MAULANA AZAD
NATIONAL INSTITUTE OF TECHNOLOGY, Bhopal - 462003
DEPARTMENT OF MECHANICAL ENGINEERING
M.Tech (Part Time) in Automation and Robotics
PROPOSED SCHEME M.Tech (w.e.f. July 2024)

First Semester:

Subject Code	Subject	Periods Per Week			Total Credits
		L	T	P	
AR24511	Metaheuristic Techniques	3	-	-	3
AR24512	Fundamentals in Robotics	3	-	-	3
	Departmental Elective -1	3	-	-	3
AR24513	Automation and Robotics Lab-I	-	-	2	1
Total Hours:11 **Total Credits:10**		**Total Semester Credits**			**10**

Second Semester:

Subject Code	Subject	Periods Per Week			Total Credits
		L	T	P	
AI24562	Sensors, Microcontrollers, and Embedded Systems	3	-	-	3
	Departmental Elective -2	3	-	-	3
AR24514	Mechatronics Lab.	-	-	2	1
AR24515	Seminar-I	-	-	2	1
AR24516	Minor Project-1 (Self Learning)				2
Total Hours:12 **TotalCredits:20**		**Total Semester Credits**			**10**

- **Communication Skill will be Audit Course of 2 credits which will not be counted in SGPA/CGPA calculation**

Third Semester:

Subject Code	Subject	Periods Per Week			Total Credits
		L	T	P	
AR24521	Robot Dynamics and Control	3	-	-	3
AR24522	Automation in Manufacturing	3	-	-	3
	Departmental Elective -3	3	-	-	3
AR24523	Automation and Robotics Lab-II	-	-	2	1
Total Hours:11 **Total Credits:30**		**Total Semester Credits**			**10**

Fourth Semester:

Subject Code	Subject	Periods Per Week			Total Credits
		L	T	P	
	Departmental Elective -4	3	-	-	3
	Open Elective	3	-	-	3
AR24524	Robotic Programming Lab	-	-	2	1
AR24525	Seminar-II	-	-	2	1
AR24526	Minor Project-2 (Self Learning)				2
Total Hours:12 **Total Credits:40**		**Total Semester Credits**			**10**

Fifth Semester:

Subject Code	Subject	Scheme of studies periods per week			Total Credits
		L	T	P	
AR24611	Dissertation- Phase-I	-	-	40	20
Total Hours: 40 **Total Credits: 60**	**Total Semester Credits**				**20**

Sixth Semester:

Subject Code	Subject	Periods Per Week			Total Credits
		L	T	P	
AR24621	Dissertation Phase-II	-	-	40	20
Total Hours:40 **Total Credit:80**		**Total Semester Credits**			**20**

List of Department Electives

Course No.	Subject	Course No.	Subject
AR24551	Soft Robotics	AI24521	Deep Learning
AR24552	Control Systems for Robots	AI24581	Robotics and Planning Algorithms
AR24553	Micro Manufacturing	AI24512	Machine Learning
AR24554	Mechatronics	AI24522	Computer Vision
AR24555	Digital Manufacturing	AI24577	Internet of Things
AR24556	CAD/CAM and CIM	CS24505	Digital Image Processing
AR24557	Multibody Dynamics	VED24101	VLSI Design
AR24558	Autonomous Robot Technologies	SM24551	Micro-electro Mechanical Systems
AR24559	Additive Manufacturing Technologies	ME24524	Research Methodology

List of Open Electives

ARP24581	Introduction to Urban Planning
BSE24581	Bioprocess Engineering
BSE24582	Biophysics Tools and Techniques
CHE24581	Analytical Techniques
CHE24582	Green Technology & Processes
CE24581	Solid Waste Management
CE24582	Basic Concept of GIS
CE24583	Road Safety
CSE24582	Advanced Data Structures and Algorithms
PHY24581	Nanotechnology and Nanoscience
EE24581	Electric Machines & Applications
EE24582	Control and Instrumentation
ECE24581	Introduction to Fuzzy Logic
ECE24582	Neural Networks and its Applications
EC24581	Energy Resource Technologies
HUM24581	Intellectual Property Rights for Engineers
HUM24582	Applied Psychology :Human Centered Design and Engineering
MTH24581	Advanced Operations Research
MTH24582	Computing Technologies
MME24581	Advanced Instrumentation Methods for Material Analysis
MME24582	Smart Materials and their Application
MBA24581	Engineering Startup Management