

Executive MTech IN APPLIED MECHATRONICS AND ROBOTICS

Elevating Expertise, Redefining Insights

2 Years | Online Immersive Sessions | Graduate from an IIT

Forge Futures, Innovate Beyond - IIT Bhilai's Distinctive Edge

Indian Institute of Technology (IIT) Bhilai was established in the state of Chhattisgarh by the Ministry of Education in the year 2016.

IIT Bhilai is presently housed in its permanent campus at Kutelabhata, Bhilai, Chhattisgarh.

At IIT Bhilai, we understand the demands of the dynamic corporate landscape, and our Executive MTech programs are meticulously crafted to provide a seamless blend of academic excellence and real-world applicability. Whether you aspire to advance in your current role, switch career paths, or stay ahead of industry trends, our Executive MTech courses offer the strategic edge you need to thrive in a competitive landscape.





Program Overview

The Executive MTech in Applied Mechatronics and Robotics is an advanced course of study that fuses multiple disciplines, preparing students for careers in mechatronics and robotics. This program begins with core principles, introducing the synergy between mechanical engineering, electronic control systems, and computer science. As students progress, they delve into specialized areas of robotics and automation, focusing on design, analysis, and implementation in various industries.

Who Can Apply?

Min 2 years of Experience within preceding 5 Years

Should have B.Tech/ BE/ M.Tech/ MSc (In Relevant Field- 4 Semester Program) / MCA (4 Semester Program) / MS Degree (min. 4 Semester Program).

In the qualifying degree at least 55 percent marks or equivalent 5.5 CGPA/CPI must be there. In case of the candidate belonging to SC, ST, or Persons with Disability (PwD) category, this is relaxed to 50% or equivalent 5.0 CGPA/CPI. For MCA/MSC passed graduates, the percentage score of MCA/MSC would be considered. For BE/BTech Engineering graduates without PG specialization, the percentage score of the undergraduate degree would be considered. For a post graduation in the Engineering field of study, PG score qualification can be considered.

Selection process will be scheduled post counseling & application process, depending on the number of eligible applications as per seat availability for the program. This entire process will be online.

Who Is This Program For?

The Executive MTech in Applied Mechatronics and Robotics is tailored for professionals already immersed in technology-related domains such as IT professionals, software engineers, and experts in Mechatronics and Robotics.

Entrepreneurs, innovators, and tech enthusiasts, as well as engineers aspiring to master the dynamic field of Executive MTech in Applied Mechatronics and Robotics, will find this program specifically designed to meet their needs.

For engineers and software developers aiming to cultivate a profound understanding of Mechatronics and Robotics, the Executive MTech program offers invaluable insights and skills development.

PROGRAM OBJECTIVES

To introduce the fundamental concepts of robotics, focusing on the principles of robot design, operation, and control.

To study the role of robotics in various industries and future technological trends.

To introduce the fundamental concepts and components of mechatronic systems.

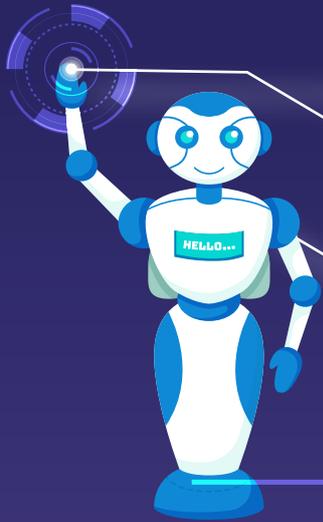
To foster the ability to analyze and synthesize mechatronic systems for various applications.

To understand the fundamental principles and workings of various sensors and instrumentation technologies.

To impart a comprehensive understanding of advanced robotic systems, including their design, control, and applications.

To explore advanced control systems, sensors, and actuators used in the development of humanoid robots.

To develop skills in designing and implementing motion planning strategies for various robotic systems.



PROGRAM HIGHLIGHTS

- An esteemed certification, campus immersion & alumni status from IIT Bhilai
- Learn through Virtual Instructor-Led Training (VILT)
- Explore top-notch learning with industry experts



PROGRAM STRUCTURE

Sem	Course Code	Course Name	L-T-P-C	Credits	Category
I	MRL501	Fundamentals of Mechatronics	2-0-0-2	2	Core
I	MRL502	Mechanisms for Robotic Systems	2-0-0-2	2	Core
I	MRL503	Modern Control Systems	2-0-0-2	2	Core
I	MRL504	Sensors for Robotics	2-0-0-2	2	Core
I	MRL505	Data Analysis and Visualization	2-0-0-2	2	Core
I	MRL512	Artificial Intelligence	2-0-0-2	2	Core
II	MRL6XX	Elective - ME -1	2-0-0-2	2	Elective (E)
II	MRL6XX	Elective - EE -1	2-0-0-2	2	Elective (E)
II	MRL6XX	Elective - DSAI-1	2-0-0-2	2	Elective (E)
II	MRL6XX	Elective - MT & R- 1	2-0-0-2	2	Elective (E)
II	MRP601	Capstone Project	0-0-8-4	4	Project (P)
III	MRL6XX	Elective - ME - 2	2-0-0-2	2	Elective (E)
III	MRP6XX	Elective - EE - 2	2-0-0-2	2	Elective (E)
III	MRP6XX	Elective - DSAI - 3	2-0-0-2	2	Elective (E)
III	MRP6XX	Elective - MT & R -3	2-0-0-2	2	Elective (E)
III	MRMP602	Minor Project	0-0-4-2	2	Project (P)
IV	MRMP603	Major Project	0-0-12-6	6	Project (P)
IV		Campus immersion program / Electives	0-1-6-4	4	
				44	

Bucket	Course Code	List of Elective Courses	L-T-P-C	Credits
Electives in ME	MRL511	Actuators	2-0-0-2	2
	MRL622	Automation	2-0-0-2	2
	MRL623	Advanced Mechanisms	2-0-0-2	2
	MRL624	Smart Materials and Structures	2-0-0-2	2
	MRL625	Robotics and Human -Machine Interaction	2-0-0-2	2
	MRL626	Advanced CAD for Mechatronic Systems	2-0-0-2	2
Electives in EE	MRL602	Advanced Control Systems	2-0-0-2	2
	MRL608	Signal Interface Circuits	2-0-0-2	2
	MRL627	Embedded Systems for Robotics	2-0-0-2	2
	MRL628	Power Electronics for Robotic Systems	2-0-0-2	2
	MRL629	Sensors and Actuator Interfaces	2-0-0-2	2
	MRL630	Robotics Communication Networks	2-0-0-2	2
Electives in DSAI	MRL613	Soft Computing	2-0-0-2	2
	MRL614	Machine Learning	2-0-0-2	2
	MRL631	AI in Robotics	2-0-0-2	2
	MRL632	Deep Reinforcement Learning	2-0-0-2	2
	MRL633	Predictive Analytics for Robotic Systems	2-0-0-2	2
	MRL634	Natural Language Processing for Robotics	2-0-0-2	2
Electives in MT&R	MRL614	UAV Guidance & Navigation	2-0-0-2	2
	MRL621	Industry 4.0	2-0-0-2	2
	MRL623	Machine Vision for Robotics	2-0-0-2	2
	MRL635	Autonomous Vehicles	2-0-0-2	2
	MRL636	Underwater Robotics	2-0-0-2	2
	MRL637	Swarm Robotics	2-0-0-2	2
	MRL638	Micro -Nano Robotics	2-0-0-2	2

Program Elective and Open Elective courses, along with their credits, are tentative and subject to change



CORE LEARNING OUTCOMES

- Ability to understand and apply basic principles of robotics in design and development.
- Proficiency in analyzing robotic kinematics and dynamics for various applications.
- Competence in applying mechatronic principles to real-world problems and innovative solutions.
- Familiarity with current trends and emerging technologies in sensor and instrumentation fields.
- Skills in critically analyzing robotic systems' performance and proposing innovative solutions for improvement.
- Expertise in interdisciplinary collaboration, integrating knowledge from electronics, computer science, and mechanics in robotics.
- Students will acquire the skills to critically assess and contribute to future developments in humanoid robotics technology.
- Skills in evaluating and implementing state-of-the-art technologies in robot motion planning.
- Capability to develop solutions for complex navigation problems in robotics.
- Understanding of the ethical implications and real-world applications of mobile robotics technology.

PROGRAM ADMISSION JOURNEY



STEP 1:

Fill up an online application form, upload the required documents and submit application



STEP 2:

Make the application payment



STEP 3:

Shortlisting based on work, and education profile



STEP 4:

If shortlisted, you will receive an offer letter from IIT Bhilai



STEP 5:

Pay admission confirmation fee within 7 days of receiving the offer letter

Selection process will be scheduled post-counseling & application process, depending on the number of eligible applications as per seat availability for the program. This entire process will be online.

Note: The application fee once paid is not refundable. IIT Bhilai reserves the right to conduct the admissions process. By submitting the application, the students agree that any decision regarding Admissions from IIT Bhilai will be final and binding.

Fee Structure

Executive MTech in Applied Mechatronics and Robotics

Application Fee (Non-Refundable)	₹ 5,000/-			
Fees	Instalment 1	Instalment 2	Instalment 3	Instalment 4
	₹ 91,250/-	₹ 91,250/-	₹ 91,250/-	₹ 91,250/-
Total Fees	₹ 3,70,000/-			

Optional Fees

Head	Sem 1	Sem 2	Sem 3	Sem 4	Total
Optional Campus Immersion Fee	₹ 0/-	₹ 10,000/-	₹ 0/-	₹ 10,000/-	₹ 20,000/-
Optional Institute Alumni Fee	₹ 0/-	₹ 0/-	₹ 0/-	₹ 6,000/-	₹ 6,000/-

Cancellation & Fee Refund Policy:

➤ Application Fee: Non-refundable.

➤ Course Fee Refund:

A refund of 90% of the paid course fee will be issued if a request is raised before the Batch commencement date.

No refund will be provided on or after the batch commencement date.



Tools and Technologies

Virtual Labs and Simulation Tools



For simulation and analysis of mechatronics & control systems



Open-source framework for robot software development



CAD design & simulation in mechatronics

Programming Platforms



Robotics and mechatronics - machine learning & data analysis



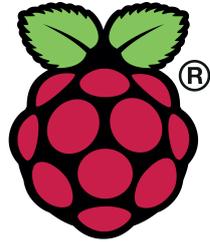
Microcontroller programming & embedded systems

Software for Statistical Analysis & Data Processing



Data analysis & statistics

Remote Access Labs & Hardware Kits

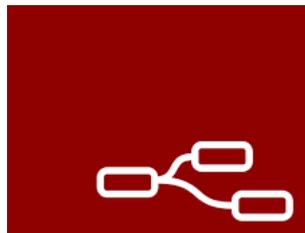


Raspberry Pi



DIY robotics kits - practical experiments at home

Internet of Things (IoT) Platforms



Node-RED



IoT CLOUD

For IoT development & experiments.

AI & ML Platforms



Advanced electives in AI & ML



Get In Touch With Us

For registration and any other information please get in touch with us at admission.iitbhilai@digiversity.com

Contact us: 033-4058-6356