

SANJIVANI COLLEGE OF ENGINEERING, KOPARGAON

B. Tech Programme (Mechatronics Engineering)

Academic year 2022-23

Programme Structure: 21-22

First Year

B.Tech. Programme in Mechatronics Engg.											Programme Code: MK	
First year : Semester-I (Curriculum:2022-2023)												
Cat	Abbriv.	Course Title	Teaching scheme/week			Credits L+T+P	Examination scheme					Total
			L	T	P		Theory		Theory		Total	
						ESE	CIA	OR	PR	TW		
BS	BS1001	Engineering mathematics-I	3	1		4	60	40				100
BS	BS1002	Engg Physics	3			3	60	40				100
ES	ES1001	Computer fundamentals and programming	3			3	60	40				100
ES	ES1002	Engg Graphics	2			2	30	20				50
ES	ES1008	Theory of development and engineering thi	2			2	30	20				50
IP	IP	Induction program										-
BS	BS1102	Engg Physics lab			2	1					25	25
ES	ES1101	Computer fundamentals and programming Lab			2	1					25	25
ES	ES1102	Engg graphics lab			2	1					25	25
HSMC	HS1101/2/3	Language proficiency lab(English/German/Japanese)	2		1	1					50	50
ES	ES1108	Theory of development and engineering thinking lab	2		1	1					50	50
Total			13	1	10	19	240	160	0	0	175	575

B.Tech. Programme in Mechatronics Engg.											Programme Code: MK	
First Year: Semester II (Curriculum:2022-2023)												
Cat	Abbriv.	Course Title	Teaching scheme/week			Credits	Examination scheme					Total
			L	T	P		Theory		Theory		Total	
						ISE	CIA	OR	PR	TW		
BS	BS2004	Engineering mathematics-II	3	1		4	60	40				100
BS	BS1003	Engg chemistry	3			3	60	40				100
ES	ES1002	Basic electrical and electronics engg	3			3	60	40				100
ES	ES1004	IT for engineers	2			2	30	20				50
HSMC	HS2004	Physical education and sports	1			1						0
MC	MC1001	Envirnontal sciences	2			Pass/Fail						
ES	ES1008	Engineering mechanics	2			2	30	20				50
BS	BS1104	Engg chemistry Lab			2	1					25	25
ES	ES1101	Basic electrical and electronics engg lab			2	1					25	25
ES	ES1104	IT for engineers			2	1					25	25
ES	ES1105	Workshop practice			2	1					50	50
ES	ES1108	Engineering mechanics lab			2	1					50	50
HSMC	HS2104	Physical education and sports			2	1					50	50
Total			16	1	12	21	240	160	0	0	225	625

Second Year

B.Tech. Programme in Mechatronics Engg.						Programme Code: MK						
Second year: Semester-III (Curriculum:2021-2022)												
Cat	Abbriv.	Course Title	Teaching scheme/week			Credits	Examination scheme					Total
			L	T	P		Theory		Theory			
							ESE	CIA	OR	PR		
PC	PC3001	Basic Concepts of Mechatronics	4			4	60	40				100
PC	PC3002	Strength of Materials	3	1		4	60	40				100
PC	PC3003	Electrical Machines	3			3	60	40				100
PC	PC3004	Programming in Python	3			3	60	40				100
HSMC	HS205	Universal human values	3			3	60	40				100
MC	MC3002	Constitution of India #	2			Pass/Fail						0
PC	PC3101	Basic Mechatronics Lab			2	1					50	50
PC	PC3102	Strength of Materials Lab			2	1			50			50
PC	PC3103	Electrical Machines Lab			2	1			25			25
PC	PC3104	Programming in Python lab			2	1				25		25
PR	PR3101	Entrepreneurship Programme				1					50	50
		Total	18	1	8	22	300	200	75	25	100	700

B.Tech. Programme in Mechatronics Engg.						Programme Code: MK						
Second year: Semester-IV (Curriculum:2021-2022)												
Cat	Abbriv.	Course Title	Teaching scheme/week			Credits	Examination scheme					Total
			L	T	P		Theory		Theory			
							ESE	CIA	OR	PR		
PC	PC4005	Theory of machines	3			3	60	40				100
PC	PC4006	Microcontroller and embeded C programmi	3			3	60	40				100
PC	PC4007	Microprocessors and system programming	3			3	60	40				100
PC	PC4008	Sensors and instrumentation	4			4	60	40				100
BS	BS4005	Mathematics- III	3	1		4	60	40				100
MC	MC4003	Innovations #	2			Pass/Fail						0
PC	PC4105	Theory of machines lab			2	1			50			50
PC	PC4106	Microcontroller and embeded C programming lab			2	1				25		25
PC	PC4108	Microprocessors and system programming lab			2	1				25		25
PC	PC4109	Sensors and instrumentation lab			2	1					50	50
PR	PR4102	CAPSTON Project				1					50	50
		Total	18	1	8	22	300	200	50	50	100	700

Third Year

B.Tech. Programme in Mechatronics Engg.						Programme Code: MK						
Third Year: Semester-V (Curriculum:2022-2023)												
Cat	Abbriv.	Course Title	Teaching scheme/week			Credits	Examination scheme					Total
			L	T	P		Theory		Theory			
							ESE	CIA	OR	PR		
PC	PC5010	Digital Signal Processing	3			3	60	40				100
PC	PC5011	Industrial automation	4			4	60	40				100
PC	PC5012	Design of machine elements	3			3	60	40				100
PC	PC5013	Fluid mechanics	3			3	60	40				100
PC	PC5014	Programming in JAVA	2			2	30	20				50
HSMC	HS5004	Industrial Management	2			2	30	20				50
MC	MC5004	Solid modelling #	2			Pass/Fail						0
PC	PC5110	Digital Signal Processing Lab			2	1			25			25
PC	PC5111	Industrial automation lab			2	1			50			50
PC	PC5113	Fluid mechanics			2	1				50		50
PC	PC5114	Programming in JAVA lab \$			2	1			25			25
PR	PR5103	IPR & Patents				1					50	50
		Total	19	0	8	22	300	200	75	25	100	700

B.Tech. Programme in Mechatronics Engg.						Programme Code: MK						
Third year: Semester-VI (Curriculum: 2022-2023)												
Cat	Abbriv.	Course Title	Teaching scheme/week			Credits	Examination scheme					Total
			L	T	P		Theory		Theory			
							ESE	CIA	OR	PR		
PC	PC6015	Thermodynamics & Heat Transfer	3			3	60	40				100
PC	PC6016	Computer Network & Cyber Security	3			3	60	40				100
PC	PC6017	Control Engineering	3			3	60	40				100
PC	PC6018	Manufacturing Technologies	4			4	60	40				100
PE	PE600*	Professional Elective I	3			3	60	40				100
MC	MC6005	Finite element analysis #	2			Pass/ Fail						0
PC	PC6115	Thermodynamics & Heat Transfer Lab			2	1			25			25
PC	PC6117	Control Engineering Lab			2	1			25			25
PC	PC6118	Manufacturing Technologies Lab			4	2					50	50
PC	PE610*	Professional Elective I Lab			2	1					50	50
PE	PR6105	Mini Project based on Programming Skills			2	1			50			50
		Total	18	0	12	22	300	200	100	0	100	700

Final Year

B.Tech. Programme in Mechatronics Engg.						Programme Code: MK						
Final year: Semester-VII (Curriculum: 2022-2023)												
Cat	Abbriv.	Course Title	Teaching scheme/week			Credits	Examination scheme					Total
			L	T	P		Theory		Theory			
							ESE	CIA	OR	PR		
PC	PC7019	Robotics	3			3	60	40		-	-	100
PC	PC7020	Mechatronics Systems	3			3	60	40				100
PC	PC7021	Computer Aided Manufacturing	3			3	60	40				100
PE	PE700*	Professional Elective II	3			3	60	40				100
PC	PC7119	Robotics Lab			4	2			50			50
PC	PC7121	Computer Aided Manufacturing Lab			2	1			25			25
PE	PE710*	Professional Elective II Lab			2	1					25	25
PR	PR7106	Project Work I			4	2					50	50
PR	PR7107	Internship^				2					50	50
		Total	12	0	12	20	240	160	75	0	125	600

B.Tech. Programme in Mechatronics Engg.						Programme Code: MK						
Final year: Semester-VIII (Curriculum: 2022-2023)												
Cat	Abbriv.	Course Title	Teaching scheme/week			Credits	Examination scheme					Total
			L	T	P		Theory		Theory			
							ESE	CIA	OR	PR		
OE	OE800*	Open Elective I	3			3	60	40	-			100
OE	OE800*	Open Elective II	3			3	60	40	-			100
PR	PR8108	Project Work II	0		20	10			100			100
		Total	6	0	20	16	120	80	100	0	0	300
Professional Elective – I						Open Elective – I						
1	PE6001	Industry 4.0				1	OE8001	Virtual and Augmented Reality				
2	PE6002	Automotive mechatronics				2	OE8002	Image Processing and Computer Vis				
3	PE6003	Total quality management				3	OE8003	Wireless Network & Communication				
Professional Elective – II						Open Elective – II						
1	PE7004	Drone technology				1	OE8004	Artificial Intelligence				
2	PE7005	Rapid Prototyping (MTPE-702)				2	OE8005	Real Time System				
3	PE7006	Machine Learning (MTPE-703)				3	OE8006	Artificial Neural Network				

Honors Courses – Industry 4.0 & Automotive Mechatronics

B. Tech Programme in Mechatronics Engineering											Programme code: MK		
Honours course: Industry 4.0 : Semester-V,VI,VII,VIII (Curriculum 2020-2021)													
Sem	Abbriv.	Course Title (Honours Courses: Industry 4.0	Teaching scheme			Credits L+P+T	Examination scheme & Marks						Total
			L	T	P		Theory			Practical			
							ISE	ESE	CIA*	OR	PR	TW	
V	HN5001	Cyber Physical Systems	4			4	30	50	20		-	-	100
VI	HN6002	DBMS & Information security for Industrial Automation	4			4	30	50	20				100
VI	HN6102	DBMS & Information security for Industrial Automation Lab			2	1						50	50
VII	HN7003	Industrial IoT & Internet of Services	4			4	30	50	20				100
VII	HN7103	Industrial IoT & Internet of Services Lab			2	1						50	50
VIII	HN8004	Smart Factory	4			4	30	50	20				100
		Total	16	0	4	18	120	200	80	0	0	100	500

B. Tech Programme in Mechatronics Engineering											Programme code: MK		
Honours course: Automotive Mechatronics : Semester-V,VI,VII,VIII (Curriculum 2020-2021)													
Sem	Abbriv.	Course Title (Honours Courses: Industry 4.0	Teaching scheme			Credits L+P+T	Examination scheme & Marks						Total
			L	T	P		Theory			Practical			
							ISE	ESE	CIA*	OR	PR	TW	
V	HN5011	Automotive machines & Drives	4			4	30	50	20		-	-	100
V	HN5111	Automotive machines & Drives Lab			2	1						50	50
VI	HN6012	Automotive control systems	4			4	30	50	20				100
VII	HN7013	Battery & fuel cell technology	4			4	30	50	20				100
VII	HN7113	Battery & fuel cell technology Lab			2	1						50	50
VIII	HN8014	Hybrid vehicles & Vehicle dynamics	4			4	30	50	20				100
		Total	16	0	4	18	120	200	80	0	0	100	500