



The Institution of Engineers  
(India), Nagpur



Indian Society for  
Technical Education

# One Week FDP on Recent Technological Advancement in Aerospace Engineering

Organized by  
DEPARTMENT OF  
AERONAUTICAL ENGINEERING



18<sup>th</sup> to 22<sup>nd</sup>  
June  
2024



## About

Tulsiramji Gaikwad-Patil College of Engineering and Technology (TGPCET) was established in the year 2007 by Vidarbha Bahu-uddeshiya Shikshan Sanstha (VBSS), a registered society. It is a self financed Private Engineering College, which is affiliated to Rashtrasant Tukadoji Maharaj Nagpur University (RTMNU) Nagpur and is approved by All India Council for Technical Education, New Delhi. Also college is approved by Directorate of Technical Education (DTE), Mumbai, Maharashtra State. The Institute is Accredited with A+ (3.32 CGPA) by NATIONAL ASSESSMENT AND ACCREDITATION COUNCIL (NAAC). An Autonomous Institute affiliated to RTM Nagpur University, Nagpur. Mechanical Engineering and Electrical Engineering departments at TGPCET have been accredited by the NBA.

## Vision

To emerge as a learning Center of Excellence in the National Ethos in domains of Science, Technology and Management.

## Mission

- To strive for rearing standard and stature of the students by practicing high standards of professional ethics, transparency and accountability.
- To provide facilities and services to meet the challenges of Industry and Society.
- To facilitate socially responsive research, innovation and entrepreneurship.
- To ascertain holistic development of the students and staff members by inculcating knowledge and profession as work practices.

## DEPARTMENT OF AERONAUTICAL ENGINEERING

The Department of Aerospace Engineering was established in 2020 with an intake of 60 students in the UG course. The department has also started a PG program in Aeronautical Engineering with an intake of 12 in the year 2023. Aeronautical engineering involves researching, designing, constructing, testing, and manufacturing of the aircraft within Earth's atmosphere. It also covers the investigation into aerodynamic elements of aircraft, including behaviors and related factors such as control surfaces, lift, airfoil, and drag. The Department aims to cultivate expertise in specialized fields within aeronautical engineering, including aircraft structural design, aerodynamics, propulsion systems, and guidance and control systems, with an emphasis on research and innovation. The aeronautical engineering department features several specialized labs: Aero-Thermodynamics Lab, Fluid Mechanics and Machinery Lab, Aerodynamics Lab, Aircraft Structures Lab, Propulsion Lab, and CAD/CAE Lab, offering students hands-on experience in advanced research and practical applications. The department has well qualified and experienced faculties from IITs, NITs and Government institutes having excellent academic as well as research contribution. The aeronautical engineering department offers a vibrant and enriching environment for students. The student-run Aerocious forum hosts guest lectures and workshops, while the drone club organizes competitions and projects, providing opportunities for practical experience and fostering innovation in drone technology and applications. The department encourages students to engage in research and publish papers. They are also motivated to participate in international and national conferences, providing them with valuable opportunities to present their work, network with industry professionals, and stay informed about the latest advancements in the field.

## Vision

To foster technically skilled Aeronautical Engineers of the utmost academic principles, to convene the needs of academia, industry and society.

## Mission

- Impart quality technical education and unique interdisciplinary experiences.
- Develop the analytical, computational and design capabilities to provide sustainable solutions.
- Expose the students to the current trends and opportunities in the Aerospace industry.
- Inculcate professional responsibility based on an innate ethical value system.

## PATRONS

**Dr. Mohan Gaikwad-Patil**  
Chairman, GPG

**Mr. Akash Gaikwad-Patil**  
Vice Chairman, GPG

**Dr. Anjali Gaikwad-Patil**  
President, GPGI

**Prof. Sandeep Gaikwad**  
Treasurer, GPGI

**Shri. Vinod Gaikwad**  
Member, GPGI

**Dr. P.L. Naktode**  
Principal, TGPCET

**Prof. Pragati Patil**  
Vice-Principal, TGPCET

## COORDINATOR

**Dr. Vivek Mishra**  
HoD, AE Department, TGPCET

## CO-COORDINATOR

**Prof. Vishwjeet Ambade**  
Asst. Professor, AE, TGPCET

## ORGANIZING COMMITTEE

**Dr. Manoj Chaudhary**  
99230 68767

**Prof. Kalpit Kaurase**  
75099 49676

**Prof. Sujeet Pandey**  
84970 93325

**Prof. Harikant Bansal**  
75053 42090

## About FDP

The National Education Policy focus on the approaches required to advance innovation and research in multiple disciplines. The strategy is to focus only on developing a stronger research culture at all levels, which can have a substantial impact on students' learning, their experience in higher education, entrepreneurship concepts, and capacity enhancement. The educator has the option of using scientific, conceptual, and research-based teaching approaches. Instilling a research culture in the classroom encourages students to study at a higher level and fosters an investigative mindset, resulting in conceptual consistency in information acquisition.

Aerospace engineering stands at the forefront of technological advancement, with innovations shaping the future of aviation and space exploration. Keeping abreast of these advancements is crucial for educators to equip students with relevant skills and knowledge. This FDP aims to empower faculty members with insights into cutting-edge technologies driving progress in the aerospace industry. Through a combination of lectures, workshops, and hands-on activities, participants will delve into topics such as advanced materials, propulsion systems, autonomous flight, space exploration, and sustainability initiatives. Leading experts from academia and industry will facilitate sessions, offering invaluable perspectives and practical guidance.

## Major Topics to be covered

- Amphibian Aircraft for Sustainable Aviation
- Role of test parameters and material composition on the erosion behavior of polymer composite
- Design of Helicopter Tail Rotor Shaft system
- Unsteady supersonic flow over spiked body
- Lunar Space Economy and Entrepreneurship
- Aircraft System in the Aviation Industry
- Additive Manufacturing and 3D printing its Application in Aerospace Industry
- Characterization of composite materials used in Aerospace industry
- Meditation for peaceful life
- Hydrogen as fuel to fulfill the future energy demand in Aerospace Industry
- Unmanned aerial Vehicles and its application

## Course Outcomes

After completion of FDP Participants will be able to

- Understand the emerging technologies used for navigation, guidance and control in the aircraft management.
- Evaluate the design the rotor blade element
- Evaluate and understand the performance of composites for effective utilization in aeronautical structures.
- Analyze oblique shock and normal shock waves in supersonic condition.
- Understand the utilization of alternative fuel such as hydrogen in aerospace field

## Resource Person

**Dr. Rajkumar Pant**, Professor, IIT, Bombay

**Dr. Alok Satapathy**, Professor, NIT, Roarkela

**Dr. Saurabh Chandraker**, Associate Professor, NIT, Surathkal

**Dr. Devbrata Sahoo**, Associate Professor, MIT- ADT university, Pune

**Mr. Rajesh Muneshwar**, Director, Vihaan Spacotech Pvt.Ltd, Nagpur

**Mr. Tejghan Singh**, System Engineer, Boieng India, Pvt. Ltd, Bangalore

**Dr. G.K.Awari**, Head, Automobile Engineering Department, Gov.Poly, Nagpur

**Dr.Vivek Mishra**, Head, Aeronautical Engineering Department, TGPCET, Nagpur

**Mrs. Jaya Awari**, Meditation Trainer, Nagpur

**Dr. Manoj Chaudhary**, Asst. Professor, Aeronautical Engineering Department, TGPCET, Nagpur

**Prof. Kalpit Kaurase**, Asst. Professor, Aeronautical Engineering Department, TGPCET, Nagpur

## Venue

Online (Google Meet)

## Who can Attend

This FDP is open to Postgraduate and Ph.D. students and faculties from Institutes, Colleges, and Universities in India. Applicants pursuing PG/Ph.D. programmes in Mechanical, Aeronautical, Production, Design, Manufacturing specialization of Engineering and Sciences are eligible.

## Duration of STTP

The FDP will be organized in online mode from 18<sup>th</sup>- 22<sup>nd</sup> June, 2024

## Important Information

### How to apply

Interested Faculty and students can register by filling the online google form below



### Registration

**Registration fees: Rs.250/-**  
(Certificate from ISTE)  
Registration fees: Rs.100/  
(Certificate from Institute level)



A test will be conducted at end of the FDP and certificates will be issued to all participants who attended all the sessions and scored 60% in the test.

Feedback form will be circulated at the end of FDP

Last date for Registration  
07th June 2024

## For any query, please contact

**Dr. Vivek Mishra (Coordinator)**

HoD, Aeronautical Engineering Department, (9692464847)

**Mr.Vishwjeet V. Ambade (Co-Coordinator)**

Asst. Prof, Aeronautical Engineering Department, (7774046646)