

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI**  
**CHOICE BASED CREDIT SYSTEM (CBCS)**  
**SCHEME OF TEACHING AND EXAMINATION 2017-2018 (Approved)**

**B.E.: Medical Electronics**

**III SEMESTER**

Sl. No.	Course Code	Title	Teaching Department	Teaching Hours /Week		Examination				Credits
				Theory	Practical/ Drawing	Duration (in Hrs)	SEE Marks	CIE Marks	Total Marks	
1	17MAT31	Engineering Mathematics-III	Mathematics	04	-	03	60	40	100	4
2	17ML32	Electronic Instrumentation and Measurements	ML	04	-	03	60	40	100	4
3	17ML33	Analog Electronic Circuits	ML	04	-	03	60	40	100	4
4	17ML34	Digital Design and HDL	ML	04	-	03	60	40	100	4
5	17ML35	Human Anatomy and Physiology	ML	04	-	03	60	40	100	4
6	17ML36	Network Analysis	ML	03	-	03	60	40	100	3
7	17MLL37	Analog Electronic Circuits Lab	ML	-	1Hr-Instruction 2Hr-Practical	03	60	40	100	2
8	17MLL38	Digital Design and HDL Lab	ML	-	1Hr-Instruction 2Hr-Practical	03	60	40	100	2
9	17KL / CPH39/49	Kannada / Constitution of India, Professional Ethics and Human Rights	Humanities	01		01	30	20	50	1
<b>TOTAL</b>				<b>24</b>	<b>6</b>	<b>25</b>	<b>510</b>	<b>340</b>	<b>850</b>	<b>28</b>

**1. Kannada/Constitution of India, Professional Ethics and Human Rights:** 50 % of the programs of the Institution have to teach Kannada/Constitution of India, Professional Ethics and Human Rights in cycle based concept during III and IV semesters.

**2. Audit Course:**

(i) \*All lateral entry students (except B.Sc. candidates) have to register for Additional Mathematics – I, which is 03 contact hours per week.

1	17MATDIP31	Additional Mathematics –I	Mathematics	03	--	03	60	--	60	--
---	------------	---------------------------	-------------	----	----	----	----	----	----	----

(ii) Language English (Audit Course) be compulsorily studied by all lateral entry students (except B.Sc. candidates)

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI**  
**CHOICE BASED CREDIT SYSTEM (CBCS)**  
**SCHEME OF TEACHING AND EXAMINATION 2017-2018 (Approved)**

**B.E.: Medical Electronics**

**IV SEMESTER**

Sl. No	Subject Code	Title	Teaching Department	Teaching Hours /Week		Examination				Credits
				Theory	Practical/ Drawing	Duration (in Hrs)	SEE Marks	CIE Marks	Total Marks	
1	17MAT41	Engineering Mathematics-IV	Mathematics	04	-	03	60	40	100	4
2	17ML42	Signal Conditioning and Data Acquisition Circuits	ML	04	-	03	60	40	100	4
3	17ML43	Embedded Controllers	ML	04	-	03	60	40	100	4
4	17ML44	Signal and Systems	ML	04	-	03	60	40	100	4
5	17ML45	Biomedical Instrumentation	ML	04	-	03	60	40	100	4
6	17ML46	Scientific and Analytical Instrumentation *	ML	03	-	03	60	40	100	3
7	17MLL47	Embedded Controllers Lab	ML	-	1Hr-Instruction 2Hr-Practical	03	60	40	100	2
8	17MLL48	Physiological Measurements & Biomedical Instrumentation Lab	ML	-	1Hr-Instruction 2Hr-Practical	03	60	40	100	2
9	17KL / CPH39/49	Kannada / Constitution of India, Professional Ethics and Human Rights	Humanities	01		01	30	20	50	1
<b>TOTAL</b>				<b>24</b>	<b>06</b>	<b>25</b>	<b>510</b>	<b>340</b>	<b>850</b>	<b>28</b>

**1. Kannada/Constitution of India, Professional Ethics and Human Rights:** 50 % of the programs of the Institution have to teach Kannada/Constitution of India, Professional Ethics and Human Rights in cycle based concept during III and IV semesters.

**2. Audit Course:**

(i) \*All lateral entry students (except B.Sc. candidates) have to register for Additional Mathematics – I, which is 03 contact hours per week.

1	17MATDIP41	Additional Mathematics –II	Mathematics	03	--	03	60	--	60	--
---	------------	----------------------------	-------------	----	----	----	----	----	----	----

(ii) Language English (Audit Course) be compulsorily studied by all lateral entry students (except B.Sc. candidates)

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI**  
**CHOICE BASED CREDIT SYSTEM (CBCS)**  
**SCHEME OF TEACHING AND EXAMINATION 2017-2018 (Approved)**

**B.E.: Medical Electronics**

**V SEMESTER**

Sl. No	Subject Code	Title	Teaching Department	Teaching Hours /Week		Examination				Credits
				Theory	Practical/ Drawing	Duration (in Hrs)	SEE Marks	CIE Marks	Total Marks	
1	17ES51	Management and Entrepreneurship Development	ML/ Humanities	04	-	03	60	40	100	4
2	17ML52	Control Systems	ML	04	-	03	60	40	100	4
3	17ML53	Digital Signal Processing	ML	04	-	03	60	40	100	4
4	17ML54	Diagnostic and Therapeutic Equipment's	ML	04	-	03	60	40	100	4
5	17ML55X	Professional Elective-I	ML	03	-	03	60	40	100	3
6	17ML56X	Open Elective-I	ML	03	-	03	60	40	100	3
7	17MLL57	Signal Conditioning Circuits and Data Acquisition Lab	ML	-	1Hr-Instruction 2Hr-Practical	03	60	40	100	2
8	17MLL58	Diagnostic and Therapeutic Equipment's Lab	ML	-	1Hr-Instruction 2Hr-Practical	03	60	40	100	2
<b>TOTAL</b>				<b>22</b>	<b>06</b>	<b>24</b>	<b>480</b>	<b>320</b>	<b>800</b>	<b>26</b>

Professional Elective-I		Open Elective-I	
17ML551	VLSI Design	17ML561	Computer Organization
17ML552	Rehabilitation Engineering	17ML562	Virtual Bio-Instrumentation
17ML553	Hospital Design, Planning and Management	17ML563	Medical Electronics Design
17ML554	Biomedical Nanotechnology	17ML564	Pharmacology and Drug Delivery
		17NC561	Essentials of NCC (common to all branches)

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

Selection of an open elective is not allowed, if:

- The candidate has no pre – requisite knowledge.
- The candidate has studied similar content course during previous semesters.
- The syllabus content of the selected open elective is similar to that of Departmental core course(s) or to be studied Professional elective(s).

Registration to open electives shall be documented under the guidance of Programme Coordinator and Adviser.

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI**  
**CHOICE BASED CREDIT SYSTEM (CBCS)**  
**SCHEME OF TEACHING AND EXAMINATION 2017-2018 (Approved)**

**B.E.: Medical Electronics**

**VI SEMESTER**

Sl. No	Subject Code	Title	Teaching Department	Teaching Hours /Week		Examination				Credits
				Theory	Practical/ Drawing	Duration (in Hrs)	SEE Marks	CIE Marks	Total Marks	
1	17ML61	Analog and Digital Communication Systems	ML	04	-	03	60	40	100	4
2	17ML62	Medical Image Processing	ML	04	-	03	60	40	100	4
3	17ML63	OOPs with C++	ML	04	-	03	60	40	100	4
4	17ML64	Medical Physics	ML	04	-	03	60	40	100	4
5	17ML65X	Professional Elective-II	ML	03	-	03	60	40	100	3
6	17ML66X	Open Elective-II	ML	03	-	03	60	40	100	3
7	17MLL67	Medical Image Processing Lab	ML	-	1Hr-Instruction 2Hr-Practical	03	60	40	100	2
8	17MLL68	OOPs with C++ Lab	ML	-	1Hr-Instruction 2Hr-Practical	03	60	40	100	2
<b>TOTAL</b>				<b>22</b>	<b>6</b>	<b>24</b>	<b>480</b>	<b>320</b>	<b>800</b>	<b>26</b>

Professional Elective-II		Open Elective-II	
17ML651	Biosensors and Smart Sensors	17ML661	Mobile Communication
17ML652	Physiological System Modeling	17ML662	Embedded Real Time Systems
17ML653	Bioinformatics	17ML663	Embedded System Design and Programming
17ML654	Biomechanics and Biodynamics	17ML664	Biomaterials and Artificial Organs
		17CS661	Mobile Application Development (common to all branches)

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

Selection of an open elective is not allowed, if:

- The candidate has no pre – requisite knowledge.
- The candidate has studied similar content course during previous semesters.
- The syllabus content of the selected open elective is similar to that of Departmental core course(s) or to be studied Professional elective(s).

Registration to open electives shall be documented under the guidance of Programme Coordinator and Adviser.

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI**  
**CHOICE BASED CREDIT SYSTEM (CBCS)**  
**SCHEME OF TEACHING AND EXAMINATION 2017-2018 (Approved)**

**B.E.: Medical Electronics**

**VII SEMESTER**

Sl. No	Subject Code	Title	Teaching Department	Teaching Hours /Week		Examination				Credits
				Theory	Practical/ Drawing	Duration (in Hrs)	SEE Marks	CIE Marks	Total Marks	
1	17ML71	Biomedical Digital Signal Processing	ML	04	-	03	60	40	100	4
2	17ML72	Computer Communication Networks in Healthcare	ML	04	-	03	60	40	100	4
3	17ML73	ARM Processor	ML	04	-	03	60	40	100	4
4	17ML74X	Professional Elective-III	ML	03	-	03	60	40	100	3
5	17ML75X	Professional Elective-IV	ML	03	-	03	60	40	100	3
6	17MLL76	Biomedical DSP Lab	ML	-	1Hr-Instruction 2Hr-Practical	03	60	40	100	2
7	17MLL77	ARM Processor Lab	ML	-	1Hr-Instruction 2Hr-Practical	03	60	40	100	2
8	17MLP78	Project Work Phase-I + Project Seminar	ML	-	03	--	--	100	100	2
<b>TOTAL</b>				<b>18</b>	<b>9</b>	<b>21</b>	<b>420</b>	<b>380</b>	<b>800</b>	<b>24</b>

Professional Elective-III		Professional Elective-IV	
17ML741	Database Management System in Healthcare	17ML751	Biostatistics
17ML742	Medical Informatics and Expert Systems	17ML752	Lasers and Optical Fibers in Medicine
17ML743	Low Power VLSI Design	17ML753	Ergonomics
17ML744	Biometric Systems	17ML754	Big-data and Cloud Computing

- **Project Phase – I and Project Seminar:** Comprises of Literature Survey, Problem identification, Objectives and Methodology. CIE marks shall be based on the report covering Literature Survey, Problem identification, Objectives and Methodology and Seminar presentation skill.

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI**  
**CHOICE BASED CREDIT SYSTEM (CBCS)**  
**SCHEME OF TEACHING AND EXAMINATION 2017-2018 (Approved)**

**B.E.: Medical Electronics**

**VIII SEMESTER**

Sl. No	Subject Code	Title	Teaching Department	Teaching Hours /Week		Examination				Credit
				Theory	Practical/ Drawing	Duration (in Hrs)	SEE Marks	CIE Marks	Total Marks	
1	17ML81	Medical Imaging Systems	ML	4	-	3	60	40	100	4
2	17ML82X	Neural Networks and AI in Biomedical Engineering	ML	4	-	3	60	40	100	4
3	17ML83X	Professional Elective-V	ML	3	-	3	60	40	100	3
4	17ML84	Internship / Professional Practice	ML	Industry Oriented		3	50	50	100	2
5	17MLP85	Project Work Phase-II	ML	-	6	3	100	100	200	6
6	17MLS86	Seminar	ML	-	4	-	-	100	100	1
<b>TOTAL</b>				<b>11</b>	<b>10</b>	<b>15</b>	<b>330</b>	<b>370</b>	<b>700</b>	<b>20</b>

<b>Professional Elective-V</b>	
17ML831	Bio-MEMS
17ML832	Medical Device Regulations
17ML833	Picture Archiving and Communication Systems
17ML834	Programmable System on Chip (PSoC)

- **Internship / Professional Practice:** The 4 Weeks internship to be completed between the VI and VII semester vacation, and/or VII and VIII semester vacation period.