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
Total Hours: 24 **Total Credits: 22**		**Total Semester Credits**			**22**

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
Total Hours: 24 **Total Credits: 44**		**Total Semester Credits**			**22**

Third Semester:

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

Fourth Semester:

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

Electives

List of Electives (A)	
AR 551	Soft Robotics
AR 552	Control Systems for Robots
AR 553	Micro Manufacturing
AR 554	Mechatronics
AR 555	Digital Manufacturing
AR 556	CAD/CAM & CIM
AR 557	Multibody Dynamics
CN 551	Internet of things
DC 523	Digital Image Processing
List of Electives (B)	
SM 513	Finite Element Methods
SM 514	Micro-electro Mechanical System
VE 511	VLSI Design

List of Open Electives (C)	
ARP - 581	Introduction to Urban Planning
BSE – 581	Bioprocess Engineering
BSE – 582	Biophysics Tools and Techniques
CHE – 581	Analytical Techniques
CHE – 582	Green Technology & Processes
CE – 581	Solid Waste Management
CE – 582	Basic Concept of GIS
CE – 583	Road Safety
PHY – 581	Nanotechnology and Nanoscience
EE – 581	Electric Machines & Applications
EE – 582	Control and Instrumentation
EC - 581	Energy Resource Technologies
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