

Curriculum for B.Sc. Engineering Honours Degree Programme

**Biomedical Engineering Specialization - Instrumentation & Imaging Stream
Department of Electronic and Telecommunication Engineering**

Module Code	Module Name	Category	Lectures hrs/week	Lab/ Assignments hrs/weeks	Credits		Norm		Evaluation (%)		
					GPA	NGPA	GPA	NGPA	CA	WE	
Semester 1											
MA1013	Mathematics	C	3	1/1	3.0		15.0		20	80	
CS1032	Programming Fundamentals	C	2	3/1	3.0				20	80	
ME1032	Mechanics	C	2	3/4	2.0				20	80	
MT1022	Properties of Materials	C	2	3/4	2.0				20	80	
CE1022	Fluid Mechanics	C	2	3/4	2.0				20	80	
EE1013	Electrical Engineering	C	2	3/4	2.0				20	80	
EL1012	Language Skill Enhancement I	C	-	3/1	1.0				20	80	
MN1012	Engineering in Context	C	1	-		1.0		1.0	30	70	
					Total for Semester 1				15.0	1.0	

Module Code	Module Name	Category	Lectures hrs/week	Lab/ Assignments hrs/weeks	Credits		Norm		Evaluation (%)		
					GPA	NGPA	GPA	NGPA	CA	WE	
Semester 2											
MA1023	Methods of Mathematics	C	3	1/1	3.0		17.0	2.0	30	70	
BM1011	Engineering in Medicine and Biology	C	1	3/1		2.0			100	-	
EN1013	Electronics – I	C	3	-	3.0				30	70	
EN1053	Introduction to Telecommunications	C	3	-	3.0				30	70	
EN1060	Signals and Systems	C	3	-	3.0				30	70	
EN1093	Laboratory Practice – I	C	-	9/1	3.0				100	-	
EN1970	Communication Skills	C	1	3/1	2.0				100	-	
MN1030	Entrepreneurship Skill Development (continued in S3)	O	0.5	3/2		1.0			70	30	
					Total for Semester 2				17.0	2.0	

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					GPA	NGPA	GPA	NGPA	CA	WE	
<i>Semester 3</i>											
MA2013	Differential Equations	C	2	-	2.0		20.0		30	70	
MA2023	Calculus	C	2	-	2.0				30	70	
BM2011	Human Anatomy and Physiology I	C	3	-	3.0				30	70	
EN2013	Electronics – II	C	3	-	3.0				40	60	
EN2040	Random Signals and Processes	C	2	-	2.0				30	70	
EN2030	Fundamentals of Computer Organization and Design	C	3	-	3.0				50	50	
EN2090	Laboratory Practice – II	C	-	9/1	3.0				100	-	
EE2093	Theory of Electricity	C	2	-	2.0				30	70	
ME1822	Basic Engineering Thermodynamics	E	1.5	3/2	2.0				30	70	
ME2122	Engineering Drawing and Computer Aided Modelling	E	2	3/1	3.0				2.0	100	0
EN2532	Robot Design and Competition	O	1.5	3/1	2.5			60	40		
MN1030	Entrepreneurship Skill Development (continued from S2)	O	0.5	3/2		1.0		70	30		
					<i>Total for Semester 3</i>				22.0		

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					GPA	NGPA	GPA	NGPA	CA	WE
<i>Semester 4</i>										
MA2033	Linear Algebra	C	2	-	2.0				30	70
BM2020	Human Anatomy and Physiology II	C	2	3/2	2.5				30	70
BM2101	Analysis of Physiological Systems	C	2	3/1	3.0				40	60
BM2900	Field Visit	C	-	-		1.0			100	-
EN2110	Electronics – III	C	3	3/1	4.0				40	60
EN2083	Electromagnetics	C	3	3/1	4.0				40	60
EN2570	Digital Signal Processing	C	2	3/1	3.0		18.5	1.0	40	60
EN2550	Fundamentals of Image Processing and Machine Vision	E	2	3/1	3.0				40	60
CS2022	Data Structures and Algorithms	E	2.0	3/2	2.5				40	60
CS2832	Modular Software Development	E	2.0	3/2	2.5				50	50
MA2053	Graph Theory	E	2.0	-	2.0		2.0		30	70
MN2010	Entrepreneurial Leadership	O	1.5	3/2	2.0				50	50
<i>Total for Semester 4</i>							20.5	1.0		

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					GPA	NGPA	GPA	NGPA	CA	WE	
<i>Semester 5</i>											
BM3121	Medical Imaging	C	3	3/1	4.0		11.0		40	60	
EN3030	Circuits and Systems Design	C	3	3/1	4.0				50	50	
EN3143	Electronic Control Systems	C	2	3/1	3.0				40	60	
EN3023	Electronic Design Realization	E	2	3/1	3.0		3.0		40	60	
CS3032	Computer Networks	E	2	3/1	3.0				40	60	
MA3013	Applied Statistics	E	2	-	2.0		2.0		30	70	
MA3023	Numerical Methods	E	2	-	2.0				30	70	
MN3042	Business Economics & Financial Accounting	E	3	-	3.0		3.0		30	70	
MN3052	Industrial Management & Marketing	E	2.5	3/2	3.0				30	70	
MN3010	Multidisciplinary Design, Innovation and Venture Creation	O	1.5	3/2	2.0				50	50	
					<i>Total for Semester 5</i>				19.0	-	
<i>Industrial Training</i>											
BM3990	Industrial Training	C	-	-		6.0		6.0	100	-	
					<i>Total for Industrial Training</i>				6.0		
<i>Semester 6</i>											
BM3180	Scientific Communications for BME	C	1	3/1	2.0		2.0	3.0	100	-	
BM3190	Biostatistics and Ethics for BME	C	-	3/1		1.0			100	-	
EN3900	Seminar	E	2	-		2.0			100	-	
DE1XXX	Humanities Electives I	E	2	-	2.0		4.0				
DE2XXX	Humanities Elective II	E	2	-	2.0						
EN3110	Electronic Devices	E	2	3/1	3.0		3.0		40	60	
EN3240	Embedded Systems Engineering	E	2	3/1	3.0				100	-	
EN3370	Traffic Engineering	E	2	3/1	3.0				50	50	
EN3532	Electronic Instrumentation	E	2	3/1	3.0				50	50	
EN3210	Self Initiated Innovation	E	-	-	3.0		3.0		100	-	
					<i>Total for Semester 6</i>				9.0	3.0	

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Module Code	Module Name	Category	Lectures hrs/week	Lab/ Assignments hrs/weeks	Credits		Norm		Evaluation (%)	
					GPA	NGPA	GPA	NGPA	CA	WE
<i>Semester 7</i>										
BM4200	Research Project*	C	-	-	4.0		7.0		100	-
BM4111	Medical Electronics & Instrumentation	C	2	3/1	3.0				50	50
BM4151	Biosignal Processing	E	2	3/1	3.0		3.0		50	50
BM4301	Medical Image Processing	E	2	3/1	3.0				50	50
BM4321	Genomic Signal Processing	E	2	3/1	3.0				50	50
EN4603	Digital IC Design	E	2	3/1	3.0		A [†]		50	50
EN4213	Power Electronics	E	2	3/1	3.0				50	50
EN4553	Machine Vision	E	2	3/1	3.0				50	50
EN4563	Robotics	E	2	3/1	3.0				50	50
MA4013	Linear Models and Multivariate Statistics	E	3	-	3.0		3.0		30	70
MA4033	Time Series and Stochastic Processes	E	3	-	3.0				30	70
MA4023	Operational Research	E	3	-	3.0				30	70
MA4053	Neural Network and Fuzzy Logic	E	3	-	3.0				30	70
MN4150	Project Management	E	2	-	2.0		2.0		50	50
MN4062	Organizational Behaviour and Management	E	2	-	2.0				30	70
MN4132	Consumer and Industrial Marketing	E	2	-	2.0				30	70
MN4122	Human Resource Management and Industrial Relations	E	2	-	2.0				30	70
MN4042	Technology Management	E	2	-	2.0				30	70
MN4022	Engineering Economics	E	2	-	2.0				30	70
MN4030	Strategic Enterprise Management	E	1.5	3/2	2.0				40	60
MN3020	Entrepreneurship Business Basics	E	2	3/1	3.0				50	50

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					GPA	NGPA	GPA	NGPA	CA	WE		
Semester 8												
BM4200	Research Project*	C	-	-	6.0		6.0		100	-		
BM4500	Biomechanics	E	2	3/2	2.5		2.5		50	50		
BM4521	Rehabilitation Engineering	E	2	3/2	2.5				40	60		
BM4600	Biomaterials	E	2	3/2	2.5				40	60		
BM4620	Biotechnology	E	2	3/2	2.5				30	70		
EN4020	Advanced Digital Systems	E	2	3/1	3.0				<i>B</i> [†]		100	-
EN4233	Industrial Electronics and Automation	E	2	3/1	3.0		50	50				
EN4283	Electronics Application in Renewable Energy	E	2	3/1	3.0		50	50				
EN4430	Analog IC Design	E	2	3/1	3.0		50	50				
EN4333	Microwave Engineering	E	2	3/1	3.0		50	50				
EN4393	Information Theory	E	2	3/1	3.0		40	60				
EN4403	Mobile Computing	E	2	3/1	3.0		70	30				
EN4420	Advanced Signal Processing	E	2	3/1	3.0		50	50				
EN4573	Pattern Recognition and Machine Intelligence	E	2	3/1	3.0		50	50				
EN4583	Advances in Machine Vision	E	2	3/1	3.0		50	50				
EN4593	Autonomous Systems	E	2	3/1	3.0		40	60				
MA4013	Linear Models and Multivariate Statistics	E	3.0	-	3.0		3.0				30	70
MA4033	Time Series and Stochastic Processes	E	3.0	-	3.0						30	70
MA4023	Operational Research	E	3.0	-	3.0						30	70
MA4053	Neural Network and Fuzzy Logic	E	3.0	-	3.0						30	70

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Module Code	Module Name	Category	Lectures hrs/week	Lab/ Assignments hrs/weeks	Credits		Norm		Evaluation (%)		
					GPA	NGPA	GPA	NGPA	CA	WE	
<i>Semester 8 (Cont..)</i>											
MN4122	Human Resource Management and Industrial Relations	E	2.0	-	2.0				30	70	
MN4042	Technology Management	E	2.0	-	2.0				30	70	
MN4072	Small Business Management and Entrepreneurship	E	2.0	-	2.0				30	70	
MN4022	Engineering Economics	E	2.0	-	2.0				30	70	
MN4150	Project Management	E	2.0	-	2.0				50	50	
MN4092	Management Skills Development	E	2.0	-	2.0				30	70	
MN4112	Production and Operations Management	E	2.0	-	2.0				30	70	
MN4010	Business Plan Development	E	1.5	3/2	2.0				70	30	
MN4170	Global Entrepreneurship	E	1.5	3/2	2.0		2.0		40	60	
					Total for Semester 7 and Semester 8				34.5	-	
					Total for the Programme				137	13	

* - A total of 10 credits for Research Project over Semester 7 and Semester 8.

† - A total of 6.0 credit over Semester 7 and Semester 8 from technical electives ($A+B = 6.0$)

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Module Lineup for Entrepreneurship Minor

Module Code	Module Name	Category	Lectures hrs/week	Lab/ Assignments hrs/weeks	Credits		Norm		Evaluation (%)	
					GPA	NGPA	GPA	NGPA	CA	WE
MN1030	Entrepreneurship Skill Development	C	1.0	3/1		2.0		2.0	70	30
MN2010	Entrepreneurial Leadership	C	1.5	3/2	2.0		2.0		50	50
MN3010	Multidisciplinary Design, Innovation and Venture Creation	C	1.5	3/2	2.0		2.0		50	50
MN3020	Entrepreneurship Business Basics	C	2.0	3/1	3.0		3.0		50	50
MN4010	Business Plan Development	C	1.5	3/2	2.0		2.0		70	30
MN4022	Engineering Economics	E	2.0	-	2.0				30	70
MN4042	Technology Management	E	2.0	-	2.0				30	70
MN4112	Production and Operations Management	E	2.0	-	2.0				30	70
MN4030	Strategic Enterprise Management	E	1.5	3/2	2.0				40	60
MN4170	Global Entrepreneurship	E	1.5	3/2	2.0		2.0		40	60
Total for all Semesters							11.0		2.0	

Modules Offered to Other Fields of Specialization

Module Code	Module Name	Category	Lectures hrs/week	Lab/ Assignments hrs/weeks	Credits		Evaluation (%)		
					GPA	NGPA	CA	WE	
Semester 4									
BM2800	Introduction to Biomedical Engineering	E	2	-	2.0		40	60	