

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

#### BE COMPUTER SCIENCE AND 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>									
19Z101	Calculus and its Applications	3	1	0	4	50	50	100	BS
19Z102	Electrical and Electronics Systems	3	0	0	3	50	50	100	ES
19Z103	Chemistry of Electronic Materials	3	0	0	3	50	50	100	BS
19Z104	Problem Solving and Python Programming	3	0	0	3	50	50	100	ES
19G105	English Language Proficiency	2	1	0	3	50	50	100	HS
19Z110	Basic Sciences Laboratory	0	0	4	2	50	50	100	BS
19Z111	Engineering Practices	0	0	2	1	50	50	100	ES
19Z112	Python Programming Laboratory	0	0	4	2	50	50	100	ES
19IP15	Induction Programme **	0	0	0	0	-	-	-	MC
<b>Total 26 periods</b>		<b>14</b>	<b>2</b>	<b>10</b>	<b>21</b>	<b>400</b>	<b>400</b>	<b>800</b>	
<b>SEMESTER 2</b>									
19Z201	Transforms and its Applications	3	1	0	4	50	50	100	BS
19Z202	Materials Science	3	0	0	3	50	50	100	BS
19Z203	Industrial Electrochemistry	2	0	0	2	50	50	100	BS
19Z204	Digital Design	3	0	0	3	50	50	100	ES
19Z205	C Programming	2	2	0	4	50	50	100	ES
19G__	Language Electives	0	0	4	2	50	50	100	HS
19Z211	Digital Design Laboratory	0	0	4	2	50	50	100	ES
19Z213	Engineering Graphics	0	0	4	2	50	50	100	ES
19Z215	Activity Point Programme *	-	-	-	Grade	-	-	-	MC
<b>Semester 2- Summer Term</b>									
19A213	Internship <sup>€</sup>	0	0	0	2 <sup>€</sup>	100	0	100	EEC
<b>Total 28 periods</b>		<b>13</b>	<b>3</b>	<b>12</b>	<b>22</b>	<b>500</b>	<b>400</b>	<b>900</b>	

\*\* As per norms

\* As per AICTE Norms; Total 60 hrs; Grade: Completed / Not completed; Not counted for CGPA

CA Continuous Assessment

FE Final Examination

€ 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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		Lecture	Tutorial	Practical	Credits	CA	FE	Total	CAT	
<b>SEMESTER 3</b>										
19Z301	Linear Algebra	3	1	0	4	50	50	100	BS	
19Z302	Data Structures	4	0	0	4	50	50	100	PC	
19Z303	Computer Architecture	3	1	0	4	50	50	100	ES	
19Z304	Discrete Structures	2	1	0	3	50	50	100	PC	
19Z305	Object Oriented Programming	3	0	0	3	50	50	100	PC	
19O306	Economics for Engineers	3	0	0	3	50	50	100	HS	
19Z310	Data Structures Laboratory	0	0	2	1	50	50	100	PC	
19Z311	Object Oriented Programming Laboratory	0	0	2	1	50	50	100	PC	
19K312	Environmental Science **	2	0	0	0	-	-	-	MC	
19Z315	Activity Point Programme *	-	-	-	Grade	-	-	-	MC	
<b>Total 27 periods</b>		<b>20</b>	<b>3</b>	<b>4</b>	<b>23</b>	<b>400</b>	<b>400</b>	<b>800</b>		
<b>SEMESTER 4</b>										
19Z401	Probability, Stochastic Processes and Statistics	3	1	0	4	50	50	100	BS	
19Z402	Design and Analysis of Algorithms	3	1	0	4	50	50	100	PC	
19Z403	Operating Systems	3	0	0	3	50	50	100	PC	
19Z404	Database Management Systems	3	0	0	3	50	50	100	PC	
19Z405	Software Engineering	3	0	0	3	50	50	100	PC	
19____	Open Elective I	3	0	0	3	50	50	100	OE	
19Z410	Operating Systems Laboratory	0	0	2	1	50	50	100	PC	
19Z411	Database Management 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	
19Z415	Activity Point Programme *	-	-	-	Grade	-	-	-	MC	
<b>Total 28 periods</b>		<b>20</b>	<b>2</b>	<b>6</b>	<b>23</b>	<b>500</b>	<b>400</b>	<b>900</b>		

\*\* As per norms

\* As per AICTE Norms; Total 60 hrs; Grade : Completed / Not completed; Not counted for CGPA

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<b>SEMESTER 5</b>									
19Z501	Theory of Computing	3	1	0	4	50	50	100	PC
19Z502	Microprocessors and Interfacing	3	0	0	3	50	50	100	PC
19Z503	Artificial Intelligence	3	0	0	3	50	50	100	PC
19Z504	Computer Networks	3	0	0	3	50	50	100	PC
19Z505	Object Oriented Analysis and Design	2	2	0	4	50	50	100	PC
19Z510	Computer Networks Laboratory	0	0	2	1	50	50	100	PC
19Z511	Microprocessors and Interfacing Laboratory	0	0	2	1	50	50	100	PC
19Z512	Software Package Development	0	0	4	2	50	50	100	EEC
19Q513	Business and Managerial Communications	0	0	2	1	100	0	100	EEC
19Z515	Activity Point Programme *	-	-	-	Grade	-	-	-	MC
<b>Total 27 periods</b>		<b>14</b>	<b>3</b>	<b>10</b>	<b>22</b>	<b>500</b>	<b>400</b>	<b>900</b>	
<b>SEMESTER 6</b>									
19Z601	Machine Learning	3	0	0	3	50	50	100	PC
19Z602	Compiler Design	3	1	0	4	50	50	100	PC
19Z603	Distributed Computing	3	0	0	3	50	50	100	PC
19Z604	Embedded Systems	2	2	0	4	50	50	100	PC
19Z__	Professional Elective I	3	0	0	3	50	50	100	PE
19Z610	Machine Learning Laboratory	0	0	2	1	50	50	100	PC
19Z611	Distributed Computing Laboratory	0	0	2	1	50	50	100	PC
19Z612	Application Development Laboratory	0	0	4	2	50	50	100	PC
19Q613	Quantitative and Reasoning Skills	0	0	2	1	100	0	100	EEC
19Z620	Innovation Practices	0	0	4	2	50	50	100	EEC
19Z615	Activity Point Programme *	-	-	-	Grade	-	-	-	MC
<b>Total 31 periods</b>		<b>14</b>	<b>3</b>	<b>14</b>	<b>24</b>	<b>550</b>	<b>450</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)

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		Lecture	Tutorial	Practical	Credits	CA	FE	Total	CAT
<b>SEMESTER 7</b>									
19Z701	Cryptography	2	2	0	4	50	50	100	PC
19____	Open Elective II	3	0	0	3	50	50	100	OE
19Z__	Professional Elective II	3	0	0	3	50	50	100	PE
19Z__	Professional Elective III	3	0	0	3	50	50	100	PE
19Z__	Professional Elective IV	3	0	0	3	50	50	100	PE
19Z720	Project Work I	0	0	4	2	50	50	100	EEC
<b>Total 20 periods</b>		<b>14</b>	<b>2</b>	<b>4</b>	<b>18</b>	<b>300</b>	<b>300</b>	<b>600</b>	
<b>SEMESTER 8</b>									
19Z__	Professional Elective V	3	0	0	3	50	50	100	PE
19Z__	Professional Elective VI	3	0	0	3	50	50	100	PE
19Z820	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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## LANGUAGE ELECTIVES

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

## PROFESSIONAL ELECTIVES

- 19Z001 Approximation Algorithms
- 19Z002 Advanced Data Structures
- 19Z003 Big Data and Analytics
- 19Z004 Computer Graphics
- 19Z005 Computer Vision
- 19Z006 Deep Learning
- 19Z007 Information Retrieval
- 19Z008 Information Security
- 19Z009 Internet of Things
- 19Z010 Multicore Architecture
- 19Z011 Multi-Tier Computing
- 19Z012 Natural Language Processing
- 19Z013 Open Source Systems
- 19Z014 Parallel Programming
- 19Z015 Programming Paradigms
- 19Z016 Randomized Algorithms
- 19Z017 Semantic Web Technology
- 19Z018 Service Oriented Architecture
- 19Z019 Signal Processing
- 19Z020 Soft Computing
- 19Z021 Software Defined Networks
- 19Z022 Software Project Management
- 19Z023 Software Testing and Quality Assurance
- 19Z024 Storage Management
- 19Z025 Unix Internals
- 19Z026 User Interface Design
- 19Z027 XML and Web Services
- 19Z028 Wireless Networks
- 19Z029 Social and Economic Network Analysis
- 19Z030 Cloud Computing

## ONE-CREDIT COURSES

### COMPUTER SCIENCE AND ENGINEERING

- 19ZF01 Game Programming
- 19ZF02 Design of Database Query Compiler
- 19ZF03 Test Automation using Open Source Tools
- 19ZF04 IoT for Telecommunication Systems
- 19ZF05 Openstack and Docker
- 19ZF06 Blockchain
- 19ZF07 Ethereum Development
- 19ZF08 Web Development and Configuration Management Using Python
- 19ZF09 Full Stack Development

### ENGLISH

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

### HUMANITIES

- 19OFA1 Export – Import Practices
- 19OFA2 Insurance - Concepts and Practices
- 19OFA3 Public Finance
- 19OFA4 Public Finance and Taxation
- 19OFA5 Social Entrepreneurship

### Summary of Credit Distribution

<b>BE COMPUTER SCIENCE AND 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	9	9	4	4	0	0	0	0	26
3	ES	9	11	4	0	0	0	0	0	24
4	PC	0	0	12	15	19	18	4	0	68
5	PE	0	0	0	0	0	3	9	6	18
6	OE	0	0	0	3	0	0	3	0	6
7	EEC	0	0+2 <sup>£</sup>	0	1	3	3	2	4	15
8	MC	-	-	-	-	-	-	-	-	-
	<b>TOTAL</b>	<b>21</b>	<b>22+2<sup>£</sup></b>	<b>23</b>	<b>23</b>	<b>22</b>	<b>24</b>	<b>18</b>	<b>10</b>	<b>165</b>

£ Summer Term Course(s)

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