SYLLABUS

Executive M.Tech - Artificial Intelligence

M.Tech. (A.I)

About the Program

The M.Tech Executive in Artificial Intelligence at IIT Bhilai is designed for seeking to gain advanced knowledge and skills in Artificial Intelligence (AI). The program combines theoretical concepts with practical applications, enabling participants to design and deploy AI-based solutions for real-world challenges. The curriculum emphasizes machine learning, deep learning, natural language processing, computer vision, and AI ethics while fostering innovation and leadership in AI technologies.

The program is structured to be flexible and interactive, offering a blend of online classes, elective courses, and project-based learning to cater to the needs of working professionals. Graduates will be equipped to pursue roles such as AI researchers, data scientists, and AI consultants.

Program Learning Objectives (PLOs)

	Learning Objective
PLO1	Acquire a strong foundation in AI principles, methodologies, and tools.
PLO2	Develop advanced technical skills in AI domains such as machine learning, deep learning, and NLP.
PLO3	Gain expertise in designing and implementing AI solutions for real-world problems in various industries.
PLO4	Understand ethical, societal, and governance implications of deploying AI technologies.
PLO5	Foster innovation and critical thinking to contribute to AI research and advancements.
PLO6	Build leadership and collaborative skills to lead AI-driven projects and multidisciplinary teams.

Program Outcomes (POs)

	Program Outcome
PO1	Demonstrate proficiency in core AI technologies, including neural networks, computer vision, and NLP.
PO2	Analyze and solve complex problems using AI tools and techniques with an emphasis on optimization.
PO3	Design, develop, and deploy AI-based systems while ensuring scalability and efficiency.
PO4	Adhere to ethical standards and address societal impacts of AI applications.
PO5	Effectively communicate AI concepts and solutions to stakeholders and multidisciplinary teams.
PO6	Exhibit lifelong learning abilities to stay updated with emerging AI technologies and trends.

Course Structure For Executive M.Tech. (AI)

Semester I (Total Credits - 10)

Course Code	Course Name	L	T	P	C	Category
AI01	Introduction to Artificial Intelligence	2	1	0	3	Core Course
AI02	Mathematics and Programming for Artificial Intelligence	3	1	0	4	Core Course
AI03	Machine Learning	2	0	2	3	Core Course

Semester II (Total Credits - 9)

Course Code	Course Name	L	T	P	C	Category
AI04	Deep Learning	2	0	2	3	Core Course
AIEXX	AI Electives-1	3	0	0	3	Elective 1
AIEXX	AI Electives-1	3	0	0	3	Elective 2

Semester III (Total Credits - 9)

Course Code	Course Name	L	T	P	C	Category
AIEXX	AI Electives-2	3	0	0	3	Elective 3
AIEXX	AI Electives-2	3	0	0	3	Elective 4
AIEXX	AI Electives-2	3	0	0	3	Elective 5

Semester IV (Total Credits - 12)

Course Code	Course Name	L	T	P	C	Category
AIP01	Capstone Project	0	0	24	12	MTech Project
OR						
AIT01*	Thesis	x	x	x	12	MTech Thesis

Semester - V* (Total Credits - 14)

Course Code	Course Name	L	T	P	C	Category
AIT01*	Thesis	x	x	x	14	MTech Thesis

* Only for those who have opted for the equivalent degree to the regular MTech Program

Students registered only for the Executive MTech (Online) Program:
Total Credits : 10 (Semester I)+ 9 (Semester II)+ 9 (Semester - III) + 12 (Semester - IV) = 40

Students opted for the equivalent degree to the regular MTech Program
Total Credits : 10 (Semester I) + 9 (Semester II) + 9 (Semester III) + 12 (Semester - IV) + 14 (Semester V) =54

Additional Notes:

- **Program Equivalency:** The Executive MTech (Online) Program is not equivalent to the regular offline MTech program at IIT Bhilai.
- **Thesis Requirements:** To achieve equivalency with the regular offline MTech program, the candidate must complete a total of 26 thesis credits on campus from the fourth semester onwards.

Bucket for Electives

Category	Sem	Course Code	Course Name	L	T	P	C
AI Electives - 1	2	AIE01	Reinforcement Learning	3	0	0	3
	2	AIE02	Natural Language Processing	3	0	0	3
	2	AIE03	Computer Vision	3	0	0	3
	2	AIE04	Systems for AI/ML	3	0	0	3

Category	Sem	Course Code	Course Name	L	T	P	C
AI Electives - 2	3	AIE04	Learning with Graphs	3	0	0	3
	3	AIE05	Distributed AI Systems	3	0	0	3
	3	AIE06	Generative AI	3	0	0	3
	3	AIE07	Agents and Prompt Engineering	3	0	0	3
	3	AIE08	AI for Industry (IoT, Robotics, UAV)	3	0	0	3
	3	AIE09	Security and Privacy of AI	3	0	0	3

Electives will be floated based on the availability of faculty members. This list may be updated from time to time and change batch-wise.