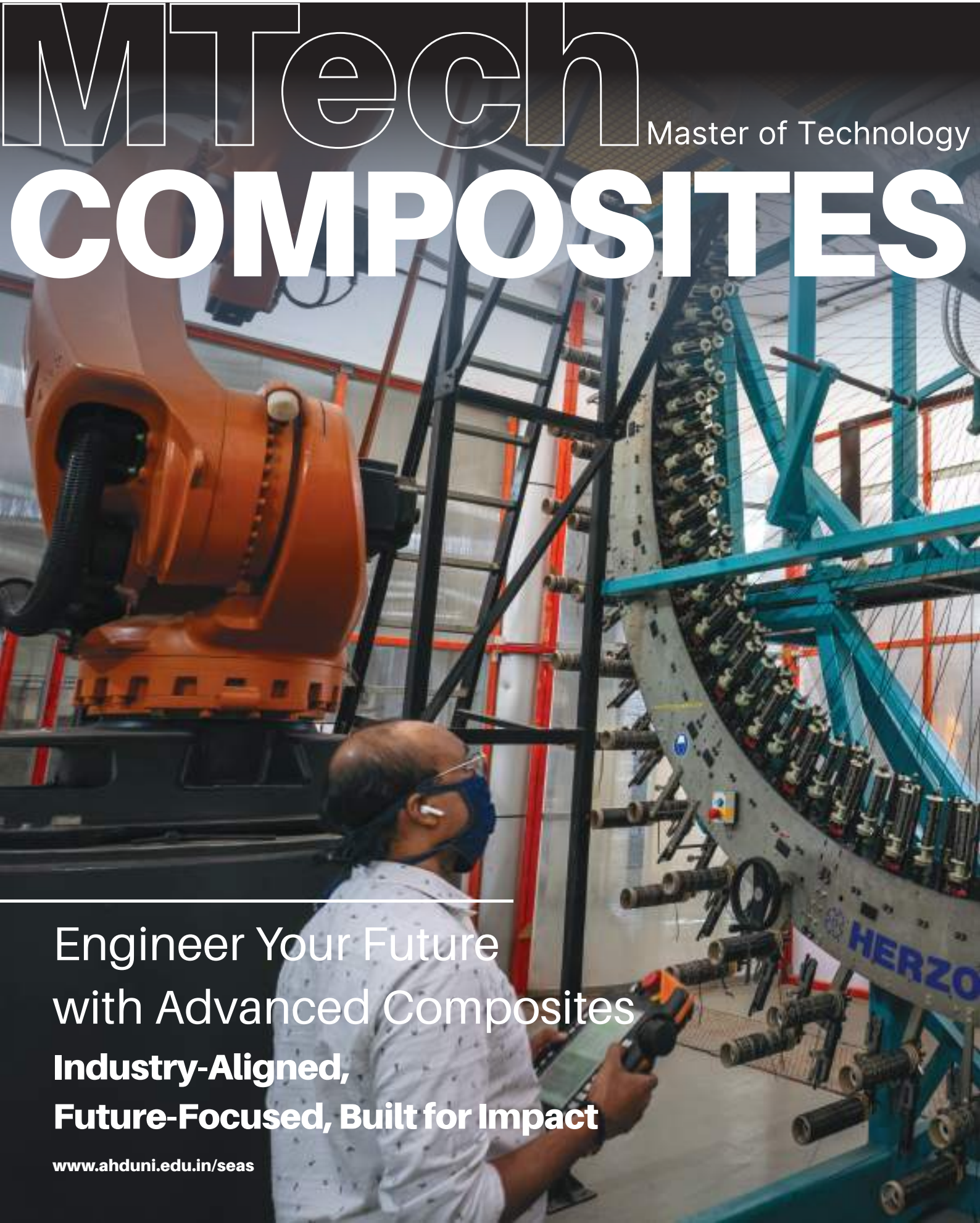
Ahmedabad University

MTech Master of Technology

COMPOSITES



Engineer Your Future with Advanced Composites

Industry-Aligned, Future-Focused, Built for Impact

www.ahduni.edu.in/seas

Ahmedabad University

About Us

- Established in 2009
- Leading private, non-profit research university
- Liberal education focused on interdisciplinary learning, practice orientation, and research thinking
- Prepares critical thinkers who are analytically equipped, practically oriented, and contextually aware global citizens
- Six schools and nine centres bringing liberal arts, sciences, and the professions to engage together in knowledge creation for addressing complex challenges of the society
- Curriculum offering majors that merge the boundaries of disciplines to prepare students for the new economy

School of Engineering and Applied Science

The school delivers undergraduate and graduate engineering programmes with extensive student-centric pedagogies to achieve excellent learning outcomes. Our project-based educational approach helps shape dynamic and proactive graduates with capabilities for lifelong learning, complex problem-solving, design and innovation, and adaptation of technology towards meeting the needs of society. We teach technology and actively guide and nurture its use in ways that are relevant to industry and contemporary societal issues.

Amrut Mody School of Management ▪ Bagchi School of Public Health ▪ School of Arts and Sciences
School of Engineering and Applied Science ▪ Undergraduate College ▪ The Graduate School

Ahmedabad Design Lab ▪ Centre for Heritage Management ▪ Centre for Inter-Asian Research
Centre for Learning Futures ▪ Global Centre for Environment and Energy ▪ International Centre for Space and Cosmology ▪
Sahyog: Centre for Promoting Health ▪ The Climate Institute ▪ VentureStudio

Message from the Dean

Ahmedabad University is committed to providing an education that prepares students to think critically and creatively enabling them to emerge as independent thinkers and compassionate leaders. The School of Engineering and Applied Science has created curricula that help students grow intellectually, personally, and professionally so that they may thrive themselves and also help others thrive.

The School's infrastructure, comprising contemporary advanced facilities, well-equipped laboratories, and a large and well-stocked library, fosters a conducive environment for learning. Our students are also supported and mentored by faculty, who are active researchers and engage students in their academic pursuits. Additionally, the school promotes holistic development and participation among students through workshops, conferences, and other extracurricular events organised on campus. We deliver a sound engineering education and a nuanced approach for tackling real-world challenges.

Professor Sunil Kale

Dean
School of Engineering and Applied Science
PhD (Stanford University)

Why Study

MTech in Composites Programme

at Ahmedabad University?

- First MTech programme in India, with Ahmedabad University being one of the top ten educational institutes globally to offer the programme
- A comprehensive programme in Composites that integrates design, materials, tooling, manufacturing, testing, quality assurance, supply chain, sustainability and industry-related professional practices
- Empowers students with cutting-edge knowledge and hands-on expertise, preparing them to lead in industries where composites revolutionise performance, sustainability, and innovation
- Offered in partnership with the **Ahmedabad Textile Industry's Research Association (ATIRA)** — a pioneer in composite design, development, and testing, and recognised as a ***Centre of Excellence*** by the ***Government of India***
- Designed to align with industry requirements, standards and skills

Master of Technology in **Composites**

Emerging economies like India are focusing on manufacturing indigenous engineering products, increasing the use of advanced lightweight composites. Traditional materials such as metals, while strong and durable, are finite resources and face increasing scarcity. This growing resource crisis has spurred scientists to seek more sustainable and resource-efficient alternative materials. Composites have emerged as a powerful solution due to their ability to meet the demands of modern industries while also addressing environmental concerns and material shortages. They provide a versatile solution in numerous critical industries and everyday applications.

This calls for the creation of highly skilled engineers with proficiency in designing, developing, testing, and manufacturing parts and assemblies involving advanced composite materials. With the aim of addressing this need, the School of Engineering and Applied Science at Ahmedabad University started India's first Master of Technology programme specialising in Composites from 2024-2025.

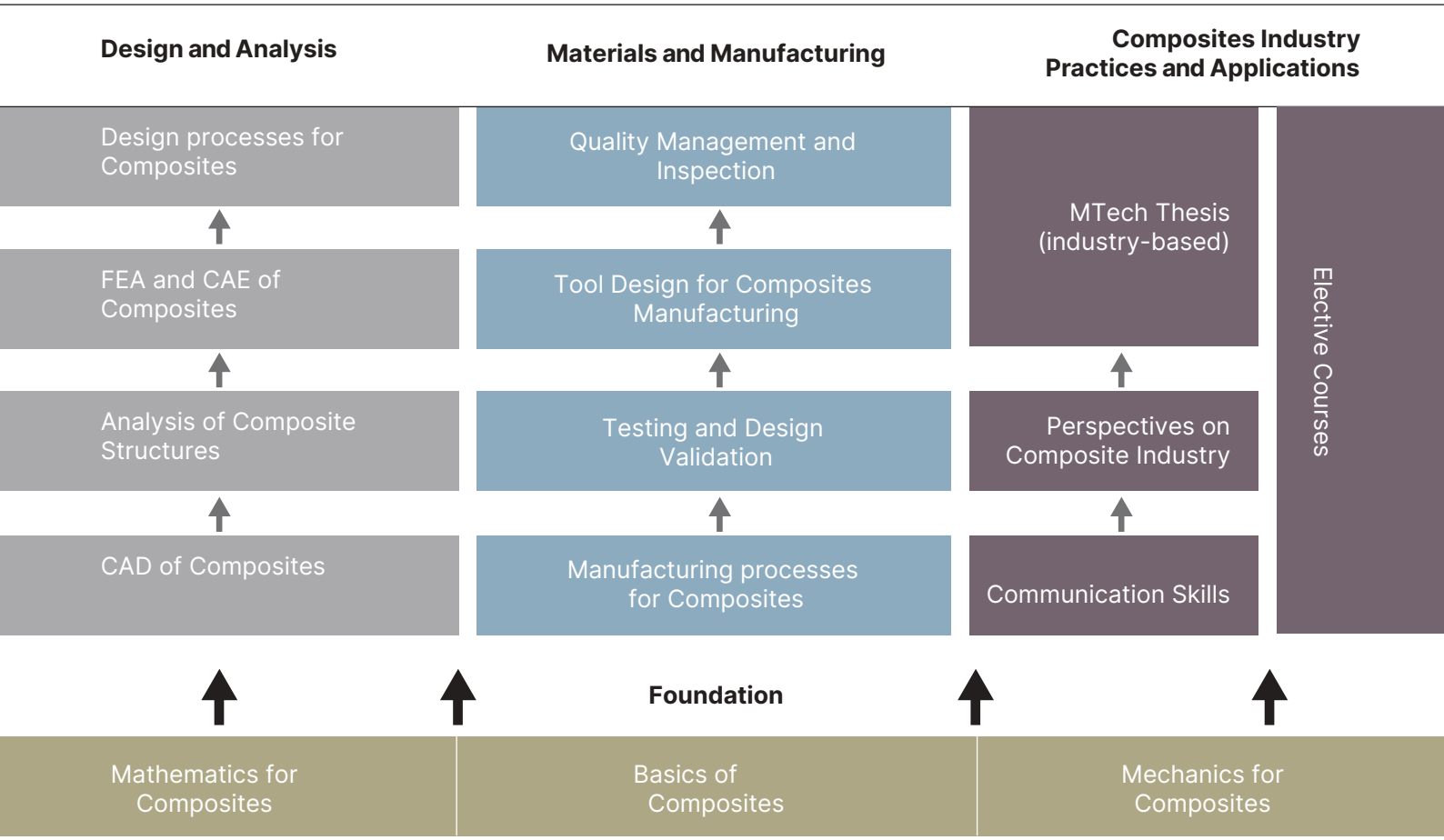
Programme Highlights

- Two-year, full time
- Student-centric pedagogy
- Project-based approach
- Design-driven curriculum
- Industry-oriented courses
- Complex problem-solving approach
- Inspiring innovation and lifelong learning
- Deep, interdisciplinary education that builds skills and perspectives

Programme Overview

	Credits
Programme Core	**32**
Programme Electives	**9**
Communication Skills	**3**
MTech Thesis	**36**
TOTAL	**80**

The course is delivered over a term lasting over a duration of seven weeks. Terms 1-6 are for core and elective course and Terms 7-10 are for Thesis.



Core Courses

Recognising the competencies of fresh graduates and industry practitioners, we have built a programme that provides awareness, knowledge, and skills to upgrade professionals to become industry-ready. The components of each of these elements of the programme have been delineated in detail below.

- **Fundamental Skills**
  - Mathematics for Composites
  - Mechanics of Composites
  - Basics of Composites
  - Communication Skills
- **Skill Development**
  - Analysis of Composites
  - Computer-Aided Design (CAD) of Composites
  - Perspectives on Composites
- **Industry Exposure**
  - Finite Element Analysis (FEA) and Computer-Aided Engineering (CAE) for Composites
  - Design Processes for Composites
  - Manufacturing Processes
- **Industry Practices**
  - Testing and Design Validation
  - Tooling for Composites
  - Quality Management and Inspection

Elective Courses

Students will have an option to select electives from a wide variety of topics aligning with their areas of interest. These are a mix of advanced knowledge and skill-building courses beyond the core courses.

- Fatigue and fracture of composites
- Nano composites
- Sustainable composites
- Dynamic analysis of composite structures
- Functionally graded materials
- Pressure vessel design with composites
- Advanced CAE of composites
- Smart composites
- Natural composites
- Advanced resins and fibres
- Composites applications: Energy, Transportation, High Temperature, Drones

Thesis at Industry

The one year MTech Thesis is a mandatory component of this programme. Students can work on live industry problems or carry out cutting-edge research.

- **Unique Industry-Linked Thesis Experience:** In direct collaboration with a partner industry to bridge academic research with real-world applications
- **Skill Development and Employability:** Exposure to cutting-edge design softwares, technologies, innovative practices, and industry standards, enhancing technical skills and career readiness
- **Mentorship and Guidance:** Expert support from academic researchers and industry professionals to ensure a comprehensive learning experience
- **Comprehensive Understanding of Composites:** In-depth knowledge of composites technology and its impactful applications across diverse domains

OBJECTIVES

Work on-site	On Live Problems	Hands-on Experience	Industry Best Practices	Potential Employment

THESIS STRUCTURE

Terms	Milestones	Credits
Term 7	Problem Identification and Literation Survey	9
Term 8	Solution Model and Simulation	9
Term 9	Validation of Results	9
Term 10	Thesis Writing	9

Faculty

Sunil Kale

Mechanical Engineering

PhD
(Stanford University)

Ashitava Ghosal

Mechanical Engineering

PhD
(Stanford University)

Sham Gurav

Mechanical Engineering

PhD
(Delft University of Technology)

Hemant Chouhan

Mechanical Engineering

PhD
(Indian Institute of Technology Delhi)

Bimal Das

Mechanical Engineering

PhD
(Indian Institute of Technology Patna)

Mayuribala Mangrulkar

Chemical Engineering

PhD
(Skolkovo Institute of Science and Technology)

Shuja Ahmed

Mechanical Engineering

PhD
(Indian Institute of Technology Patna)

Akhand Rai

Mechanical, Electrical and Electronics Engineering

PhD
(Indian Institute of Technology Patna))

Dharamashi Rabari

Chemical Engineering

PhD
(Indian Institute of Technology Guwahati)

Nand Kishore Singh

Mechanical Engineering

PhD
(Indian Institute of Technology Dhanbad)

Faculty from the Industry

Naresh Chandra Sharma

Professor of Practice of Engineering
Ahmedabad University

Ankush Sharma

Senior Scientific Officer
Ahmedabad Textile Industry's Research Association (ATIRA)

Partha Bairi

Senior Scientific Officer
Ahmedabad Textile Industry's Research Association (ATIRA)

Bhushan Chaudhary

Head - NPD & Operation
Ahmedabad Textile Industry's Research Association (ATIRA)

Deepak Tadse

Deputy General Manager
Arvind Composites

Chetan Patel

Chief Manager
Arvind Composites

Advisory Board Members

Naresh Bhatnagar

Department of Mechanical Engineering
Indian Institute of Technology Delhi

Ramesh Sundaram

Ex-Senior Scientist and Head
Composites Division
NAL, Bangalore

Ashok Kumar Sood

Ex-General Manager
Design and Development Complex
HAL Nashik, Bangalore

Puneet Mahajan

Department of Applied Mechanics
Indian Institute of Technology Delhi

Makarand D Joshi

Director
R&DE (Engineers)
DRDO

Amit Vijay

Director & CEO
Rockman Advanced Composites

Sharad Kale

Owner
Kale Texnique

Pragnesh Shah

Director
Ahmedabad Textile Industry's Research Association (ATIRA)

Career Prospects

Ahmedabad University has established robust partnerships with leading composites industries through Memorandums of Understanding (MoUs) with esteemed organisations such as EPP Composites, Rockman Automation, Indian Innovatics and Arvind Composites. These collaborations enable students to gain practical insights and access to advanced industry practices. Additionally, the University closely engages with prominent companies like L&T Composites, Reliance Composites, TATA Advanced Materials, Space Applications Centre (SAC), Indian Space Research Organisation (ISRO), and Defence Research and Development Organisation (DRDO). Through these associations, students have access to unparalleled opportunities for working on real-world challenges, contributing to innovative research, and undertaking thesis projects that address critical industry needs. This seamless integration of academia and industry equips our graduates with the skills and expertise to excel in the ever-evolving field of composites.

Select companies active in Composites area:

Aerospace and Defence

- Hindustan Aeronautics Ltd (HAL)
- Boeing
- Maini Aerospace
- National Aerospace Laboratories (NAL)
- Infosys
- Kineco Limited
- Mahindra Defence
- Aeronautical Development Agency (ADA)
- Defence Research and Development Organization (DRDO)
- Indian Space Research Organization (ISRO)
- Airbus
- Adani Defence Systems and Technologies Limited
- Aeronautical Development Establishment (ADE)
- Adani Defence Systems and Technologies Limited
- Absolute Composites Private Limited

Automotive/Construction/ Sports/Healthcare

- HCL Technologies
- Infosys
- Kineco Limited
- Tata Motors
- HCL Technologies
- Absolute Composites Pvt Ltd
- Tata Advanced Systems Ltd. (TASL)
- Arvind Advanced Materials
- Larsen & Turbo

Career Planning and Placement

Industry Centric Thesis

- Students spend 1 year working on real-world industry problems during their thesis, showcasing their potential and value to the company.
- Successful projects often lead to direct industry absorption or provide students with in-depth insights to pursue roles in similar organisations, with full support from faculty and the Career Development Centre (CDC) of Ahmedabad University.

Startup Ecosystem

- With India being a global hub for startups, Ahmedabad University offers dedicated guidance through Venture Studio.
- Students receive comprehensive support, including workspace, patenting assistance, technical mentoring, and access to funding from government and private entities.

Research Pathways

- For students aspiring to pursue research in composites, Ahmedabad University provides a strong foundation for PhD admissions at leading universities worldwide.
- Initial research conducted at Ahmedabad University ensures a seamless transition to advanced academic opportunities in universities worldwide.

Career Development Centre

The Career Development Centre (CDC) at Ahmedabad University prepares students for successful careers by offering access to resources enabling them to explore, discover, develop, and pursue personal and professional goals while facilitating their connection to the professional world. CDC assists students in tapping such active connections to obtain summer internships at the end of their first year, facilitates final placement, and prepares them for successful careers by augmenting their technical and technological skill sets.

How can the CDC help you?

The CDC offers support to students in the following areas:

- Career counselling, guidance and planning
- Career assessment and testing
- Career development workshops and interactions with industry leaders
- Placement and internship assistance
- Professional grooming sessions
- Personality development workshops
- Communication proficiency interventions
- Resume writing workshops
- Mock group discussions and personal interviews
- Quantitative, analytical and logical practice tests
- Aptitude practice tests

Campus Infrastructure

The Ahmedabad University campus offers a modern, sustainable, and fully networked environment designed to enrich the learning experience. The state-of-the-art infrastructure at the University includes modern and technically equipped classrooms, laboratories, a central library, and other learning resources. It provides comprehensive facilities for student well-being, including accommodation, sports facilities, cafes, spaces for recreation, and a wellness centre.

The award-winning University Centre is a vibrant hub for exchange of ideas, informal meetings, and social events. The eco-friendly campus, characterised by a rich biodiversity, has implemented sustainability strategies to enhance resilience against extreme heat, reduce water runoff, and augment green spaces for the entire community.

Student Housing

The Ahmedabad University student residencies offer high-quality, comfortable, and secure living accommodations. Committed to fostering a sense of community, the residencies celebrate diversity in ideas, lifestyles, and cultural practices, providing a true home-away-from-home experience.

Located within a one-kilometer radius of Ahmedabad University's Central Campus, the residencies offer air-conditioned accommodations on a sharing basis, subject to availability. Shared dining halls, gymnasiums, and recreational spaces are available for residents' convenience. The University also provides transportation to and from the campus. All residencies are under 24/7 security surveillance, with wardens, security guards, CCTV cameras, and on-call medical services ensuring residents' safety and wellbeing.

Life at Ahmedabad

At Ahmedabad University, learning extends beyond the classroom. Vibrant student clubs, cultural events, and a robust support system create a strong community. On campus, students receive the support and resources they need to succeed.

Located in the heart of Ahmedabad, India's first UNESCO World Heritage City, the University offers a unique blend of academic excellence and cultural experiences. The city's vibrant mix of tradition and modernity provides an inspiring backdrop for holistic education and exploration. The city brims with opportunities for students who can participate in inter-college competitions, music and performance festivals and explore ancient monuments, vibrant markets, and more.

Student Testimonials

"Joining this University has been an exciting journey! The supportive faculty, diverse peers, and vibrant campus environment have made me feel welcomed and inspired to grow both academically and personally. The engaging classes and extracurricular opportunities have broadened my horizons, and I'm excited for what's ahead. It already feels like a second home."

Krishna Bhavsar

Class of 2026

Ahmedabad University

Radhakrishna Kamat

Class of 2026

Ahmedabad University

"Joining the MTech in Composites programme was the best decision I made for my professional growth. The interdisciplinary curriculum covers everything from the fundamentals of composite materials to their applications in sectors like aerospace and automotive. The state-of-the-art labs and facilities make learning engaging and practical. The emphasis on research and innovation has inspired me to work on a project that could revolutionise lightweight structures."

Accreditations and Awards

- Recognised by University Grants Commission to award degrees under Section 22 of the UGC Act, 1956, in 2010
- Recognised by the Government of Gujarat as a Centre of Excellence
- Accredited with an 'A' grade by the National Assessment and Accreditation Council (NAAC)
- Awarded a 5-star rating, the highest awarded in the Gujarat State Institutional Rating Framework (GSIRF) for 2021-22 by the Knowledge Consortium of Gujarat (KCG), Department of Education, Government of Gujarat
- Recognised by the UGC under Section 12(B) of the UGC Act, becoming one of the few private research universities to have been awarded this recognition for select research universities
- Recognised as a Highly Commended University for Teaching and Learning Strategy of the Year in the Times Higher Education (THE) Awards Asia 2023
- Awarded the Association to Advance Collegiate Schools of Business (AACSB) Innovations That Inspire Award 2023 for its Foundation Programme
- Awarded Gold Rating by the Indian Green Building Council for achieving the Green Building Standards at our University Centre
- Awarded the Royal Institute of British Architects (RIBA) International Award for Excellence 2024 for our University Centre

Admissions

Eligibility

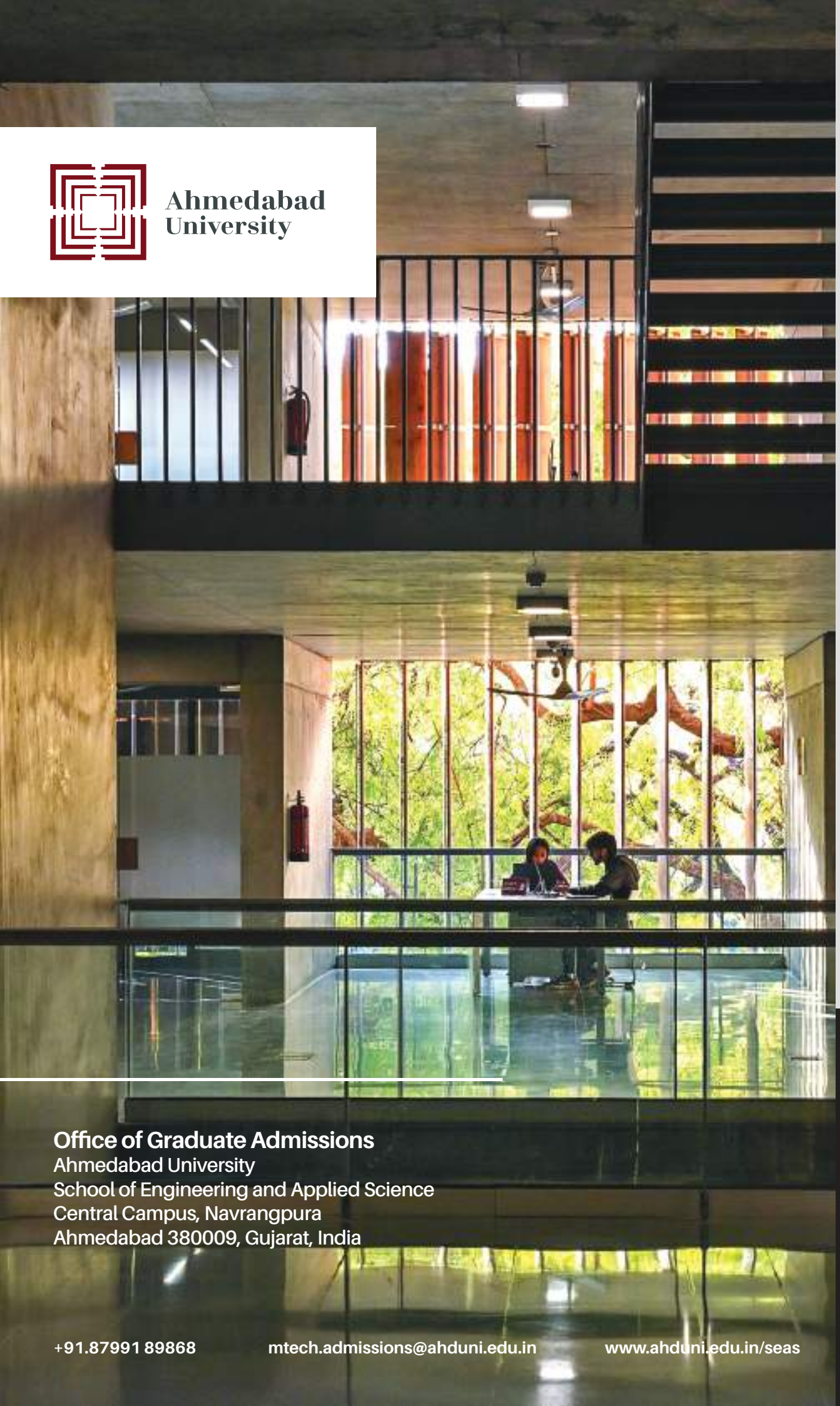
- BTech degree in any of the following disciplines: Mechanical, Aerospace, Chemical, Metallurgy, Material Science, Mechatronics and Automation, Civil, Textile, Naval Architecture, Marine, Mining, Production and Industrial, Textile, Engineering Sciences or Agricultural Engineering and all allied branches
- The GATE score is optional. Students without a GATE score will have to undergo a written test
- All students (with or without the GATE score) will have to appear in a personal interaction for selection
- Graduates of other engineering branches will also be considered subject to prior preparation, evaluation and followed by a personal interview

Selection Process

- Eligible candidates can submit an online application form with a payment of INR 1200 as application fees (non-refundable)
- Candidates can submit their application without a score and update the entrance test scores
- Shortlisted candidates will be called for faculty interaction on campus or online
- Based on a holistic assessment, offers will be made to deserving candidates

Fee Structure and Financial Aid

Please scan the QR code to view the fees and the financial aid.



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