

# Dr. Ambedkar Institute of Technology, Bengaluru-560 056

SCHEME OF TEACHING AND EXAMINATION from Academic Year 2020-21

**B.E Medical Electronics Batch 2019-20**

**Outcome Based Education (OBE) and Choice Based Credit System (CBCS)**

## III SEMESTER

Sl. No	Course and Course Code		Course Title	Teaching Department	Teaching Hours /Week			Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P					
1	BC	18MA31	Transforms and Applications	Mathematics	3	0	0	03	50	50	100	3
2	PC	18ML31	Analog Electronic Circuits		3	0	0	03	50	50	100	3
3	PC	18ML32	Logic Design & VHDL		2	2	0	03	50	50	100	3
4	PC	18ML33	Medical Science		3	0	0	03	50	50	100	3
5	PC	18ML34	Network Analysis		2	2	0	03	50	50	100	3
6	PC	18ML35	Sensors and Measurement		3	0	0	03	50	50	100	3
7	PC	18ML36	OOPs & Data Structure		3	0	0	03	50	50	100	3
8	PC	18MLL37	Analog Electronic Circuits Lab		0	0	2	02	50	50	100	1
9	HS	18MLL38	Logic Design Lab		0	0	2	02	50	50	100	1
10	MC	18HS31/32	CIPH/ Env.Studies	Humanities	2			02	50	-	50	1
11	MC	18HS33	Soft Skills	Humanities	2			02				-
<b>TOTAL</b>					<b>23</b>	<b>04</b>	<b>04</b>	<b>29</b>	<b>500</b>	<b>500</b>	<b>950</b>	<b>24</b>

### Course prescribed to lateral entry Diploma holders admitted to III semester of Engineering programs

12	MC	18MAD31	Advance Mathematics - I	Mathematics	02	01	--	03	50		50	-
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(a) **The mandatory non – credit courses** Advance Mathematics I and II prescribed at III and IV semesters respectively, to lateral entry Diploma holders admitted to III semester of BE programs shall compulsorily be registered during respective semesters to complete all the formalities of the course and appear for SEE examination.

(b) **The mandatory non – credit courses** Advance Mathematics I and II, prescribed to lateral entrant Diploma holders admitted to III semester of BE programs, are to be completed to secure eligibility to VII semester. However, they are not considered for vertical progression from II year to III year of the programme but considered as head of passing along with credit courses of the programme to eligibility to VII semester.

**Note: BC: Science Course, PC: Professional Core. HS: Humanities, MC: Mandatory Course.**

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## IV SEMESTER

Sl. No	Course and Course Code		Course Title	Teaching Department	Teaching Hours /Week			Examination			Credits	
					Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks		Total Marks
1	BC	18MA41	Probability, Numerical and Optimisation Technique	Mathematics	3	0	0	03	50	50	100	3
2	PC	18ML41	Microcontrollers		3	0	0	03	50	50	100	3
3	PC	18ML42	Communication System		3	0	0	03	50	50	100	3
4	PC	18ML43	Signals & Systems		3	2	0	03	50	50	100	4
5	PC	18ML44	Biomedical Instrumentation		4	0	0	03	50	50	100	4
6	PC	18ML45	Linear IC's And Applications		3	0	0	03	50	50	100	3
7	PC	18MLL46	OOPS & Data Structure Lab		0	0	2	03	50	50	100	1
8	PC	18MLL47	Microcontroller Lab		0	0	2	03	50	50	100	1
9	PC	18MLL48	Linear Integrated Circuits Lab		0	0	2	03	50	50	100	1
10	HS	18HS41/42	CIPH/ Env. Studies	Humanities	2	0	0	02	50	-	50	1
11	MC	18HS43	Employability Skills	Humanities	3	0	0	-				-
<b>TOTAL</b>					<b>24</b>	<b>2</b>	<b>6</b>	<b>29</b>	<b>500</b>	<b>450</b>	<b>950</b>	<b>24</b>

### Course prescribed to lateral entry Diploma holders admitted to III semester of Engineering programs

12	MC	18MAD31	Advance Mathematics - I	Mathematics	02	01	--		50		50	-
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(a) **The mandatory non – credit courses** Advance Mathematics I and II prescribed at III and IV semesters respectively, to lateral entry Diploma holders admitted to III semester of BE programs shall compulsorily be registered during respective semesters to complete all the formalities of the course and appear for SEE examination.

(b) **The mandatory non – credit courses** Advance Mathematics I and II, prescribed to lateral entrant Diploma holders admitted to III semester of BE programs, are to be completed to secure eligibility to VII semester. However, they are not considered for vertical progression from II year to III year of the programme but considered as head of passing along with credit courses of the programme to eligibility to VII semester.

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## V SEMESTER

Sl. No	Course and Course Code		Course Title	Teaching Department	Teaching Hours /Week			Examination			Credits	
					Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks		Total Marks
					L	T	P					
1	HS	18HS51/52	M&E/IPR	Humanities	3	0	0	03	50	50	100	3
2	PC	18ML51	Digital Image Processing	ML	3	0	0	03	50	50	100	3
3	PC	18ML52	Medical Imaging Systems	ML	3	0	0	03	50	50	100	3
4	PC	18ML53	Physiological Control Systems	ML	3	2	0	03	50	50	100	4
5	PC	18ML54	Digital Signal Processing	ML	3	0	0	03	50	50	100	3
6	PE	18ML55X	Professional Elective-1	ML	3	0	0	03	50	50	100	3
7	OE	18MLE56	Open Elective -A	ML	3	0	0	03	50	50	100	3
8	PC	18MLL57	Biomedical Instrumentation Lab	ML	0	0	2	03	50	50	100	1
9	PC	18MLL58	Digital Signal Processing Lab	ML	0	0	2	03	50	50	100	1
10	PC	18MLL59	Biomedical Digital Signal & Image Processing Lab	ML	0	0	2	03	50	50	100	1
<b>TOTAL</b>					21	2	6		500	500	1000	<b>25</b>

**Note: BC: Science Course, PC: Professional Core. HS: Humanities, MC: Mandatory Course.**

### Professional Elective -1

18ML551	Embedded Systems & IOT applications
18ML552	Clinical Engineering
18ML553	ARM Processor

### Open Elective :18 MLE56 Biomedical Engineering

Students can select any one of the open electives (Please refer to consolidated list of Dr AIT for open electives) offered by any Department.

Selection of an open elective is not allowed provided,

- The candidate has studied the same course during the previous semesters of the programme.
- The syllabus content of open elective is similar to that of Departmental core courses or professional electives.
- A similar course, under any category, is prescribed in the higher semesters of the programme.

Registration to electives shall be documented under the guidance of Programme Coordinator

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## VI SEMESTER

Sl. No	Course and Course Code		Course Title	Teaching Department	Teaching Hours /Week			Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P					
1	HS	18HS61/62	M&E/IPR	Humanities	3	0	0	03	50	50	100	3
2	PC	18ML61	Biomedical Digital Signal Processing	ML	3	0	0	03	50	50	100	3
3	PC	18ML62	Laser & Fibre Optics in Medicine	ML	3	0	0	03	50	50	100	3
4	PC	18ML63	Biomedical Equipments	ML	3	0	0	03	50	50	100	3
5	PC	18ML64	Medical Physics	ML	3	0	0	03	50	50	100	3
6	PE	18ML65X	Professional Elective -2	ML	3	0	0	03	50	50	100	3
7	OE	18MLE66	Open Elective -B	ML	3	0	0	03	50	50	100	3
8	PC	18MLL67	Operation & Testing of Medical Devices Lab	ML	0	0	2	02	50	50	100	1
9	MP	18MLMP68	Mini-project	ML	-	-	-	03	50	50	100	2
10	INT	18MLI69	Industry Internship	(To be carried out during the intervening vacations of VI & VII semester)	-	-	-	-	-	-	-	-
<b>TOTAL</b>					<b>21</b>	<b>0</b>	<b>2</b>	<b>26</b>	<b>500</b>	<b>450</b>	<b>900</b>	<b>24</b>

**Note: PC: Professional core, PE: Professional Elective, OE: Open Elective, MP: Mini-Project, INT: Internship.**

Hospital Training has to be carried out for a period of 10 working days after the completion of 5<sup>th</sup> semester examination

Professional Elective-2		Open Elective - B	
18ML651	Infrared Imaging & Applications	18MLE66	Medical Informatics
18ML652	Medical Informatics		
18ML653	VLSI Design		



**DR AMBEDKAR INSTITUTE OF TECHNOLOGY, BANGALORE**

**MASTER LIST OF SYLLABUS FOR THE ACADEMIC YEAR 2020-21**

**BATCH 17-18**

DEPARTMENT		<b>MEDICAL ELECTRONICS</b>	SEMESTER : VII							
			No. OF CREDITS : 24							
REV NO/DATE:			Teaching Hrs./week			Examination				
SL.NO	Course Code	Course Title	Theory			Duration in Hrs.	CIE Marks	SEE Marks	Total Marks	Credits
			L	T	P					
1.	HS04	Intellectual Property Rights (IPR)	2	0	0	03	50	50	100	2
2.	ML71	Biomedical Digital Signal Processing	3	0	0	03	50	50	100	3
3.	ML72	Digital Image Processing	3	0	0	03	50	50	100	3
4.	ML73	Bio-Mechanics	3	0	0	03	50	50	100	3
5.	ML74X	Elective 3(Group-C)	3	0	0	03	50	50	100	3
6.	ML75X	Elective 4(Group-D)	3	0	0	03	50	50	100	3
7.	MLL76	Biomedical Digital Signal & Image Processing Lab.	0	0	2	03	50	50	100	1
8.	MLS77	Seminar	0	0	2	-	50	-	50	2
9.	IDE	Inter Department Elective-1 (Group-E)	4	0	0	03	50	50	100	4
10.	MPL78	Project Phase I	0	0	2	0	-	-	-	0
			21	0	6	24	450	400	850	24

**Professional Elective**

Elective-3 Group-C		Elective- 4 Group-D	
ML741	Speech Processing	ML751	Bio-Statistics & Research Methodology
ML742	Biomaterials & Artificial Organs	ML752	Medical Devices & Regulations
ML743	Picture Archiving and Communication Standards	ML753	Hospital Design and Management

Inter Department Elective-1 (GROUP-E)	
MLE01	Bio Medical Engineering



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**MASTER LIST OF SYLLABUS FOR THE ACADEMIC YEAR 2020-21**

**BATCH 17-18**

<b>DEPARTMENT</b>		<b>MEDICAL ELECTRONICS</b>	<b>SEMESTER : VIII</b>									
			<b>No. OF CREDITS : 24</b>									
<b>REV NO/DATE:</b>			<b>Teaching Hrs./week</b>			<b>Examination</b>						
SL.NO	Course Code	Course Title	Theory			Tutorial Practical		Duration in Hrs.	CIE Marks	SEE Marks	Total Marks	Credits
			L	T	P	T	P					
1	ML81X	Elective 5 (Group-F)	4	0	0		03	50	50	100	4	
2	ML82X	Elective 6 (Group-G)	4	0	0		03	50	50	100	4	
3	MLP83	Project Phase II	0	0	3		03	50	50	100	12	
4	IDE	Inter Department Elective-2 (Group-H)	4	0	0		03	50	50	100	4	
			12	0	3		12	200	200	400	24	

<b>Professional Elective 5 (Group-F)</b>		<b>Professional Elective 6 (GROUP-G)</b>	
ML811	Neural Network & Pattern Recognition	ML821	Biometric Systems
ML812	Bio Sensors & Bio-MEMS	ML822	Rehabilitation Engineering
ML813	Infra Red Imaging & Applications	ML823	Programming with Python

<b>Inter Department Elective-2 (GROUP-H)</b>	
MLE02	Medical Devices Safety and Regulations