

B. Tech. (Robotics and Artificial Intelligence)

Course Structure

Semester I

BSC 1	MTL BS101	Engineering Mathematics – I	3	1	0	4
BSC 2	PHL BS101	Engineering Physics	3	0	0	3
BSC 2	PHP BS101	Engineering Physics Lab	0	0	2	1
ESC 1	CSL ES101	Introduction to C Programming	3	0	0	3
ESC 1	CSP ES101	Introduction to C Programming Lab	0	0	2	1
ESC 2	EEL ES103	Foundation course in Electrical and Electronics Engineering	3	0	0	3
ESC 2	EEP ES103	Electrical and Electronics Engineering Lab	0	0	2	1
SEC 1	MEM SE107	Fabrication Lab	1	0	2	2
AEC 1 / VAC 1	MEM VA103	MATLAB for Engineers	1	0	2	2
		Cumulative Credits	20			20

Semester II

BSC 3	MTL BS102	Engineering Mathematics – II	3	1	0	4
BSC 4	MTL DC205	Probability and Statistics	3	0	0	3
DCC 1	MEL DC106	Basics of Mechanical Engineering	3	1	0	4
DCC 2	ECL DC108	Digital Electronics	3	0	0	3
DCC 2	ECP DC108	Digital Electronics Lab	0	0	2	1
SEC 2	MEM S102	Engineering Graphics with CAD	1	0	2	2
AEC 2	XXX AEXXX	Ability Enhancement Course				2
VAC 2	XXX VAXXX	Value Added course				2
MAC 1	PCN MA102	Universal Human Values-II	2	0	0	0
		Cumulative Credits	42			22

Semester III

BSC 5	MTL DC203	Integral Transforms and Complex Analysis	3	1	0	4
ESC 3	CSL ES205	Introduction to C++ Programming	3	0	0	3
ESC 3	CSP ES205	C++ Programming Lab	0	0	2	1
DCC 3	CSL DC205	Data Science & Analytics	3	0	0	3
DCC3	CSP DC205	Data Science & Analytics Lab	0	0	2	1
DCC 4	MEL DC207	Kinematics of Robots	3	1	0	4
DCC 5	MEL DC209	Robotics & Applications	3	0	0	3
DCC 5	MEP DC209	Robotics Lab	0	0	2	1
SEC 3	XXX SEXXX	Skill Enhancement Course	2	0	0	2
PR	MEI PR203	Summer Internship – I				1
VAC 3	XXX VA XXX	Value Added Course				2
		Cumulative Credits	66			24

Semester IV

DCC 6	MEL DC212	CAD for Robotics	3	0	0	3
DCC 6	MEP DC212	CAD for Robotics Lab.	0	0	2	1
DCC 7	EEL ES202	Electrical Machines for Robotics	3	0	0	3
DCC 7	EEP ES202	Electrical Machines Lab for Robotics	0	0	2	1
DCC 8	ECL DC208	Control System	3	0	0	3
DCC 8	ECP DC208	Control System Lab	0	0	2	1
DCC 9	MEL DC214	Sensors and Actuators for Robotics	3	1	0	4
DCC 10	MEL DC216	Robot Dynamics	3	0	0	3
DCC 10	MEP DC216	Robot Dynamics Lab	0	0	2	1
VAC 4	BTL VA202	Environmental Science & Education	2	0	0	2
		Cumulative Credits	88			22

Semester V

DCC 11	ECL DC307	Embedded System and Microcontroller	3	0	0	3
DCC 11	ECP DC307	Embedded System and Microcontroller Lab	0	0	2	1
DCC 12	MEL DC307	Drives for Robots	3	0	0	3
DCC 12	MEP DC307	Drives for Robots Lab	0	0	2	1
DCC 13	CSL DC305	Machine Learning	3	0	0	3
DCC 13	CSP DC305	Machine Learning Lab	0	0	2	1
DEC 1	XXL DE3XX	School Elective – I	3	1/0	0/2	4
DEC 2 / GEC 1	XXL GE3XX	School Elective – II/Generic Elective – I	3	1/0	0/2	4
PR	MEI PR303	Summer Internship-II				1
DCC	MED PD303	Project Work -1				2
		Cumulative Credits	111			23

Semester VI

DCC 14	CSL DC302	Deep Learning	3	0	0	3
DCC 14	CSP DC302	Deep Learning Lab.	0	0	2	1
DCC 15	CSL DC306	Image Processing & Computer Vision	3	0	0	3
DCC 15	CSP DC306	Image Processing & Computer Vision Lab	0	0	2	1
DEC 3	MEL DE3XX	School Elective – III	3	1/0	0/2	4
DEC 4 / GEC 2	XXL GE3XX	School Elective – IV/Generic Elective -II	3	1/0	0/2	4
AEC	XXX AE3XX	Management / Entrepreneurship/Economy	3	0	0	3
DCC	MED PR304	Project Work- II				2
MAC 2	PCN MA302	Indian Knowledge System	2	0	0	NC
		Cumulative Credits	132			21

Semester VII

DCC 16	MEL DC403	Smart Manufacturing	3	0	0	3
DCC 16	MEP DC403	Smart Manufacturing Lab	0	0	2	1
DEC 5	MEL DE4XX	School Elective – V	3	1/0	0/2	4
DEC 6 / GEC 3	XXL GE4XX	School Elective – VI/ Generic Elective – III	3	1/0	0/2	4
PR	MEI PR403	Summer Internship –III				2
DCC/PR	MED PR403	Minor Project				4
	Cumulative Credits		150			18

Semester VIII

DCC/PR		Major Project / Internship (Industrial or In-house Project)				10
	MED PR404/MEI PR404	Cumulative Credits	160			10

LIST OF SKILL ENHANCEMENT COURSES

Course Code	Course Title	L-T-P	Credits
MEM SE101/ MEM SE104	Engineering Workshop	1-0-2	2
MEM SE102/ MEM SE103	Engineering Graphics with CAD	1-0-2	2
MEM SE105	3D Printing Technology	1-0-2	2

LIST OF ABILITY ENHANCEMENT COURSES

Course Code	Course Title	L-T-P	Credits
MEM AE101	Presentation Skills and Technical Writing	1-0-2	2

LIST OF VALUE-ADDED COURSES

Course Code	Course Title	L-T-P	Credits
MELVA102	Introduction to Sustainability	2-0-0	2
MEL VA101	Introduction to Product Design	2-0-0	2
MEM VA103	MATLAB for Engineers	1-0-2	2

List of Departmental/School Elective Courses (DEC)

Departmental Elective –I

S. No.	Course Code	Course Title	L-T-P	Credits
1	MEL DE325	Mobile and Micro Robotics	3-1-0	4
2	MEL DE327	Intelligent Manufacturing	3-1-0	4
3	EEE DE324	Power Electronics Controlled Drives	3-1-0	4
4	CSL DE335	Fuzzy logic	3-1-0	4
5	CSM DE337	Programming using Python	3-0-2	4

Departmental Elective –II

S. No.	Course Code	Course Title	L-T-P	Credits
1	MEL DE329	Autonomous Robotics	3-1-0	4
2	MEL DE331	Mechatronics System Design	3-1-0	4
3	ECL DE390	Microcontrollers Architecture and Programming	3-1-0	4
4	CSL DE327	Augmented Reality & Virtual Reality	3-1-0	4
5	EEE DE304	Advanced Control System	3-1-0	4

Departmental Elective –III

S. No.	Course Code	Course Title	L-T-P	Credits
1	CSL DE340	Advanced Artificial Intelligence	3-1-0	4
2	MEL DE328	Stochastic Processes & Random Variables	3-1-0	4

Departmental Elective –IV

S. No.	Course Code	Course Title	L-T-P	Credits
1	CSL DE342	Internet of Things for Robotics	3-1-0	4
2	MEL DE330	Advanced Mechatronics	3-1-0	4
3	EEE DE318	Digital Control System	3-1-0	4

Departmental Elective –V

S. No.	Course Code	Course Title	L-T-P	Credits
1	MEL DE417	Agricultural Robotics	3-1-0	4
2	MEL DE419	Mechatronics for Agriculture	3-1-0	4
3	MEL DE421	Agricultural Plant & Device Control	3-1-0	4

Departmental Elective –VI

S. No.	Course Code	Course Title	L-T-P	Credits
1	MEL DE425	Mechatronics for Medical Applications	3-1-0	4
2	EEE DE416	Fuzzy Logic and Neural Networks	3-1-0	4
3	CSL DE421	Reinforcement Learning	3-1-0	4

List of Generic Elective Courses (GEC)

S. No.	Course Code	Course Title	L-T-P	Credits
1	MEL DE327	Intelligent Manufacturing	3-1-0	4
2	CSL DE342	Internet of Things for Robotics	3-1-0	4
3	MEL DE417	Agricultural Robotics	3-1-0	4
4	MEL DE419	Mechatronics for Agriculture	3-1-0	4
5	MEL DE421	Agricultural Plant & Device Control	3-1-0	4
6	MEL DE425	Mechatronics for Medical Applications	3-1-0	4