

Course Structure for B.Tech Programme
First Year (Common courses for all B.Tech Programme)

First Semester					
S.No.	Subject Code	Subject Name	L-T-P	Credits	Category
1.	BAS - 101	Applied Mathematics-I	3-1-0	4	BAS
2.	BAS-103	Applied Physics-I	2-1-2	4	BAS
3.	BAS-105	Applied Chemistry	2-1-2	4	BAS
4.	BMA - 110/BEC - 110	Engineering Mechanics/Basic Electrical Engineering	3-0-2	4	OEC
5.	BMA - 120/BMA -130	Workshop Practice/ Engineering Graphics	0-1-2	2	OEC
6.	HMC-110/ BCS - 110	Humanities and Social Science/Programming in C Language	3-1-0/ 3-0-2	4	HMC/ OEC
Total				22	

Second Semester					
S.No.	Subject Code	Subject Name	L-T-P	Credits	Category
1.	BAS -102	Applied Mathematics-II	3-1-0	4	BAS
2.	BAS -104	Applied Physics -II	2-1-2	4	BAS
3.	BAS -106	Environmental Science	2-1-2	4	BAS
4.	BEC - 110/BMA -110	Basic Electrical Engineering /Engineering Mechanics	3-0-2	4	OEC
5.	BMA- 130 /BMA -120	Engineering Graphics / Workshop Practice	0-1-2	2	OEC
6.	BCS - 110 / HMC -110	Programming in C language /Humanities and Social Science	3-0-2/ 3-1-0	4	OEC / HMC
Total				22	

B.Tech.(MAE)**Third Semester (Second Year)**

S.No.	Subject Code	Subject Name	L-T-P	Credits	Category
1.	BMA -201	Production technology -I	3-0-2	4	DCC
2.	BMA -203	Strength of Materials	3-0-2	4	DCC
3.	BMA- 205	Thermal Engineering - I	3-0-2	4	DCC
4.	BAS -205	Numerical Techniques for Engineers	2-1-0	3	BAS
5.	BMA- 207	Machine Drawing Lab	0-0-2	1	DCC
6.	BMA- 253	Industrial Training	-	1	DCC
7.	GEC- 201	Generic Open Elective –I	2-0-0/ 1-1-0/ 0-0-4	2	GEC
8.	BEC -209	Analog and Digital electronics	3-0-2	4	OEC
	BCS - 201	Data Structures	3-0-2		
	BIT - 201	Database Management Systems	3-0-2		
	BAS - 201	Material Science and Engineering	3-1-0		
		Total		23	

Fourth Semester (Second Year)

S.No.	Subject Code	Subject Name	L-T-P	Credits	Category
1	BMA- 202	Production technology - II	3-0-2	4	DCC
2	BMA- 204	Theory of Machines	3-0-2	4	DCC
3	BMA -206	Engineering Materials	3-0-2	4	DCC
4	BMA- 208	Thermal Engineering-II	3-0-2	4	DCC
5	BCS -202	Computer Organization & Architecture	3-0-2	4	OEC
	BIT -204	Object Oriented Programming	3-0-2		
	BEC -210	Elements of Information Theory	3-1-0		
	BAS-202	Nano Structures & Materials in Engineering	3-1-0		
	BAS-204	Optical Engineering	2-1-2		
	BAS -206	Optimization Techniques	3-1-0		
6	HMC - 202	Disaster Management	1-0-2	2	HMC
		Total		22	

Fifth Semester (Third Year)

S.No.	Subject Code	Subject Name	L-T-P	Credits	Category
1.	BMA -301	Machine Design	3-0-2	4	DCC
2.	BMA -303	Fluid Mechanics and Hydraulic Machines	3-0-2	4	DCC
3.	BMA -305	Automobile Engineering	3-0-2	4	DCC
4.	BMA -3XX	Department Elective I	3-0-2 /3-1-0	4	DCE
5.	HMC	Professional Ethics and Human Values	3-0-0	3	HMC
6.	BMA- 353	Industrial Training	-	1	DCC
7.	GEC -301	Generic Open Elective- II	2-0-0	2	GEC
		Total		22	

Sixth Semester (Third Year)

S.No.	Subject Code	Subject Name	L-T-P	Credits	Category
1.	BMA- 304	Heat Transfer	3-0-2	4	DCC
2.	BMA -306	Computer Aided Design	3-0-2	4	DCC
3.	BMA -308	Production Management	3-0-0	3	DCC
4.	BMA -310	Advanced Machine Design Lab	0-0-2	1	DCC
5.	BMA -3YY	Department Elective II	3-0-2 /3-1-0	4	DEC
6.	BMA -3ZZ	Department Elective III	3-0-2 /3-1-0	4	DEC
7.	HMC-302	Principles of Management	2-0-0	2	HMC
	HMC-304	Marketing Management	2-0-0		
	HMC-306	Financial Management	2-0-0		
	HMC-308	Human Resource Management	2-0-0		
		Total		22	

Seventh Semester (Fourth Year)

S.No.	Subject Code	Subject Name	L-T-P	Credits	Category
1.	BMA- 401	Finite Element Analysis	3-0-2	4	DCC
2.	BMA- 403	Mechatronics	3-0-2	4	DCC
3.	BMA- 451	Minor Project	0-0-8	4	DCC
4.	BMA- 453	Industrial Training / Internship	-	1	DCC
5.	BMA- 4XX	Department Elective IV	3-0-2 /3-1-0	4	DEC
6.	BMA- 4YY	Department Elective V	3-0-2/ 3-1-0	4	DEC
		Total		21	

Eighth Semester (Fourth Year)

S.No.	Subject Code	Subject Name	L-T-P	Credits	Category
1	BMA -402	Computer Aided Manufacturing	3-0-2	4	DCC
2	BMA -404	Robotics and Computer Integrated Manufacturing	3-0-2	4	DCC
3	BMA- 452	Major Project	0-0-16	8	DCC
4	BMA- 4ZZ	Department Elective VI	3-0-2 /3-1-0	4	DEC
5.	GEC-402	Generic Open Elective III	0-2-0 0-0-4 2-0-0	2	GEC
		Total		22	

Note: All Industrial training / Internships will be done in summer break of previous academic session. Assessment for the same will be done within first two weeks of opening of academic session by department.

List of Department Elective Courses

Category	Course Code	Subject	Credit
Department Elective Course – I	BMA-307	Mechanical Vibration	3-0-2
	BMA-309	Introduction to composites	3-0-2
	BMA-311	Automation in Manufacturing	3-0-2
	BMA-313	IC Engines	3-0-2
	BMA-315	Artificial Intelligence	3-0-2
Department Elective Course – II	BMA-312	Metal Forming & Casting	3-0-2
	BMA-314	Advanced Strength of Materials	3-0-2
	BMA-316	Quality Management & Six Sigma Applications	3-0-2
	BMA-318	Gas Dynamics	3-1-0
	BMA-320	Design of Mechanisms	3-0-2
Department Elective Course – III	BMA-322	Industrial Tribology	3-0-2
	BMA-324	Power Electronics	3-0-2
	BMA-326	Power Plant Engineering	3-0-2
	BMA-328	Combustion, Emission and Pollution Control	3-0-2
Department Elective Course – IV	BMA-405	Tool Engineering	3-0-2
	BMA-407	Welding Technology	3-0-2
	BMA-409	Mechanical Modeling and Simulation	3-0-2
	BMA-411	Flexible Manufacturing System	3-0-2
	BMA-413	Refrigeration and Air-Conditioning	3-0-2
	BMA-415	**E-Learning Based Course-1	
Department Elective Course – V	BMA-417	Agile Manufacturing	3-0-2
	BMA-419	Hydraulic & pneumatic Control	3-0-2
	BMA-421	Ergonomic design	3-0-2
	BMA-423	Computational Fluid Dynamics	3-0-2
	BMA-425	Hydraulic Machines and Hydro-Power Plant	3-0-2
	BMA-427	**E-Learning Based Course-2	
Department Elective Course – VI	BMA-406	Advanced Machine Design	3-0-2
	BMA-408	Maintenance and Reliability	3-0-2
	BMA-410	Reverse Engineering and Rapid Prototyping	3-0-2
	BMA-412	Non-conventional Manufacturing Processes	3-0-2
	BMA-414	Product design & Development	3-0-2
	BMA-416	**E-Learning Based Course-3	
	BMA-418	Fracture Mechanics	3-0-2
	BMA-420	Non-conventional Energy resources	3-0-2
	BMA-422	Cogeneration and Improved Power cycles	3-0-2
	BMA-424	MEMS & NEMS	3-0-2
	BMA- 426	Design of Experiments	3-0-2

M. Tech. (R&A)**First Semester (First Year)**

SNo	Subject Code	Subject Name	L-T-P	Credits	Category
1	MRA - 101	Robotics Engineering	3-0-2	4	DCC
2	MRA - 103	Mechatronics Systems and Applications	3-0-2	4	DCC
3	MRA - 105	Computer Aided Modeling and Analysis	3-0-2	4	DCC
4	MRA - 107	Automation in Manufacturing	3-0-2	4	DCC
5	ROC - 101	Research Methodology	3-0-0	3	ROC
6	GEC - 101	Generic Open Elective	2-0-0 /1-1-0 /0-0-4	2	GEC
		Total		21	

Second Semester (First Year)

SNo	Subject Code	Subject Name	L-T-P	Credits	Category
1	MRA - 102	Pneumatic and Hydraulic Controls	3-0-2	4	DCC
2	MRA- 104	Computer Integrated Manufacturing	3-0-2	4	DCC
3	MRA -106	Microcontroller & Applications	3-0-2	4	DCC
4	MRA -1xx	Department Elective I	3-0-2	4	DEC
5	MRA -1yy	Department Elective II	3-0-2	4	DEC
6	ROC -102	Research Ethics	3-0-0	3	ROC
		Total		23	

Third Semester (Second Year)

SNo	Subject Code	Subject Name	L-T-P	Credits	Category
1	MRA -201	Advanced Robotics	3-0-2	4	DCC
2	MRA -2xx	Department Elective III	3-0-2 / 3-1-0	4	DEC
3	MRA -2yy	Department Elective IV	3-0-2 / 3-1-0	4	DEC
4	MRA -251	Dissertation – I / Project Work	-	8	DCC

5	MRA -253	Industrial Training / Project	-	1	DCC
6	GEC -201	Generic Open Elective	2-0-0 /1-1-0 /0-0-4	2	GEC
		Total		23	

Fourth Semester (Second Year)

SNo	Subject Code	Subject Name	L-T-P	Credits	Category
1	MRA -252	Dissertation – II / Project Work	-	20	DCC
		Total		20	

Note: Industrial training / Internships will be done in summer break of previous academic session.

Assessment for the same will be done within first two weeks of opening of academic session by department.

List of Department Elective Courses

Category	Course Code	Subject	Credit
Department Elective Course – I	MRA -108	Modern Control Theory	3-0-2
	MRA -110	MEMS and Microsystems for Automation	3-0-2
	MRA -112	Applications of AI in Automation	3-0-2
	MRA -114	Instrumentation and Control Engineering	3-0-2
	MRA -116	Higher Numerical Techniques	3-0-2
Department Elective Course – II	MRA -118	Advanced digital signal processing	3-0-2
	MRA -120	Advanced Finite Element Analysis	3-0-2
	MRA -122	Neural Network and Fuzzy Logic	3-0-2
	MRA -124	Optimization for Engineering	3-1-0
	MRA -126	Modelling & Simulation for Automation	3-0-2
Department Elective Course – III	MRA -203	Machine Vision	3-0-2
	MRA -205	Wireless Sensor Networks	3-0-2
	MRA -207	Advanced Mechanism Design	3-1-0
	MRA -209	Applications of Machine learning in Automation	3-0-2
	MRA -211	Design of Experiments	3-0-2
Department Elective Course – IV	MRA -213	Electrical machines and Power systems	3-0-2
	MRA -215	Industrial Engineering	3-0-2
	MRA -217	Embedded System Design for Automation	3-0-2
	MRA -219	Bio Sensors	3-0-2
	MRA -221	Multi-Body Dynamics	3-0-2
	MRA -223	VLSI Design for Automation	3-0-2