

### 13. Courses of Study and Scheme of Assessment

#### BE ELECTRONICS AND COMMUNICATION ENGINEERING

(2019 Regulations)  
(Minimum credits to be earned: 165)

Course Code	Course Title	Periods / week				Maximum Marks			
		Lecture	Tutorial	Practical	Credits	CA	FE	Total	CAT
<b>SEMESTER 1</b>									
19L101	Calculus and its Applications	3	1	0	4	50	50	100	BS
19L102	Physics	3	0	0	3	50	50	100	BS
19L103	Chemistry of Electronic Materials	3	0	0	3	50	50	100	BS
19L104	Problem Solving and C Programming	2	0	0	2	50	50	100	ES
19G105	English Language Proficiency	2	1	0	3	50	50	100	HS
19L110	Engineering Graphics	0	0	4	2	50	50	100	ES
19L111	Basic Sciences Laboratory *	0	0	4	2	50	50	100	BS
19L112	Problem Solving and C Programming Laboratory	0	0	2	1	50	50	100	ES
19IP15	Induction Programme **	0	0	0	0	-	-	-	MC
<b>Total 25 periods</b>		<b>13</b>	<b>2</b>	<b>10</b>	<b>20</b>	<b>400</b>	<b>400</b>	<b>800</b>	
<b>SEMESTER 2</b>									
19L201	Complex Variables and Transforms	3	1	0	4	50	50	100	BS
19L202	Materials Science	2	0	0	2	50	50	100	BS
19L203	Industrial Electrochemistry	2	0	0	2	50	50	100	BS
19L204	Electron Devices	3	0	0	3	50	50	100	ES
19L205	Circuit Theory	3	1	0	4	50	50	100	ES
19L210	Language Elective	0	0	4	2	50	50	100	HS
19L211	Devices and Circuits Laboratory	0	0	4	2	50	50	100	ES
19L212	Python Programming Laboratory	0	0	4	2	50	50	100	ES
19L215	Activity Point Programme #	-	-	-	-	-	-	-	MC
<b>Semester 2- Summer Term</b>									
19A213	Internship <sup>€</sup>	0	0	0	2 <sup>€</sup>	100	0	100	EEC
<b>Total 27 periods</b>		<b>13</b>	<b>2</b>	<b>12</b>	<b>23</b>	<b>500</b>	<b>400</b>	<b>900</b>	

\* Physics and Chemistry Lab

\*\* As per norms

CA Continuous Assessment

FE Final Examination

# As per AICTE Norms; Total 60 hrs; Grade : Completed / Not Completed; Not Counted

€ This course will be conducted prior to the commencement of the third semester for a period of 3 weeks

£ For internship, one credit is equivalent to minimum 40 hours of work as per norms

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**BE ELECTRONICS AND COMMUNICATION ENGINEERING****(2019 Regulations)**

Course Code	Course Title	Periods / week			Maximum Marks				
		Lecture	Tutorial	Practical	Credits	CA	FE	Total	CAT
<b>SEMESTER 3</b>									
19L301	Linear Algebra and Numerical Analysis	3	1	0	4	50	50	100	BS
19L302	Analog Electronics	3	0	0	3	50	50	100	PC
19L303	Digital Electronics	3	0	0	3	50	50	100	PC
19L304	Electromagnetic Fields and Waves	3	1	0	4	50	50	100	PC
19L305	Data Structures and Algorithms	2	2	0	4	50	50	100	ES
19O306	Economics for Engineers	3	0	0	3	50	50	100	HS
19L310	Analog Electronics Laboratory	0	0	2	1	50	50	100	PC
19L311	Digital Electronics Laboratory	0	0	2	1	50	50	100	PC
19K312	Environmental Science **	2	0	0	0	-	-	-	MC
19L315	Activity Point Programme #	-	-	-	-	-	-	-	MC
<b>Total 27 periods</b>		<b>19</b>	<b>4</b>	<b>4</b>	<b>23</b>	<b>400</b>	<b>400</b>	<b>800</b>	
<b>SEMESTER 4</b>									
19L401	Probability and Random Processes	3	1	0	4	50	50	100	BS
19L402	Linear Integrated Circuits	3	0	0	3	50	50	100	PC
19L403	Signals and Systems	3	0	0	3	50	50	100	PC
19L404	Measurements and Instrumentation	2	1	0	3	50	50	100	PC
19L405	Computer Architecture	3	1	0	4	50	50	100	PC
19L406	Antennas and Wave Propagation	3	1	0	4	50	50	100	PC
19L410	Linear Integrated Circuits Laboratory	0	0	2	1	50	50	100	PC
19L411	Signals and Systems Laboratory	0	0	2	1	50	50	100	PC
19O412	Indian Constitution **	2	0	0	0	-	-	-	MC
19Q413	Soft Skills Development	0	0	2	1	100	0	100	EEC
19L415	Activity Point Programme #	-	-	-	-	-	-	-	MC
<b>Total 29 periods</b>		<b>19</b>	<b>4</b>	<b>6</b>	<b>24</b>	<b>500</b>	<b>400</b>	<b>900</b>	

\*\* As per norms

CA Continuous Assessment

FE Final Examination

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Course Code	Course Title	Periods / week			Maximum Marks				
		Lecture	Tutorial	Practical	Credits	CA	FE	Total	CAT
<b>SEMESTER 5</b>									
19_____	Open Elective I	3	0	0	3	50	50	100	OE
19L502	Communication Engineering	3	0	0	3	50	50	100	PC
19L503	Microprocessors and Microcontrollers	3	0	0	3	50	50	100	PC
19L504	Control Systems	3	0	0	3	50	50	100	PC
19L505	Computer Networks	3	1	0	4	50	50	100	PC
19L_____	Professional Elective I	3	0	0	3	50	50	100	PE
19L510	Communication Engineering Laboratory	0	0	2	1	50	50	100	PC
19L511	Microprocessors and Microcontrollers Laboratory	0	0	2	1	50	50	100	PC
19Q513	Business and Managerial Communications	0	0	2	1	100	0	100	EEC
19L515	Activity Point Programme #	-	-	-	-	-	-	-	MC
<b>Total 25 periods</b>		<b>18</b>	<b>1</b>	<b>6</b>	<b>22</b>	<b>500</b>	<b>400</b>	<b>900</b>	
<b>SEMESTER 6</b>									
19L601	Digital Signal Processing	3	0	0	3	50	50	100	PC
19L602	Digital Communication	3	0	0	3	50	50	100	PC
19L603	VLSI Design	3	0	0	3	50	50	100	PC
19L604	Embedded Systems and IoT	3	1	0	4	50	50	100	PC
19L605	Digital Image Processing	3	0	0	3	50	50	100	PC
19L610	Digital Signal Processing Laboratory	0	0	2	1	50	50	100	PC
19L611	VLSI Design Laboratory	0	0	2	1	50	50	100	PC
19L620	Innovation Practices	0	0	4	2	100	0	100	EEC
19Q613	Quantitative and Reasoning Skills	0	0	2	1	100	0	100	EEC
19L615	Activity Point Programme #	-	-	-	-	-	-	-	MC
19L_____	Professional Elective II	3	0	0	3	50	50	100	PE
<b>Total 29 periods</b>		<b>18</b>	<b>1</b>	<b>10</b>	<b>24</b>	<b>600</b>	<b>400</b>	<b>1000</b>	

At the end of 6th semester, the students are required to earn the minimum number of activity points from the AICTE mandated ACTIVITY POINT PROGRAMME to qualify for the award of BE/BTech degree (Refer Section 4 (vii) (c) of 2019 Regulations)

CA            Continuous Assessment  
 FE            Final Examination  
 #             As per AICTE Norms; Total 60 hrs; Grade : Completed / Not Completed; Not Counted

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Course Code	Course Title	Periods / week			Maximum Marks				
		Lecture	Tutorial	Practical	Credits	CA	FE	Total	CAT
<b>SEMESTER 7</b>									
19L701	Microwave Engineering	3	0	0	3	50	50	100	PC
19L702	Wireless Communication	3	0	0	3	50	50	100	PC
19L711	Microwave Engineering Laboratory	0	0	2	1	50	50	100	PC
19L712	Digital Communication Engineering Laboratory	0	0	2	1	50	50	100	PC
19L720	Project Work I	0	0	4	2	50	50	100	EEC
19L____	Professional Elective IV	3	0	0	3	50	50	100	PE
19L____	Professional Elective III	3	0	0	3	50	50	100	PE
19____	Open Elective II	3	0	0	3	50	50	100	OE
<b>Total 23 periods</b>		<b>15</b>	<b>0</b>	<b>8</b>	<b>19</b>	<b>400</b>	<b>400</b>	<b>800</b>	
<b>SEMESTER 8</b>									
19L____	Professional Elective V	3	0	0	3	50	50	100	PE
19L____	Professional Elective VI	3	0	0	3	50	50	100	PE
19L820	Project Work II	0	0	8	4	50	50	100	EEC
<b>Total 14 periods</b>		<b>6</b>	<b>0</b>	<b>8</b>	<b>10</b>	<b>150</b>	<b>150</b>	<b>300</b>	

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## PROFESSIONAL ELECTIVES

### ADVANCED COMMUNICATION SYSTEMS

- 19L001 Satellite Communication
- 19L003 Fiber Optic Communication
- 19L004 Radar Communication
- 19L036 Digital Communication receivers

### COMPUTER SCIENCE ELECTIVES

- 19L002 Digital Switching Systems
- 19L029 Advanced Computer Architecture and Parallel Processing
- 19L030 Embedded Linux
- 19L031 Operating Systems
- 19L032 Relational Database Management Systems
- 19L033 Soft Computing Techniques
- 19L035 Computer and Machine Vision
- 19L038 Deep Learning

### RADIO FREQUENCY SYSTEMS

- 19L005 Radio Frequency Integrated Circuits
- 19L006 Computational Electromagnetics
- 19L007 Advanced Radiating System
- 19L008 Smart Antennas
- 19L037 EMC Test and Measurements

### SIGNAL PROCESSING

- 19L009 Speech Signal Processing
- 19L010 Multimedia Compression Techniques
- 19L011 Wavelets and its Applications
- 19L012 Advanced Digital Signal Processing
- 19L013 Pattern Recognition and Machine Learning
- 19L025 Digital Signal Processing System Design

### NETWORKS

- 19L014 Wireless Systems and Standards
- 19L015 Wireless Sensor Networks
- 19L016 Wireless Networking
- 19L018 Network Security
- 19L034 Software Defined Networking
- 19L017 Long Term Evolution Technologies

### SYSTEM DESIGN

- 19L019 FPGA Based System Design
- 19L026 Vehicular Systems and Networks
- 19L027 Advanced Processor Architectures
- 19L028 Real time systems

### VLSI DESIGN

- 19L020 Analog VLSI Circuits
- 19L021 Low Power VLSI Design
- 19L022 Nano Electronics
- 19L023 Device Modeling
- 19L024 System-on-Chip Design

## LANGUAGE ELECTIVES

- 19G001 Communication Skills for Engineers
- 19G002 German- Level A1.1
- 19G003 French Language Level 1
- 19G004 Basic Japanese

## ONE-CREDIT COURSES

### ELECTRONICS AND COMMUNICATION ENGINEERING

- 19LF01 Linux and Scripting Languages
- 19LF02 Avionics
- 19LF03 System Level Verification Techniques and Methodologies
- 19LF04 Advanced Avionics
- 19LF05 E-Commerce Security
- 19LF06 Nano Technology
- 19LF07 Machine Vision Algorithms and System Design
- 19LF08 Routing Architecture and Design
- 19LF09 Automotive Controller Area Network and Security
- 19LF10 Underwater Tactical and Communication Engineering
- 19LF11 Embedded Processing With FPGAs
- 19LF12 ASIC Flow for Mixed Signal VLSI Design
- 19LF13 Design of satellite sub-systems and telemetry
- 19LF14 LoRa Gateway Design & Application
- 19LF15 5G Technology

### HUMANITIES

- 19OFA1 Export – Import Practices
- 19OFA2 Insurance - Concepts and Practices
- 19OFA3 Public Finance
- 19OFA4 Security Analysis and Portfolio Management
- 19OFA5 Social Entrepreneurship

### ENGLISH

- 19GF01 Interpersonal and Organizational Communication
- 19GF02 Human Values Through Literature

### Summary of Credit Distribution

<b>BE ELECTRONICS AND COMMUNICATION ENGINEERING</b>										
<b>S. No</b>	<b>Course Category</b>	<b>Credits Per Semester</b>								<b>Total Credits</b>
		<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	
1	HS	3	2	3	0	0	0	0	0	8
2	BS	12	8	4	4	0	0	0	0	28
3	ES	5	11	4	0	0	0	0	0	20
4	PC	0	0	12	19	15	18	8	0	72
5	PE	0	0	0	0	3	3	6	6	18
6	OE	0	0	0	0	3	0	3	0	6
7	EEC	0	0+2	0	1	1	3	2	4	13
8	MC	-	-	-	-	-	-	-	-	-
	<b>TOTAL</b>	<b>20</b>	<b>21+2</b>	<b>23</b>	<b>24</b>	<b>22</b>	<b>24</b>	<b>19</b>	<b>10</b>	<b>165</b>

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