



Karunya

DEEMED UNIVERSITY
SOLVING HUMAN PROBLEMS
NAAC Accredited A++



M.Tech. AEROSPACE ENGINEERING

About us

Aerospace Engineering is a highly interdisciplinary program with active interaction between aerodynamicists, structural engineers, propulsion engineers, programming specialists, control system engineers and electronic engineers. It encompasses the design and manufacturing of aircraft, spacecraft, propulsion systems, satellites, and missiles, as well as the design and testing of aircraft and aerospace products, components, and sub-assemblies. India being home for numerous Aerospace Government Organizations, major OEMs and service organizations, the industry has witnessed limitless innovations during the yesteryears with many more on the skyline.

Why M.Tech. Aerospace at Karunya?

M.Tech. Aerospace Engineering at Karunya is an industry-driven program aligned with the latest and future technologies of Aerospace Industry 4.0 & Digital Aviation. This program provides an ideal platform for the students to excel in core disciplines of the program along with interdisciplinary areas such as Artificial Intelligence and Machine Learning, and thereby increase the depth of knowledge. The curriculum has emphasis on experiential learning from core industries through internships and live

ADMISSIONS 2024

projects to equip the students with a unique blend of academics and industrial experience. Under the guidance of elite Professors and retired Scientist from Space Research Organizations, the graduates are groomed as technocrats, researchers, entrepreneurs and leaders who actively contribute to nation building.

Mission

- To train and empower students with in-depth understanding, sound fundamental knowledge along with finely honed practical skills required to become top-notch aerospace engineers with problem-solving capability.
- To carry out research and development activities on practical and societal challenges and contribute to the knowledge of aerospace engineering and allied areas through publications, patents and products.
- To instill professional, social and ethical values together with leadership qualities in students who through progressive learning shall contribute to the sustainable development of the society.

Programs Offered (UG / PG / Research)

- **B.Tech.** Aerospace Engineering (Full Time 4 Years)
- **M.Tech.** Aerospace Engineering (Full Time 2 Years)
- **Ph.D.** Aerospace Engineering (Full Time / Part Time)

Program Educational Objectives

- To develop the ability to demonstrate knowledge and reasoning in core areas of aerospace engineering with expertise in research, design, modeling and analysis tools.
- To impart innovative professional skills to recognize problems, formulate, analyze and propose optimal solutions.
- To cultivate proficiency in effective team work and attain strategic leadership positions in aerospace and allied domains.

Laboratories / Research Facilities

The Department has well-equipped laboratories that cater to the Academic and Research needs of the students and faculty. Major facilities available in the department include:

- Wind Tunnel facility with Subsonic Tunnel (45 m/s, 600 mm x 600 mm test section) and Supersonic Tunnel (3.5 Mach, 100 mm x 100 mm test section).
- Desktop Water Tunnel Facility
- Cessna 152 Airplane
- Aircraft Structures Laboratory with Universal Testing Machine (UTM), Polariscope, Hardness test facility, composite winding machine etc.,
- High enthalpy facility with engines, Shock Tube & Kinetic Heat Simulator
- Computational Fluid Dynamics & ANSYS laboratory
- Avionics laboratory with motion sensor control, guidance and navigation systems
- Unmanned Aerial Vehicles Laboratory
- Aircraft Simulation Facility
- RTM Composite Fabrication & 3-D Printing Facility

Research Areas

- Computational & Experimental Aerodynamics
- Ignition delay studies on Rocket Engine fuels
- Aircraft Structural Analysis
- Wind Engineering
- Trajectory Optimization for Low Earth orbits
- Polymer and Metal Matrix composites
- Unmanned Aircraft Systems for societal applications



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the Admission Process

International Collaborations

- Technical University Berlin, Germany – For Small Satellite Design and Development
- Old Dominion University, USA – For Capacity Building in Space Systems Engineering

Distinguished M.Tech Alumni



J. Helen Rathna

Equipped with all the facilities and the best set of faculty who provide all-possible support for our success, Karunya is truly the best place for pursuing Aerospace Engineering. The time spent here made me feel like a home away from home.

**Assistant Professor,
Aeronautical Engineering**
MVJ College of Engineering, Bangalore

Swati Chauhan

You enjoy the freedom to think, to express yourself and broaden your knowledge. The multicultural environment and diversity makes the campus life exciting and vibrant.

**Assistant Professor,
Aeronautical Engineering**
Parul University, Gujarat



Adheena G.J.

EBeing in Karunya was a memorable experience in terms of both academic and personal development. The expertise and dedication of faculty has moulded me to be a better person in all walks of life.

PhD Scholar & Research Assistant,
Dresden University of Technology,
Germany

Uthra M.P.

The campus is filled with positive energy and limitless opportunities. Karunya University gave me the opportunity to connect with the right kind of people apart from imparting the needed skills to become a proud Entrepreneur.

Co-Founder & Technical Head,
Fly@Mach Innovations Pvt. Ltd., Bangalore



Contact: Department of Aerospace Engineering

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