

Intake:		2020 onwards		Specialization:		Biomedical Engineering				Accreditation Requirements	
Details of the Curriculum				Stream:		Medical Instrumentation and Signals					
Module Code	Module Name	Category C/E/O	Time allocation [Hours/Week]		Credits offered		Norm		Evaluation %		[MSC] Maths Basic Sc. Comp [E] Engineering [EP] Eng Specialization [DP] Eng Design & Projects [M] Management [H] Humanities
			Lecture	Lab / Tute	GPA	NGPA	GPA	NGPA	CA	WE	
Semester 1			Specialization requirement				15.0				
CE1023	Fluid Mechanics	C	2	2/4	2.0			20	80	MSC	
CS1033	Programming Fundamentals	C	2	2	3.0			20	80	MSC	
EE1040	Electrical Fundamentals	C	2	2/4	2.0			20	80	MSC	
MA1014	Mathematics	C	5/2	1	3.0			20	80	MSC	
ME1033	Mechanics	C	2	2/4	2.0			20	80	MSC	
MT1022	Properties of Materials	C	2	2/4	2.0			20	80	MSC	
EL1030	Language Skills Enhancement [S1 & S2]	C	-	2	1.0			100	0	M	
Total					15.0	0.0	15.0	0.0			
Semester 2			Specialization requirement				23.0				
MA1024	Methods of Mathematics	C	5/2	1	3.0			30	70	MSC	
EN1014	Electronic Engineering	C	3	2	4.0			40	60	E	
EN1054	Introduction to Telecommunications Engineering	C	3	2	4.0			50	50	E	
EN1020	Circuits, Signals, and Systems	C	2	2	3.0			40	60	E	
EN1094	Laboratory Practice	C	-	4	2.0			100	0	E	
EN1971	Communication Skills	C	1	2	2.0			100	0	M	
EL1030	Language Skills Enhancement [S1 & S2]	C	-	2	1.0			100	0	M	
BMI190	Engineering Design Project	C	2	4	4.0			100	0	DP	
Total					23.0	0.0	23.0	0.0			
Semester 3			Specialization requirement				20.0				
MA2014	Differential Equations	C	2	-	2.0			30	70	MSC	
MA2024	Calculus	C	2	-	2.0			30	70	MSC	
BM2012	Anatomy and Physiology for Engineers [S3 & S4]	C	1	2	2.0			100	0	MSC	
EN2014	Electronic Circuits and Analysis	C	3	-	3.0			40	60	EP	
EN2031	Fundamentals of Computer Organization and Design	C	2	2	3.0			50	50	E	
EN2063	Signals and Systems	C	3	-	3.0			40	60	E	
EN2091	Laboratory Practice and Projects	C	-	4	2.0			100	0	DP	
EN2533	Robot Design and Competition	E	1	4	3.0			70	30	DP	
BM2210	Biomedical Device Design	E	1	4	3.0			70	30	DP	
EN2130	Communication Design Project	E	1	4	3.0			70	30	DP	
Total					26.0	0.0	20.0	0.0			
Semester 4			Specialization requirement				20.0				
MA2034	Linear Algebra	C	2	-	2.0			30	70	MSC	
BM2012	Anatomy and Physiology for Engineers [S3 & S4]	C	1	2	2.0			100	0	MSC	
BM2102	Modelling and Analysis of Physiological Systems	C	2	2	3.0			60	40	EP	
EN2111	Electronic Circuit Design	C	3	2	4.0			40	60	DP	
EN2143	Electronic Control Systems	C	2	2	3.0			40	60	E	
EN2160	Electronic Design Realization	C	2	2	3.0			70	30	DP	
CS2023	Data Structures and Algorithms	E	2	2	3.0			40	60		
CS2833	Modular Software Development	E	2	2	3.0			50	50	E	
EE2024	Electrical Machines in Power Systems	E	2	2	3.0			30	70		
ME1823	Fundamentals of Engineering Thermodynamics and Applications	E	5/2	2/2	3.0			30	70		
Total					29.0	0.0	20.0	0.0			
Semester 5			Specialization requirement				18.0				
MA3014	Applied Statistics	C	2	-	2.0			30	70	MSC	
BM3880	Engineer and Society [S5 & S6]	C	-	2	1.0			100	0	H	
BM3110	Electronic Instrumentation	C	2	2	3.0			50	50	EP	
BM3122	Medical Imaging	C	2	2	3.0			50	50	EP	
BM3500	Biomechanics	E	2	2	3.0			50	50		
EN3580	Electromagnetics	E	3	2	4.0			50	50		
EN3551	Digital Signal Processing	E	2	2	3.0			40	60		
EN3013	Analog Circuit Design	E	2	2	3.0			50	50		
EN3021	Digital System Design	E	2	2	3.0			50	50	EP	
EN3150	Pattern Recognition	E	2	2	3.0			70	30		
EN3160	Image Processing and Machine Vision	E	2	2	3.0			40	60		
EN3251	Internet of Things	E	2	2	3.0			100	-		
EN3563	Robotics	E	2	2	3.0			50	50		
EE2074	Electric Motors in Industry	E	2	2	3.0			30	70		
MN3043	Business Economics and Financial Accounting	E	3	-	3.0			30	70	M	
MN3053	Industrial Management and Marketing	E	3	-	3.0			30	70	M	
Total					46.0	0.0	18.0	0.0			
Industrial Training			Specialization requirement				6.0				
BM3991	Industrial Training	C			6.0			6.0	100	0	EP
Total					0.0	6.0	0.0	6.0			

Intake:	2020 onwards	Specialization:	Biomedical Engineering				Accreditation Requirements				
Semester 6		Specialization requirement				9.0					
BM3880	Engineer and Society [S5 & S6]	C	1	2	2.0	4.0		100	0	H	
BM3181	Seminar and Scientific Communication	C	1	2	2.0			100	0	M	
HM-1	Humanities Elective I	E	2	-	2.0	3.0		100	0	H	
BM3210	Self Initiated Innovation	E	-	6	3.0			100	0	EP	
EN3260	Industrial Electronics and Automation	E	2	2	3.0			50	50		
EN3111	Electronic Devices	E	2	2	3.0			50	50		
EN3224	Electronic Manufacturing Systems	E	2	2	3.0			50	50		
EN3270	Internet of Things Systems Engineering	E	2	2	3.0			50	50		
EN3330	Introduction to Engineering Optimization	E	2	2	3.0			70	30		
EN3340	Random Signals and Processes	E	2	2	3.0			50	50		
EN3350	Software Design Competition	E	-	6	3.0			100	0		
		Total						30.0	0.0		9.0
Semester 7		Specialization requirement				17.0					
BM4201	Project [S7 & S8]	C	-	8	4.0	9.0		100	0	DP	
BM4112	Medical Electronics and Instrumentation	C	2	2	3.0			50	50	EP	
BM4180	Technical and Scientific Writing	C	1	2	2.0			100	0	M	
BM4152	Biosignal Processing	E	2	2	3.0	3.0		70	30	EP	
BM4302	Medical Image Processing	E	2	2	3.0			70	30		
BM4322	Genomic Signal Processing	E	2	2	3.0			50	50		
CH4140	Biotechnology	E	2	2	3.0			40	60		
MA3014	Experimental Design and Quality Control	E	3	-	3.0	3.0		30	70	EP	
EN4604	Digital IC Design	E	2	2	3.0			40	60		
EN4214	Power Electronics	E	2	2	3.0			50	50		
EN4440	Embedded Systems Engineering	E	2	2	3.0			100	0		
EN4470	Probabilistic System Analysis	E	2	2	3.0			60	40		
EN4394	Applied Information Theory	E	2	2	3.0			40	60		
EN4640	Statistical Signal Processing	E	2	2	3.0			60	40		
EN4554	Deep Learning for Vision	E	2	2	3.0			60	40		
EN4594	Autonomous Systems	E	2	2	3.0			50	50		
MN4063	Organizational Behaviour and Management	E	2	-	2.0			2.0			30
MN4133	Consumer and Industrial Marketing	E	2	-	2.0	30	70				
		Total				52.0	0.0	17.0	0.0		
Semester 8		Specialization requirement				11.0					
BM4201	Project [S7 & S8]	C	-	12	6.0	6.0		100	0	DP	
EN4021	Advanced Digital Systems	E	2.0	2	3.0			100	0	EP	
EN4650	Computer Systems Architecture	E	2.0	2	3.0	70	30				
EN4480	Advanced Power Electronic Design	E	2.0	2	3.0	50	50				
EN4660	Advanced Electronic Control Systems	E	2.0	2	3.0	60	40				
EN4421	Advanced Signal Processing	E	2.0	2	3.0	50	50				
EN4720	Security in Cyber-Physical Systems	E	2.0	2	3.0	100	-				
EN4574	Advanced Pattern Recognition	E	2.0	2	3.0	60	40				
EN4730	Convex Engineering Design	E	2.0	2	3.0	70	30				
EN4584	Advances in Computer Vision	E	2.0	2	3.0	60	40				
EN4431	Analog IC Design	E	2.0	2	3.0	50	50				
MN4123	Human Resource Management and Industrial Relations	E	2.0	-	2.0	2.0		30	70	M	
MN4043	Technology Management	E	2.0	-	2.0			30	70		
MN4151	Project Management	E	2.0	-	2.0			30	70		
MN4093	Management Skills Development	E	2.0	-	2.0			30	70		
MN4113	Production and Operations Management	E	2.0	-	2.0			30	70		
		Total				46	0	11.0	0.0		
		Grand Total				267.0	6.0	133.0	6.0		

Total credit requirement for the Specialization	139.0
Faculty/Specialization Electives beyond the specialization requirements [refer faculty electives table]*	11.0
TOTAL CREDIT REQUIREMENT FOR GRADUATION	150.0

Service modules									
Code	Module Name	Semester	Time allocation [Hours/Week]		Credits		Offered to	Evaluation %	
			Lecture	Lab / Tute	GPA	NGPA		CA	WE