and experimental techniques capped off with a comprehensive training in aircraft, rocket engine and helicopter design. This training makes them amenable for employment in the aerospace, mechanical, automobile, engineering analysis and design software and allied emerging engineering fields globally.

I believe that our curriculum is one of the most challenging and prepares our students for handling a varied set of engineering as well as business administration challenges and jobs. Our graduates have performed exceedingly well in varied professions. Several of them have become technocrats with many innovative products. I am certain that our graduates will turn out to be some of the most productive recruits for any organization.

With best wishes to the graduating batch of 2016
Prof. Sanjay Mittal
DEPARTMENT FACILITIES

Low Speed Aerodynamics Laboratory has Boundary layer, Low Turbulence, Smoke visualization and 5-D wind tunnels to carry out experimental research in the areas of aerodynamics.

High Speed Aerodynamics Laboratory has supersonic Jet facility: an intermittent, blow down type supersonic wind tunnel equipped with a dedicated computer system for tunnel control and data acquisition.

Flight Laboratory is one of its kind in India to house aircrafts and powered gliders viz., Hansa – 3, Piper Saratoga (Piper PA-32R), Cessna-206, Pipistrel Sinus. Experiments are performed for estimation of cruise and climb performance of aircrafts and parameters like neutral point and manoeuvring point etc.

Autonomous Mini Helicopter Laboratory is a facility focusing on the fundamentals of design, manufacturing and testing of system and sub systems has been created to assist the development and testing of the same.

Aero-Modeling Lab provides a hands-on experience with the main objective of Designing, fabrication and flying of model airplanes, helicopters, quad–rotors and ornithopters.

Propulsion Lab is equipped with a Low Speed Cascade Tunnel (30 cm x 38 cm) with variable speed up to 60 m/sec, a tunnel (7cm x 7 cm ) for LDA facility to study jet mixing and flow visualization, 2- shaft Gas Turbine for cycle analysis, and a continuous combustion Unit to study, exhaust gas composition, effect of fuel and flame stability test can be performed.

The structures lab is set up for experimentation and testing of structural components. Several test frames have been designed and are available with actuators for testing of various structural components. The lab is currently being used for a number of research activities involving composite materials, aluminium, wood, polymeric materials, and other structural materials.

Combustion Lab is a advanced research oriented lab with sophisticated experiment facilities. Some current research areas are Inverse jet flame, Trapped vortex combustor, Hydrogen Burner (MNRE), Pneumatic Spray Nozzle (BRNS), Gelled Jet A1 Propellant Spray Combustion, Hydrogen Flame Micro-combustor etc.

CFD Laboratories works on developing algorithms related to transitional and turbulent flows, Hypersonics using novel approaches like MD, LBM, DSMC and FEM etc. High performance computing lab aims to develop accurate solvers for a variety of fluid dynamic problems.

Established in 1999 at IIT Kharagpur to meet the national needs in areas of aeronautical and non-aeronautical R&D activities, houses the most versatile and efficient wind tunnel in India. The tunnel is a state-of-the-art 3m x 2.25m closed circuit low speed wind tunnel.

Virtual instrumentation laboratory focuses on integrating softwares like Lab View to aid the process of measurement and testing of engineering data applicable to fluid dynamics, structural mechanics, Flight dynamics and aerospace propulsion.
Helicopter laboratory at IIT Kanpur indulges in wide range of research activities related to Helicopter / VTOL vehicles.

IIT Kanpur is actively involved in development of flapping wing Micro Air Vehicles through DRDO sponsored projects. Several prototypes have been constructed and tested in wind tunnel for loads measurement.

The High Performance Computing Laboratory at the Aerospace Engineering Department of I.I.T. Kanpur - started by Prof. Tapan K Sengupta, has been an active place of research right from its inception.

SPONSORED PROJECTS

[Logos of various government and private organizations]
Distinguished Alumni

Mr. Amar Chand Garg
Senior Engineer-Boeing

Mr. Vinay Prakash Mathur
General Manager HAL

Mr. Ajay Kumar
Distinguished RA, NASA Langley Research Centre

Mr. Satendra Singh
Director General DGCA

Mr. Rajiv Singh Chowdhry
Lockheed Martin Skunk Works

Dr. K Chandra Shekhar
Professor University of Missouri

Mr. Alok Kumar
Deputy Director General Planning Commission, India

Dr. Anil Enoch Deane
Professor University of Maryland

Dr. Rajiv Shrivpuri
Professor Ohio State University

Entrepreneurship

IITK has its own incubation Centre for budding entrepreneurs. Several Aerospace motivated ventures started by IITK Aerospace’s Alumni.

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