



**MAULANA AZAD  
NATIONAL INSTITUTE OF TECHNOLOGY, BHOPAL-462003  
MECHANICAL ENGINEERING DEPARTMENT**

**M. Tech. in Automation and Robotics  
SCHEME OF STUDY (w.e.f. July 2022)**

**First Semester:**

Course Code	Subjects	Scheme of the studies period per week			Total Credits
		L	T	P	
AR 511	Metaheuristic Techniques	3	-	-	3
AR 512	Fundamentals in Robotics	3	-	-	3
AI 562	Sensors, Microcontrollers, and Embedded Systems	3	-	-	3
AI 513	Machine Learning	3	-	-	3
HUM 511	Communication Skills	2	-	-	2
	Elective 1 (A)	3	-	-	3
	Elective 2 (B)	3	-	-	3
AR 513	Robotics Lab	-	-	2	1
AR 514	Seminar-I	-	2	-	1
<b>Total Hours: 24 Total Credits: 22</b>		<b>Total Semester Credits</b>			<b>22</b>

**Second Semester:**

Course Code	Subjects	Scheme of the studies period per week			Total Credits
		L	T	P	
AR 521	Robot Dynamics	3	-	-	3
AR 522	Automation in Manufacturing	3	-	-	3
AI 523	Computer Vision	3	-	-	3
	Elective 3 (A)	3	-	-	3
	Elective 4 (A)	3	-	-	3
	Elective 5 (C)	3	-	-	3
ME 524	Research Methodology	1	1	-	2
AR 523	Automation Lab	-	-	2	1
AR 524	Seminar-II	-	-	2	1
<b>Total Hours: 24 Total Credits: 44</b>		<b>Total Semester Credits</b>			<b>22</b>

**Third Semester:**

Course Code	Subjects	Scheme of the studies period per week			Total Credits
		L	T	P	
AR 611	Dissertation Phase-I	-	-	32	16
<b>Total Hours: 32</b> <b>Total Credits: 60</b>		<b>Total Semester Credits</b>			<b>16</b>

**Fourth Semester:**

Course Code	Subjects	Scheme of the studies period per week			Total Credits
		L	T	P	
AR 621	Dissertation Phase-II	-	-	40	20
<b>Total Hours: 40</b> <b>Total Credits: 80</b>		<b>Total Semester Credits</b>			<b>20</b>

## Electives

List of Electives (A)		List of Open Electives (C)	
AR 551	Soft Robotics	ARP - 581	Introduction to Urban Planning
AR 552	Control Systems for Robots	BSE – 581	Bioprocess Engineering
AR 553	Micro Manufacturing	BSE – 582	Biophysics Tools and Techniques
AR 554	Mechatronics	CHE – 581	Analytical Techniques
AR 555	Digital Manufacturing	CHE – 582	Green Technology & Processes
AR 556	CAD/CAM & CIM	CE – 581	Solid Waste Management
AR 557	Multibody Dynamics	CE – 582	Basic Concept of GIS
CN 551	Internet of things	CE – 583	Road Safety
DC 523	Digital Image Processing	PHY – 581	Nanotechnology and Nanoscience
List of Electives (B)		EE – 581	Electric Machines & Applications
SM 513	Finite Element Methods	EE – 582	Control and Instrumentation
SM 514	Micro-electro Mechanical System	EC - 581	Energy Resource Technologies
VE 511	VLSI Design	HUM – 581	Intellectual Property Rights for Engineers
		HUM – 582	Applied Psychology: Human Centered Design and Engineering
		MTH – 581	Advanced Operations Research
		MTH – 582	Computing Technologies
		MME – 581	Advanced Instrumentation Methods for Material Analysis
		MME – 582	Smart Materials and their Application
		MBA-581	Engineering Startup Management