



B. 19 Syllabus for CE, JNTUK - w. e. t. 2019-20

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY: KAKINADA**  
**KAKINADA - 533 003, Andhra Pradesh, India**

**DEPARTMENT OF CIVIL ENGINEERING**

## **COURSE STRUCTURE AND SYLLABUS**

**For**

**B. TECH CIVIL ENGINEERING**

*(Applicable for batches admitted from 2019-2020)*



**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY: KAKINADA**

**KAKINADA - 533 003, Andhra Pradesh, India**





**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY: KAKINADA**  
**KAKINADA - 533 003, Andhra Pradesh, India**

**DEPARTMENT OF CIVIL ENGINEERING**

**I Year - I SEMESTER**

SL No	Course Code	Subjects	L	T	P	Credits
1	BS1101	Mathematics - I	3	0	0	3
2	BS1102	Mathematics - II	3	0	0	3
3	BS1108	Engineering Physics	3	0	0	3
4	ES1104	Engineering Mechanics	3	1	0	4
5	ES1103	Engineering Drawing	1	0	3	2.5
6	HS1102	English Lab	0	0	3	1.5
7	BS1109	Engineering Physics Lab	0	0	3	1.5
8	PR1101	Engineering Exploration Project	0	0	2	1
<b>Total Credits</b>			<b>16</b>	<b>0</b>	<b>12</b>	<b>19.5</b>

**I Year - II SEMESTER**

SL No	Course Code	Subjects	L	T	P	Credits
1	HS1201	English	3	0	0	3
2	BS1203	Mathematics - III	3	0	0	3
3	BS1210	Engineering Chemistry	3	0	0	3
4	ES1201	Programming for problem Solving Using C	3	0	0	3
5	ES1207	Computer Aided Engineering Drawing	1	0	3	2.5
6	ES1202	Programming for problem Solving Using C Lab	0	0	3	1.5
7	BS1211	Engineering Chemistry Lab	0	0	3	1.5
8	HS1203	Communications Skills Lab	0	0	3	1.5
9	ES1219	Workshop Practice Lab	0	0	3	1.5
10	MC1201	Environmental Science	3	0	0	0
<b>Total Credits</b>			<b>15</b>	<b>0</b>	<b>11</b>	<b>20.5</b>

  
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**DEPARTMENT OF CIVIL ENGINEERING**

**I YEAR: I- SEMESTER**

Sl. No.	Course Code	Course Title	L	T	P	Credits
1	BS301	Complex Variables and Statistical Methods	3	0	0	3
2	PC301	Strength of Materials-I	3	0	0	3
3	PC302	Fluid Mechanics	3	0	0	3
4	ES301	Surveying and Geometrics'	3	0	0	3
5	PC303	Building Materials, Construction and Planning	3	0	0	3
6	PC304	Transportation Engineering-I	3	0	0	3
7	PC305	Strength of Materials Lab	0	0	3	1.5
8	PC306	Surveying Field Work – I	0	0	3	1.5
9	MC301	Constitution of India	2	0	0	0
<b>Total Credits</b>						<b>21</b>

**II YEAR: II- SEMESTER**

Sl. No.	Course Code	Course Title	L	T	P	Credits
1	PC401	Strength of Materials-II	3	0	0	3
2	PC402	Hydraulics and Hydraulic Machinery	3	0	0	3
3	ES401	Engineering Geology	3	0	0	3
4	PC403	Transportation Engineering - II	3	0	0	3
5	PC404	Environmental Engineering - I	3	0	0	3
6	PC405	Engineering Geology Lab	0	0	2	1
7	PC406	Transportation Engineering Lab	0	0	3	1.5
8	PC407	Fluid Mechanics & Hydraulics Machinery Lab	0	0	3	1.5
9	MC401	Essence of Indian Traditional Knowledge/ Professional Ethics and Human Values	2	0	0	0
<b>Total Credits</b>						<b>19</b>

  
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**III YEAR: I- SEMESTER**

SL No.	Course Code	Course Title	L	T	P	Credits
1	PC501	Structural Analysis	3	0	0	3
2	PC502	Concrete Technology	2	0	0	2
3	PC503	Water Resources Engineering - I	3	0	0	3
4	PC504	Environmental Engineering - II	3	0	0	3
5	PE501	Program Elective – I	3	0	0	3
6	OE501	Open Elective – I	3	0	0	3
7	PC506	Concrete Technology Lab	0	0	3	1.5
8	PC507	Surveying Field Work - II	0	0	3	1.5
<b>Total Credits</b>						<b>20</b>

**III YEAR: II- SEMESTER**

SL No.	Course Code	Course Title	L	T	P	Credits
1	PC601	Design & Drawing of Reinforced Concrete Structures	3	0	0	3
2	PC602	Water Resources Engineering – II	3	0	0	3
3	PC603	Geotechnical Engineering - I	3	0	0	3
4	HS601	Managerial Economics & Financial Analysis	3	0	0	3
5	PE601	Program Elective – II	3	0	0	3
6	OE601	Open Elective – II	3	0	0	3
7	PC604	CAD Lab	0	0	3	1.5
8	PC605	Environmental Engineering Lab	0	0	3	1.5
9	PR601	Socially Relevant Project	0	0	2	1
10	MC601	Employability Skills	0	0	2	0
<b>Total Credits</b>						<b>22</b>

  
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**IV YEAR: I- SEMESTER**

Sl. No.	Course Code	Course Title	L	T	P	Credits
1	PC701	Design & Drawing of Steel Structures	3	0	0	3
2	PC702	Geotechnical Engineering - II	3	0	0	3
3	PC703	Remote Sensing & GIS	3	0	0	3
4	PE701	Program Elective – III	3	0	0	3
5	OE701	Open Elective – III	3	0	0	3
6	PC704	Remote Sensing & GIS Lab	0	0	3	1.5
7	PC705	Geotechnical Engineering Lab	0	0	3	1.5
8	PR701	Industrial Training/ Internship or Seminar	0	0	3	1
9	PR702	Project Work Phase-I	0	0	4	2
<b>Total Credits</b>						<b>21</b>

**IV YEAR: II- SEMESTER**

Sl. No.	Course Code	Course Title	L	T	P	Credits
1	PC801	Estimation Specifications and Contract	3	0	0	3
2	PE801	Program Elective - IV	3	0	0	3
3	PE802	Program Elective – V	3	0	0	3
4	PR801	Project Work Phase-II	0	0	16	8
<b>Total Credits</b>						<b>17</b>

  
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**DEPARTMENT OF CIVIL ENGINEERING**

Open Electives	Professional Elective-I	Professional Elective-II	Professional Elective-III	Professional Elective-IV	Professional Elective-V
a) Disaster Management	a) Repair & Rehabilitation of Buildings	a) Pre-stressed Concrete	a) Bridge Engineering	a) Finite Element Methods	a) Advanced Structural Analysis
b) Environmental Pollution & Control	b) Environmental Impact Assessment	b) Watershed Management	b) Industrial Waste Water Treatment	b) Design & Drawing of Irrigation Structures	b) Urban Hydrology
c) Elements of Civil Engineering	c) Reinforced Soil Structures	c) Advanced Foundation Engineering	c) Earth & Rock-fill Dams	c) Soil Dynamics and Machine Foundations	c) Ground Improvement Techniques
d) Green Technology	d) Traffic Engineering	d) Urban Transportation Planning	d) Intelligent Transportation Systems	d) Road Safety Engineering	d) Pavement Management Systems
e) Smart Cities	e) Construction Technology & Management	e) Architecture and Town Planning	e) Building Services	e) Disaster Management & Mitigation	e) Low-cost Housing
f) Project Management				f) SWAYAM / NPTEL / MOOCS COURSES (12 weeks duration )	f) SWAYAM / NPTEL / MOOCS COURSES (12 weeks duration )
g) Traffic Safety					
h) Geo-Spatial Technologies					
i) Waste Water Treatment					

  
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**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**

**COURSE STRUCTURE AND SYLLABUS**

**For**

**B. Tech COMPUTER SCIENCE & ENGINEERING**

*(Applicable for batches admitted from 2019-2020)*



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**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**

**COURSE STRUCTURE - R19**

**I Year – I SEMESTER**

S. No	Course Code	Subjects	L	T	P	Credits
1	HS1101	English	3	0	0	3
2	BS1101	Mathematics - I	3	0	0	3
3	BS1106	Applied Chemistry	3	0	0	3
4	ES1112	Fundamentals of Computer Science	3	0	0	3
5	ES1103	Engineering Drawing	1	0	3	2.5
6	HS1102	English Lab	0	0	3	1.5
7	BS1107	Applied Chemistry Lab	0	0	3	1.5
8	ES1105	IT Workshop	0	0	3	1.5
9	MC1101	Environmental Science	3	0	0	0
<b>Total Credits</b>			<b>16</b>	<b>0</b>	<b>12</b>	<b>19</b>

**I Year – II SEMESTER**

S. No	Course Code	Subjects	L	T	P	Credits
1	BS1202	Mathematics – II	3	0	0	3
2	BS1203	Mathematics – III	3	0	0	3
3	BS1204	Applied Physics	3	0	0	3
4	ES1201	Programming for Problem Solving using C	3	0	0	3
5	ES1213	Digital Logic Design	3	0	0	3
6	BS1205	Applied Physics Lab	0	0	3	1.5
7	HS1203	Communication Skills Lab	0	1	2	2
8	ES1202	Programming for Problem Solving using C Lab	0	0	3	1.5
9	PR1201	Engineering Exploration Project	0	0	2	1
10	MC1204	Constitution of India	3	0	0	0
<b>Total Credits</b>			<b>18</b>	<b>1</b>	<b>10</b>	<b>21</b>

  
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**II Year – I SEMESTER**

S.No	Course Code	Courses	L	T	P	Credits
1	CS2101	Mathematical Foundations of Computer Science	3	1	0	4
2	CS2102	Software Engineering	3	0	0	3
3	ES2101	Python Programming	3	0	0	3
4	CS2103	Data Structures	3	0	0	3
5	CS2104	Object Oriented Programming through C++	3	0	0	3
6	CS2105	Computer Organization	3	0	0	3
7	ES2102	Python Programming Lab	0	0	3	1.5
8	CS2106	Data Structures through C++ Lab	0	0	3	1.5
9	MC2101	Essence of Indian Traditional Knowledge	2	0	0	0
10	MC2102	Employability Skills- I*	2	0	0	0
<b>Total</b>			<b>23</b>	<b>1</b>	<b>6</b>	<b>22</b>
<b>*Internal Evaluation through Seminar / Test for 50 marks</b>						

**II Year – II SEMESTER**

S.No	Course Code	Courses	L	T	P	Credits
1	BS2201	Probability and Statistics	3	0	0	3
2	CS2201	Java Programming	2	1	0	3
3	CS2202	Operating Systems	3	0	0	3
4	CS2203	Database Management Systems	3	1	0	4
5	CS2204	Formal Languages and Automata Theory	3	0	0	3
6	CS2205	Java Programming Lab	0	0	3	1.5
7	CS2206	UNIX Operating System Lab	0	0	2	1
8	CS2207	Database Management Systems Lab	0	0	3	1.5
9	MC2201	Professional Ethics & Human Values	3	0	0	0
10	PR2201	Socially Relevant Project*	0	0	2	1
<b>Total</b>			<b>17</b>	<b>2</b>	<b>10</b>	<b>21</b>
<b>*Internal Evaluation through Seminar for 50 marks</b>						

  
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**III Year – I SEMESTER**

S.No	Course Code	Courses	L	T	P	Credits
1	CS3101	Data Warehousing and Data Mining	3	0	0	3
2	CS3102	Computer Networks	3	0	0	3
3	CS3103	Compiler Design	3	0	0	3
4	CS3104	Artificial Intelligence	3	0	0	3
5	PE3101	<b>Professional Elective- I</b> 1. Computer Graphics 2. Principles of Programming Languages 3. Advanced Data Structures 4. Software Testing Methodologies 5. Advanced Computer Architecture	3	0	0	3
6	CS3105	Computer Networks Lab	0	0	2	1
7	CS3106	AI Tools & Techniques Lab	0	0	3	1.5
8	CS3107	Data Mining Lab	0	0	3	1.5
9	MC3101	Employability Skills -II*	2	0	0	0
<b>Total</b>			<b>17</b>	<b>0</b>	<b>8</b>	<b>19</b>

**\*Internal Evaluation through Seminar / Test for 50 marks**

**III Year – II SEMESTER**

S.No	Course Code	Courses	L	T	P	Credits
1	CS3201	Web Technologies	3	0	0	3
2	CS3202	Distributed Systems	3	0	0	3
3	CS3203	Design and Analysis of Algorithms	3	0	0	3
4	PE3201	<b>Professional Elective -II</b> (NPTEL/SWAYAM) <b>Duration: 12 Weeks Minimum</b> <b>*Course/subject title can't be repeated</b>	3	0	0	3
5	OE3201	<b>Open Elective- I (Inter Disciplinary)</b>	3	0	0	3
6	HS3201	Managerial Economics and Financial Accountancy	3	0	0	3
7	CS3204	Web Technologies Lab	0	0	4	2
9	PR3201	Industrial Training / Skill Development Programmes / Research Project in higher learning institutes	0	0	0	1
<b>Total</b>			<b>18</b>	<b>0</b>	<b>4</b>	<b>21</b>

  
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**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**  
**IV Year – I SEMESTER**

S.No	Course Code	Courses	L	T	P	Credits
1	CS4101	Cryptography and Network Security	3	0	0	3
2	CS4102	UML & Design Patterns	3	0	0	3
3	CS4103	Machine Learning	3	0	0	3
4	OE4101	<b>Open Elective -II (Inter Disciplinary)</b>	3	0	0	3
5	PE4101	<b>Professional Elective- III</b> 1. Mobile Computing 2. Data Science 3. NoSQL Databases 4. <b>Internet of Things</b> 5. Software Project Management	3	0	0	3
6	PE4102	<b>Professional Elective- IV</b> 1. Web Services 2. <b>Cloud Computing</b> 3. Mean Stack Technologies 4. Ad-hoc and Sensor Networks 5. Cyber Security & Forensics	3	0	0	3
7	CS4104	UML Lab #	0	0	2	1
8	PR4101	Project- I	0	0	0	2
9	MC4101	IPR & Patents	3	0	0	0
<b>Total</b>			21	0	2	21
# Relevant theory to be taught in the lab						

**IV Year – II SEMESTER**

S.No	Course Code	Courses	L	T	P	Credits
1	HS4201	Management and Organizational Behavior	3	0	0	3
2	OE4201	<b>Open Elective- III (Inter Disciplinary)</b>	3	0	0	3
3	PE4201	<b>Professional Elective-V</b> 1. <b>Deep Learning</b> 2. Quantum Computing 3. DevOps 4. Blockchain Technologies 5. Big Data Analytics	3	0	0	3
4	PR4201	Project- II	0	0	0	7
<b>Total</b>			9	0	0	16

  
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**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**

**Open Electives to be offered by CSE for Other Branches:**

<p><b>Open Elective I:</b></p> <ol style="list-style-type: none"> <li>1. Data Structures</li> <li>2. Java Programming</li> <li>3. Data Base Management Systems</li> <li>4. C++ Programming</li> <li>5. Operating Systems</li> <li>6. Internet of Things</li> </ol>	<p><b>Open Elective II:</b></p> <ol style="list-style-type: none"> <li>1. Problem Solving using Python</li> <li>2. Web Technologies</li> <li>3. Machine Learning</li> <li>4. Distributed Computing</li> <li>5. AI Tools &amp; Techniques</li> <li>6. Data Science</li> </ol>
<p><b>Open Elective III:</b></p> <ol style="list-style-type: none"> <li>1. Big Data</li> <li>2. Image Processing</li> <li>3. Mobile Application Development</li> <li>4. Cyber Security</li> <li>5. Deep Learning</li> <li>6. Blockchain Technologies</li> </ol>	

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R-19 Syllabus for ECE - JNTUK w. e. f. 2019 – 20

## **COURSE STRUCTURE AND SYLLABUS**

**For**

**B. TECH ELECTRONICS AND COMMUNICATION ENGINEERING**

*(Applicable for batches admitted from 2019-2020)*



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**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**

**I Year – I SEMESTER**

Sl No	Course Code	Subjects	L	T	P	Credits
1	HS1101	English	3	0	0	3
2	BS1101	Mathematics - I	3	0	0	3
3	BS1106	Applied Chemistry	3	0	0	3
4	ES1101	Programming for Problem Solving Using C	3	0	0	3
5	ES1103	Engineering Drawing	1	0	3	2.5
6	HS1102	English Lab	0	0	3	1.5
7	BS1107	Applied Chemistry Lab	0	0	3	1.5
8	ES1102	Programming for Problem Solving Using C Lab	0	0	3	1.5
9	MC1101	Environmental Science	3	0	0	0
<b>Total Credits</b>			<b>16</b>	<b>0</b>	<b>12</b>	<b>19</b>

**I Year – II SEMESTER**

Sl No	Course Code	Subjects	L	T	P	Credits
1	BS1202	Mathematics – II	3	0	0	3
2	BS1203	Mathematics – III	3	0	0	3
3	BS1204	Applied Physics	3	0	0	3
4	ES1209	Network Analysis	3	0	0	3
5	ES1211	Basic Electrical Engineering	3	0	0	3
6	ES1215	Electronic workshop	0	0	2	1
7	ES1208	Basic Electrical Engineering Lab	0	0	3	1.5
8	BS1205	Applied Physics Lab	0	0	3	1.5
9	HS1203	Communication Skills Lab	0	0	2	1
10	PR1201	Engineering Exploration Project	0	0	2	1
			<b>15</b>	<b>0</b>	<b>12</b>	<b>21</b>

  
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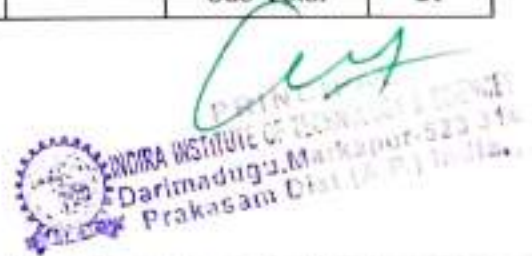
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**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**

### II Year - I Semester

S. No.	Course	Category	L	T	P	Credits
1	Electronic Devices and Circuits	PC	3	0	0	3
2	Switching Theory and Logic Design	PC	3	0	0	3
3	Signals and Systems	PC	3	0	0	3
4	Random Variables and Stochastic Processes	PC	3	0	0	3
5	Object Oriented Programming through Java	ES	3	0	0	3
6	Managerial Economics & Financial Analysis	HS	3	0	0	3
7	Electronic Devices and Circuits - Lab	LC	0	0	3	1.5
8	Switching Theory and Logic Design - Lab	LC	0	0	3	1.5
9	Constitution of India	MC	3	0	0	0
Sub-Total						<b>21</b>

### II Year - II Semester

S. No.	Course	Category	L	T	P	Credits
1	Electronic Circuit Analysis	PC	3	0	0	3
2	Linear Control Systems	PC	3	0	0	3
3	Electromagnetic Waves and Transmission Lines	PC	3	0	0	3
4	Analog Communications	PC	3	0	0	3
5	Computer Architecture and Organization	ES	3	0	0	3
6	Management and Organizational Behavior	HS	3	0	0	3
7	Electronic Circuit Analysis - Lab	LC	0	0	3	1.5
8	Analog Communications - Lab	LC	0	0	3	1.5
Sub-Total						<b>21</b>






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### III Year – I Semester

S. No.	Course	Category	L	T	P	Credits
1	Linear Integrated Circuits and Applications	PC	3	0	0	3
2	Microprocessor and Microcontrollers	PC	3	0	0	3
3	Digital Communications	PC	3	0	0	3
4	Electronic Measurements & Instrumentation	PC	3	0	0	3
5	Professional Elective (PE 1)	PE	3	0	0	3
6	Linear Integrated Circuits and Applications - Lab	LC	0	0	3	1.5
7	Digital Communications Lab	LC	0	0	3	1.5
8	Microprocessor and Microcontrollers - Lab	LC	0	0	3	1.5
9	Mini Project with Hardware Development	PR	0	0	3	1.5
10	Essence of Indian Traditional Knowledge	MC	3	0	0	0
			Sub-Total			<b>21</b>

### III Year – IISemester

S. No.	Course	Category	L	T	P	Credits
1	Wired and Wireless Transmission Devices	PC	3	0	0	3
2	VLSI Design	PC	3	0	0	3
3	Digital Signal Processing	PC	3	0	0	3
4	Professional Elective (PE2)	PE	3	0	0	3
5	Open Elective (OE1)	OE	3	0	0	3
6	Internet of Things	PC	3	0	0	3
7	VLSI Lab	LC	0	0	3	1.5
8	Digital Signal Processing Lab	LC	0	0	3	1.5
9	Intellectual Property Rights (IPR) & Patents	MC	3	0	0	0
			Sub-Total			<b>21</b>


**PRINCIPAL**  
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**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY: KAKINADA**  
**KAKINADA – 533 003, Andhra Pradesh, India**  
**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**

#### IV Year – I Semester

S. No.	Course	Category	L	T	P	Credits
1	Microwave and Optical Communication Engineering	PC	3	0	0	3
2	Data Communications & Computer networks	PC	3	0	0	3
3	Digital Image and Video Processing	PC	3	0	0	3
4	Professional Elective (PE3)	PE	3	0	0	3
5	Professional Elective (PE4)	PE	3	0	0	3
6	Internet of Things Lab	LC	0	0	3	1.5
7	Microwave and Optical Communication Engineering LAB	LC	0	0	3	1.5
8	Project - Part I	PR	0	0	6	3
			Sub-Total			<b>21</b>

#### IV Year – II Semester

S. No.	Course	Category	L	T	P	Credits
1	Professional Elective (PE5)	PE	3	0	0	3
2	Open Elective (OE2)	OE	3	0	0	3
3	Project - Part II	PR	0	0	18	9
			Sub-Total			<b>15</b>
			<b>Total</b>			<b>160</b>

  
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 Prakasam Dist.(A.P.) India,



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**KAKINADA – 533 003, Andhra Pradesh, India**  
**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**

**PROFESSIONAL ELECTIVES 1:**

1. Information Theory & Coding
2. Digital System Design using HDL
3. Data structures and Algorithms
4. Soft computing techniques and Python programming
5. Simulation & Mathematical Modeling

**PROFESSIONAL ELECTIVES 2:**

1. Cellular & Mobile Communication
2. Digital IC Design
3. Business Intelligence & Analytics
4. Pattern Recognition
5. Robotics and Automation

**PROFESSIONAL ELECTIVES 3:**

1. Communication Standards and Protocols
2. Analog IC Design
3. Smart Sensors
4. Advanced Digital Signal Processing
5. Augmented Reality

**PROFESSIONAL ELECTIVES 4:**

1. Software Radio
2. Low power VLSI Design
3. Embedded Systems
4. DSP processors and Architectures
5. Multi Media Communication

**PROFESSIONAL ELECTIVES 5:**

1. Wireless Communication
2. VLSI Testing & Testability
3. Machine Learning & Artificial Intelligence
4. Speech Processing
5. Industrial Internet of Things





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**KAKINADA – 533 003, Andhra Pradesh, India**  
**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**

**OPEN ELECTIVES FOR ECE:**

**Open Elective 1:**

1. Data Mining
2. Power Electronics
3. MEMS and its applications
4. Artificial Neural Networks

**Open Elective 2:**

1. 3D Printing
2. Block chain Technology
3. Cyber Security & Cryptography

**OPEN ELECTIVES OFFERED BY ECE:**

- OE 1 Principles of communication  
OE 2 Embedded Systems

  
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Prakasam Dist. (A.P.) India

# COURSE STRUCTURE AND SYLLABUS

For

## MECHANICAL ENGINEERING

*(Applicable for batches admitted from 2016-2017)*



**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY: KAKINADA**  
**KAKINADA - 533 003, Andhra Pradesh, India**

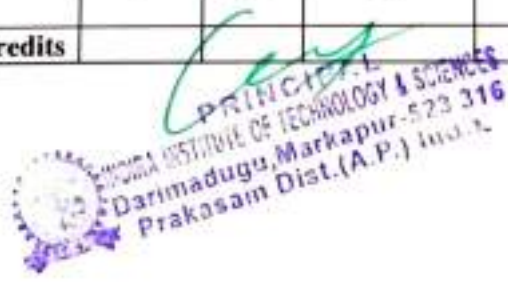
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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY  
DANIMADUGU, MARKAPUR-533 112  
Prakasam Dist (A.P.)

**Year - I Semester**

S. No.	Subjects	L	T	P	Credits
		4	--	--	3
1-HS	English - I	4	--	--	3
2-BS	Mathematics - I	4	--	--	3
3-ES	Engineering Chemistry	4	--	--	3
4-BS	Engineering Mechanics	4	--	--	3
5-BS	Computer Programming	4	--	--	3
6-ES	Environmental Studies	--	--	3	2
7-HS	Engineering/Applied Chemistry Laboratory	--	--	3	2
8-BS	English - Communication Skills Lab - I	--	--	3	2
9-ES	Computer Programming Lab	--	--	3	2
<b>Total Credits</b>					<b>24</b>

**I Year - II Semester**

S. No.	Subjects	L	T	P	Credits
		4	--	--	3
1-HS	English - II	4	--	--	3
2-BS	Mathematics - II (Mathematical Methods)	4	--	--	3
3-BS	Mathematics - III	4	--	--	3
4-ES	Engineering Physics	4	--	--	3
5-HS	Basic Electrical and Electronics Engineering	4	--	--	3
6-ES	Engineering Drawing	4	--	--	3
7-BS	English - Communication Skills Lab - II	--	--	3	2
8-HS	Engineering /Applied Physics Lab	--	--	3	2
9-ES	Engineering /Applied Physics - Virtual Labs - Assignments	--	--	2	--
10	Engg. Workshop & IT Workshop	--	--	3	2
<b>Total Credits</b>					<b>24</b>



### II Year - I Semester

S. No.	Subjects	L	T	P	Credits
1	Metallurgy & Materials Science	4	--	--	3
2	Mechanics of Solids	4	--	--	3
3	Thermodynamics	4	--	--	3
4	Managerial Economics & Financial Analysis	4	--	--	3
5	Fluid Mechanics & Hydraulic Machines	4	--	--	3
6	Computer Aided Engineering Drawing Practice	3	3	--	3
7	Electrical & Electronics Engg. Lab	--	--	3	2
8	Mechanics of Solids & Metallurgy Lab	--	--	3	2
<b>Total Credits</b>					<b>22</b>

### II Year - II Semester

S. No.	Subjects	L	T	P	Credits
1	Kinematics of Machinery	4	--	--	3
2	Thermal Engineering -I	4	--	--	3
3	Production Technology	4	--	--	3
4	Design of Machine Members -I	4	--	--	3
5	Machine Drawing	3	3	--	3
6	Industrial Engineering and Management	4	--	--	3
7	Fluid Mechanics & Hydraulic Machines Lab	--	--	3	2
8	Production Technology Lab	--	--	3	2
<b>Total Credits</b>					<b>22</b>

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 Darimadugu, Markapur-523 319  
 Prakasam Dist.(A.P.) India.

### III Year - I Semester

S. No.	Subjects	L	T	P	Credits
1	Dynamics of Machinery	4	--	--	3
2	Metal Cutting & Machine Tools	4	--	--	3
3	Design of Machine Members-II	4	--	--	3
4	Operations Research	4	--	--	3
5	Thermal Engineering -II	4	--	--	3
6	Theory of Machines Lab	--	--	3	2
7	Machine Tools Lab	--	--	3	2
8	Thermal Engineering Lab	--	--	3	2
9	IPR & Patents	--	2	--	--
<b>Total Credits</b>					<b>21</b>

### III YEAR - II Semester

S. No.	Subjects	L	T	P	Credits
1	Metrology	4	--	--	3
2	Instrumentation & Control Systems	4	--	--	3
3	Refrigeration & Air-conditioning	4	--	--	3
4	Heat Transfer	4	--	--	3
5	<b>OPEN ELECTIVE</b> 1. Entrepreneurship 2. Data Base Management System 3. Waste Water Management 4. Computer Graphics 5. Industrial Robotics 6. Green Engineering Systems	4	--	--	3
6	Heat Transfer Lab	--	--	3	2
7	Metrology & Instrumentation Lab	--	--	3	2
8	Computational Fluid Dynamics Lab	--	--	3	2
9MC	Professional Ethics & Human Values	--	3	--	--
<b>Total Credits</b>					<b>21</b>

  
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### IV Year - I Semester

S. NO	Subjects	L	T	P	Credits
1	Mechatronics	4	--	--	3
2	CAD/CAM	4	--	--	3
3	Finite Element Methods	4	--	--	3
4	Power Plant Engineering	4	--	--	3
5	<b>Elective I</b> 1. Computational Fluid Dynamics 2. Condition Monitoring 3. Additive Manufacturing	4	--	--	3
6	<b>Elective II</b> 1. Advanced Materials 2. Design for Manufacture 3. Gas Dynamics & Jet Propulsion	4	--	--	3
7	CAD/CAM Lab	--	--	2	2
8	Mechatronics Lab	--	--	2	2
<b>Total Credits</b>					<b>22</b>

### IV Year - II Semester

S. No.	Subjects	L	T	P	Credits
1	Production Planning and Control	4	--	--	3
T 2	Unconventional Machining Processes	4	--	--	3
3	Automobile Engineering	4	--	--	3
4	<b>Elective III</b> 1. Thermal Equipment Design 2. Non Destructive Evaluation 3. Quality and Reliability Engineering	4	--	--	3
5	Seminar	--	3	--	2
6	Project	--	--	--	10
<b>Total Credits</b>					<b>24</b>

Total Course Credits = 48+44 + 42 + 46 = 180

  
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 Darimadugu, Markapur-523 316  
 Prakasam Dist.(A.P.) India.



# COURSE STRUCTURE AND SYLLABUS

For

## CIVIL ENGINEERING

*(Applicable for batches admitted from 2016-2017)*



**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY: KAKINADA**  
**KAKINADA - 533 003, Andhra Pradesh, India**

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Darimadugu, Markapur-523 316  
Prakasam Dist.(A.P.) India.

### I Year - I Semester

S. No.	Subjects	L	T	P	Credits
1-HS	English - I	4	--	--	3
2-BS	Mathematics - I	4	--	--	3
3-ES	Engineering Chemistry	4	--	--	3
4-BS	Engineering Mechanics	4	2	--	3
5-BS	Computer Programming	4	--	--	3
6-ES	Environmental Studies	4	--	--	3
7-HS	Engineering / Applied Chemistry Laboratory	--	--	3	2
8-BS	English - Communication Skills Lab - I	--	--	3	2
9-ES	Computer Programming Lab	--	--	3	2
<b>Total Credits</b>					<b>24</b>

### I Year - II Semester

S. No.	Subjects	L	T	P	Credits
1-HS	English - II	4	--	--	3
2-BS	Mathematics - II (Mathematical Methods)	4	--	--	3
3-BS	Mathematics - III	4	--	--	3
4-ES	Engineering Physics	4	--	--	3
5-HS	Elements of Mechanical Engineering	4	--	--	3
6-ES	Engineering Drawing	4	--	--	3
7-BS	English - Communication Skills Lab - II	--	--	3	2
8-HS	Engineering / Applied Physics Lab	--	--	3	2
9-ES	Engineering / Applied Physics - Virtual Labs - Assignments	--	--	2	--
10	Engg. Workshop & IT Workshop	--	--	3	2
<b>Total Credits</b>					<b>24</b>

  
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Dattamulugu, Markapur-52  
Prakasam Dist. (A.P.) India.

## II Year - I Semester

S. No.	Subjects	L	T	P	Credits
1	Probability & Statistics	4	--	--	3
2	Basic Electrical & Electronics Engineering	4	--	--	3
3	Strength of Materials-I	4	--	--	3
4	Building Materials & Construction	4	--	--	3
5	Surveying	4	--	--	3
6	Fluid Mechanics	4	--	--	3
7	Survey Field Work - I	--	--	3	2
8	Strength of Materials Lab	--	--	3	2
MC	Professional Ethics & Human Values	--	3	--	--
<b>Total Credits</b>					<b>22</b>

## II Year - II Semester

S. No.	Subjects	L	T	P	Credits
1	Building Planning & Drawing	4	--	--	3
2	Strength of Materials - II	4	--	--	3
3	Hydraulics & Hydraulic Machinery	4	--	--	3
4	Concrete Technology	4	--	--	3
5	Structural Analysis - I	4	--	--	3
6	Transportation Engineering - I	4	--	--	3
7	FM & HM Lab	--	--	3	2
8	Survey Field Work - II	--	--	3	2
MC	Managerial Economics & Financial Analysis	2	--	--	--
<b>Total Credits</b>					<b>22</b>

  
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 JIET Road, Markapur-523 316  
 Prakashpur, India.


### III Year - I Semester

S. No.	Subjects	L	T	P	Credits
1	Management Science	4	--	--	3
2	Engineering Geology	4	--	--	3
3	Structural Analysis -II	4	--	--	3
4	Design & Drawing of Reinforced Concrete Structures	4	2	--	3
5	Transportation Engineering - II	4	--	--	3
6	Concrete Technology Lab	--	--	3	2
7	Geology Lab	--	--	3	2
8	Transportation Engineering Lab	--	--	3	2
<b>Total Credits</b>					<b>21</b>

### III Year - II Semester

S. No.	Subjects	L	T	P	Credits
1	Design & Drawing of Steel Structures	4	2	--	3
2	Geotechnical Engineering - I	4	--	--	3
3	Environmental Engineering -I	4	--	--	3
4	Water Resource Engineering -I	4	--	--	3
5	<b>OPEN ELECTIVE</b>	4	--	--	3
	i. Electronic Instrumentation				
	ii. Data Base Management Systems				
	iii. Alternative Energy Sources				
	iv. Waste water Management				
	v. Fundamentals of Liquefied Natural Gas				
vi. Green Fuel Technologies					
6	Geotechnical Engineering Lab	--	--	3	2
7	Environmental Engineering Lab	--	--	3	2
8	Computer Aided Engineering Lab	--	--	3	2
<b>Total Credits</b>					<b>21</b>



  
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#### IV Year - I Semester

S. No.	Subjects	L	T	P	Credits
1	Environmental Engineering - II	4	--	--	3
2	Water Resource Engineering - II	4	--	--	3
3	Geotechnical Engineering - II	4	--	--	3
4	Remote Sensing & GIS Applications	4	--	--	3
5	<b>Elective I</b> i. Finite Element Methods ii. Ground Improvement Techniques iii. Air Pollution & Control iv. Urban Hydrology v. Traffic Engineering	4	--	--	3
6	<b>Elective II</b> i. Advanced Structural Engineering ii. Advanced Foundation Engineering iii. Environmental Impact Assessment & Management iv. Ground Water Development v. Pavement Analysis and Design	4	--	--	3
7	IPR & Patents	--	2	--	--
8	GIS & CAD Lab	--	--	2	2
9	Irrigation Design & Drawing	--	--	2	2
<b>Total Credits</b>					<b>22</b>

#### IV Year - II Semester

S. No.	Subjects	L	T	P	Credits
1	Estimation Specification & Contracts	4	--	--	3
2	Construction Technology & Management	4	--	--	3
3	Prestressed Concrete	4	--	--	3
4	<b>Elective III</b> i. Bridge Engineering ii. Soil Dynamics and Foundations iii. Solid and Hazardous Waste Management iv. Water Resources Systems Planning v. Urban Transportation Planning Engg	4	--	--	3
5	Seminar on Internship Project	--	3	--	2
6	Project	--	--	--	10
<b>Total Credits</b>					<b>24</b>

**Total Course Credits = 48+44 + 42 + 46 = 180**

#### SYLLABUS

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Dattamadugu, Markapur-523 316  
Prakasam Dist.(A.P.) India.

# COURSE STRUCTURE AND SYLLABUS

For

## ELECTRICAL AND ELECTRONICS ENGINEERING

*(Applicable for batches admitted from 2016-2017)*



**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY: KAKINADA**  
**KAKINADA - 533 003, Andhra Pradesh, India**

  
PRINCIPAL  
INDIRA INSTITUTE OF TECHNOLOGY & SCIENCES  
Darlmadugb, Markapur-523 318  
Prakasam Dist.(A.P.) India.

### I Year – I Semester

S. No	Subjects	L	T	P	Credits
1-HS	English – I	4	--	--	3
2-BS	Mathematics - I	4	--	--	3
3-ES	Applied Chemistry	4	--	--	3
4-BS	Engineering Mechanics	4	--	--	3
5-BS	Computer Programming	4	--	--	3
6-ES	Environmental Studies	4	--	--	3
7-HS	Applied / Engineering Chemistry Laboratory	--	--	3	2
8-BS	English- Communication Skills Laboratory - I	--	--	3	2
9-ES	Computer Programming Laboratory	--	--	3	2
<b>Total Credits</b>					<b>24</b>

### I Year – II Semester

S. No	Subjects	L	T	P	Credits
1-HS	English – II	4	--	--	3
2-BS	Mathematics – II (Mathematical Methods)	4	--	--	3
3-BS	Mathematics – III	4	--	--	3
4-ES	Applied Physics	4	--	--	3
5	Electrical Circuit Analysis - I	4	--	--	3
6-ES	Engineering Drawing	4	--	--	3
7-BS	English - Communication Skills Laboratory - II	--	--	3	2
8-HS	Applied / Engineering Physics Laboratory	--	--	3	2
9-ES	Applied / Engineering Physics – Virtual Labs - Assignments	--	--	2	--
10	Engg. Workshop & IT Workshop	--	--	3	2
<b>Total Credits</b>					<b>24</b>

  
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 Prakasham Dist. (A.P.) India.

## II Year – I Semester

S. No	Subjects	L	T	P	Credits
1	Electrical Circuit Analysis - II	4	--	--	3
2	Electrical Machines-I	4	--	--	3
3	Basic Electronics and Devices	4	--	--	3
4	Electro Magnetic Fields	4	--	--	3
5	Thermal and Hydro Prime Movers	4	--	--	3
6	Managerial Economics & Financial Analysis	4	--	--	3
7	Thermal and Hydro Laboratory	--	--	3	2
8	Electrical Circuits Laboratory	--	--	3	2
<b>Total Credits</b>					<b>22</b>

## II Year – II Semester

S. No	Subjects	L	T	P	Credits
1	Electrical Measurements	4	--	--	3
2	Electrical Machines-II	4	--	--	3
3	Switching Theory and Logic Design	4	--	--	3
4	Control Systems	4	--	--	3
5	Power Systems-I	4	--	--	3
6	Management Science	4	--	--	3
7	Electrical Machines -I Laboratory	--	--	3	2
8	Electronic Devices & Circuits Laboratory	--	--	3	2
<b>Total Credits</b>					<b>22</b>

  
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### III Year – I Semester

S. No	Subjects	L	T	P	Credits
1	Power Systems-II	4	--	--	3
2	Renewable Energy Sources	4	--	--	3
3	Signals and Systems	4	--	--	3
4	Pulse & Digital Circuits	4	--	--	3
5	Power Electronics	4	--	--	3
6	Electrical Machines-II Laboratory	--	--	3	2
7	Control Systems Laboratory	--	--	3	2
8	Electrical Measurements Laboratory	--	--	3	2
9-MC	IPR & Patents	--	2	--	--
<b>Total Credits</b>					<b>21</b>

### III Year – II Semester

S. No	Subjects	L	T	P	Credits
1	Power Electronic Controllers & Drives	4	--	--	3
2	Power System Analysis	4	--	--	3
3	Micro Processors and Micro controllers	4	--	--	3
4	Data Structures	4	--	--	3
5	<b>Open Elective</b>	4	--	--	3
	1. Unix and Shell Programming				
	2. OOPS Through JAVA				
	<b>3. VLSI Design</b>				
	4. Robotics				
	5. Neural Networks & Fuzzy Logic				
6. Energy Audit and Conservation & Management					
6	Power Electronics Laboratory	--	--	3	2
7	Microprocessors & Microcontrollers Laboratory	--	--	3	2
8	Data Structures Laboratory	--	--	3	2
9-MC	Professional Ethics & Human Values	--	3	--	--
<b>Total Credits</b>					<b>21</b>

  
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 Prakasam Dist. (A.P.) India.

**IV Year – I Semester**

S. No	Subjects	L	T	P	Credits
1	Utilization of Electrical Energy	4	--	--	3
2	Linear IC Applications	4	--	--	3
3	Power System Operation & Control	4	--	--	3
4	Switchgear and Protection	4	--	--	3
5	<b>Elective – I:</b> 1. Electrical Machine Modeling and Analysis 2. Advanced Control Systems 3. Programmable Logic Controllers & Applications 4. Instrumentation	4	--	--	3
6	<b>Elective – II:</b> 1. Optimization Techniques 2. Electric Power Quality 3. Special Electrical Machines	4	--	--	3
7	Electrical Simulation Laboratory	--	--	2	2
8	Power Systems & Simulation Laboratory	--	--	2	2
<b>Total Credits</b>					<b>22</b>

**IV Year - II Semester**

S. No	Subjects	L	T	P	Credits
1	Digital Control Systems	4	--	--	3
2	HVDC Transmission	4	--	--	3
3	Electrical Distribution Systems	4	--	--	3
4	<b>Elective – III:</b> 1. High Voltage Engineering 2. Flexible Alternating Current Transmission Systems 3. Power System Reforms	4	--	--	3
5	Seminar	--	3	--	2
6	Project	--	--	--	10
<b>Total Credits</b>					<b>24</b>



# COURSE STRUCTURE AND SYLLABUS

For

## COMPUTER SCIENCE AND ENGINEERING

*(Applicable for batches admitted from 2016-2017)*



**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY: KAKINADA**  
**KAKINADA - 533 003, Andhra Pradesh, India**

  
SINDRA INSTITUTE OF TECHNOLOGY & SCIENCES  
Darimadugu, Markapur-523 316  
Prakasam Dist.(A.P.) India.

### I Year - I Semester

S. No.	Subjects	L	T	P	Credits
1-HS	English - I	4	--	--	3
2-BS	Mathematics - I	4	--	--	3
3-BS	Mathematics - II (Mathematical Methods)	4	--	--	3
4-BS	Applied Physics	4	--	--	3
5	Computer Programming	4	--	--	3
6-ES	Engineering Drawing	4	--	--	3
7-HS	English - Communication Skills Lab - 1	--	--	3	2
8-BS	Applied / Engineering Physics Lab	--	--	3	2
9-ES	Applied / Engineering Physics - Virtual Labs - Assignments	--	--	2	--
10	Computer Programming Lab	--	--	3	2
<b>Total Credits</b>					<b>24</b>

### I Year - II SEMESTER

S. No.	Subjects	L	T	P	Credits
1-HS	English - II	4	--	--	3
2-BS	Mathematics - III	4	--	--	3
3-BS	Applied Chemistry	4	--	--	3
4	Object Oriented Programming through C++	4	--	--	3
5-HS	Environmental Studies	4	--	--	3
6-ES	Engineering Mechanics	4	--	--	3
7-BS	Applied / Engineering Chemistry Laboratory	--	--	3	2
8-HS	English - Communication Skills Lab - 2	--	--	3	2
9	Object Oriented Programming Lab	--	--	3	2
<b>Total Credits</b>					<b>24</b>

  
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## II Year - I Semester

S. No.	Subjects	L	T	P	Credits
1-HS	Statistics with R Programming	4	--	--	3
2	Mathematical Foundations of Computer Science	4	--	--	3
3	Digital Logic Design	4	--	--	3
4	Python Programming	4	--	--	3
5	Data Structures through C++	4	--	--	3
6	Computer Graphics	4	--	--	3
7	Data Structures through C++Lab	--	--	3	2
8	Python Programming Lab	--	--	3	2
<b>Total Credits</b>					<b>22</b>

## II Year - II Semester

S. No.	Subjects	L	T	P	Credits
1	Software Engineering	4	--	--	3
2	Java Programming	4	--	--	3
3	Advanced Data Structures	4	--	--	3
4	Computer Organization	4	--	--	3
5	Formal Languages and Automata Theory	4	--	--	3
6	Principles of Programming Languages	4	--	--	3
7	Advanced Data Structures Lab	--	--	3	2
8	Java Programming Lab	--	--	3	2
<b>Total Credits</b>					<b>22</b>

  
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### III Year - I Semester

S. No.	Subjects	L	T	P	Credits
1	Compiler Design	4	--	--	3
2	Unix Programming	4	--	--	3
3	Object Oriented Analysis and Design using UML	4	--	--	3
4	Database Management Systems	4	--	--	3
5	Operating Systems	4	--	--	3
6	Unified Modeling Lab	--	--	3	2
7	Operating System & Linux Programming Lab	--	--	3	2
8	Database Management System Lab	--	--	3	2
MC	Professional Ethics & Human Values	--	3	--	--
<b>Total Credits</b>					<b>21</b>

### III Year - II Semester

S. No.	Subjects	L	T	P	Credits
1	Computer Networks	4	2	--	3
2	Data Warehousing and Mining	4	--	--	3
3	Design and Analysis of Algorithms	4	--	--	3
4	Software Testing Methodologies	4	--	--	3
5	<b>Open Elective:</b> i. Artificial Intelligence ii. Internet of Things iii. Cyber Security iv. Digital Signal Processing v. Embedded Systems vi. Robotics	4	--	--	3
6	Network Programming Lab	--	--	3	2
7	Software Testing Lab	--	--	3	2
8	Data Warehousing and Mining Lab	--	--	3	2
9	IPR & Patents	--	2	--	--
<b>Total Credits</b>					<b>21</b>

  
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#### IV Year - I Semester

S. No.	Subjects	L	T	P	Credits
1	Cryptography and Network Security	4	--	--	3
2	Software Architecture & Design Patterns	4	--	--	3
3	Web Technologies	4	--	--	3
4- HS	Managerial Economics and Financial Analysis	4	--	--	3
5	<b>Elective-I</b>	4	--	--	3
	i. Big Data Analytics				
	ii. Information Retrieval Systems iii. Mobile Computing				
6	<b>Elective-II</b>	4	--	--	3
	i. Cloud Computing				
	ii. Software Project Management iii. Scripting Languages				
7	Software Architecture & Design Patterns Lab	--	--	3	2
8	Web Technologies Lab	--	--	3	2
<b>Total Credits</b>					<b>22</b>

#### IV Year - II Semester

S. No.	Subjects	L	T	P	Credits
1	Distributed Systems	4	--	--	3
2- HS	Management Science	4	--	--	3
3	Machine Learning	4	--	--	3
4	<b>Elective-III</b>	4	--	--	3
	i. Concurrent and Parallel Programming				
	ii. Artificial Neural Networks iii. Operations Research				
5	Seminar	--	3	--	2
6	Project	--	--	--	10
<b>Total Credits</b>					<b>24</b>

Total Course Credits = 48+44 + 42 + 46 = 180





**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY: KAKINADA**  
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**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING**

**COURSE STRUCTURE-R19**

**COURSE STRUCTURE AND SYLLABUS**

**For**

**B. TECH ELECTRICAL AND ELECTRONICS ENGINEERING**

*(Applicable for batches admitted from 2019-2020)*



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**COURSE STRUCTURE-R19**

**I Year – I SEMESTER**

Sl. No	Course Code	Subjects	L	T	P	Credits
1	HS1101	English	3	0	0	3
2	BS1101	Mathematics - I	3	0	0	3
3	BS1106	Applied Chemistry	3	0	0	3
4	ES1101	Programming for Problem Solving Using C	3	0	0	3
5	ES1103	Engineering Drawing	1	0	3	2.5
6	HS1102	English Lab	0	0	3	1.5
7	BS1107	Applied Chemistry Lab	0	0	3	1.5
8	ES1102	Programming for Problem Solving Using C Lab	0	0	3	1.5
9	MC1101	Environmental Science	3	0	0	0
<b>Total Credits</b>			<b>16</b>	<b>0</b>	<b>12</b>	<b>19</b>

**I Year – II SEMESTER**

Sl. No	Course Code	Subjects	L	T	P	Credits
1	BS1202	Mathematics – II	3	0	0	3
2	BS1203	Mathematics – III	3	0	0	3
3	BS1204	Applied Physics	3	0	0	3
4	ES1212	Fundamentals of Computers	3	0	0	3
5	ES1217	Electrical Circuit Analysis - I	3	0	0	3
6	ES1218	Electrical Engineering Workshop	0	0	3	1.5
7	BS1205	Applied Physics Lab	0	0	3	1.5
8	HS1203	Communication Skills Lab	0	1	2	2
9	PR1201	Engineering Exploration Project	0	0	2	1
<b>Total Credits</b>			<b>15</b>	<b>1</b>	<b>10</b>	<b>21</b>

  
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**COURSE STRUCTURE-R19**

**II Year – I SEMESTER**

S. No	Course Code	Subjects	Category	L	T	P	Credits
1		Electrical Circuit Analysis - II	EE	3	--	--	3
2		Electrical Machines-I	EE	3	--	--	3
3		Electronic Devices and Circuits	ES	3	--	--	3
4		Electro Magnetic Fields	EE	3	--	--	3
5		Thermal and Hydro Prime movers	ES	3	--	--	3
6		Managerial Economics & Financial Analysis	BS	3	--	--	3
7		Thermal and Hydro Laboratory	ES	--	--	3	1.5
8		Electrical Circuits Laboratory	EE	--	--	3	1.5
9		Essence of Indian Traditional Knowledge	MC	3	--	--	0
<b>Total Credits</b>				<b>24</b>	<b>0</b>	<b>6</b>	<b>21</b>

**II Year – II SEMESTER**

S. No	Course Code	Subjects	Category	L	T	P	Credits
1		Electrical Measurements & Instrumentation	EE	3	--	--	3
2		Electrical Machines-II	EE	3	--	--	3
3		Digital Electronics	ES	3	--	--	3
4		Control Systems	EE	3	--	--	3
5		Power Systems-I	EE	3	--	--	3
6		Signals and Systems	EE	3	--	--	3
7		Electrical Machines -I Laboratory	EE	--	--	3	1.5
8		Electronic Devices & Circuits Laboratory	EE	--	--	3	1.5
9		Professional Ethics and Human Values	MC	3	0	0	0
<b>Total Credits</b>				<b>21</b>	<b>0</b>	<b>6</b>	<b>21</b>

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**COURSE STRUCTURE-R19**

**III Year - I SEMESTER**

S. No	Course Code	Subjects	Category	L	T	P	Credits
1		Power Systems-II	EE	3	--	--	3
2		Power Electronics	EE	3	--	--	3
3		Linear IC Applications	ES	3	--	--	3
4		Digital Signal Processing	EE	3	--	--	3
5		Microprocessors and Microcontrollers	EE	3	--	--	3
6		Electrical Machines-II Laboratory	EE	--	--	3	1.5
7		Control Systems Laboratory	EE	--	--	2	1
8		Electrical Measurements & Instrumentation Laboratory	EE	--	--	3	1.5
9		Socially Relevant Projects	MC	--	--	1	1
<b>Total Credits</b>				<b>15</b>	<b>0</b>	<b>9</b>	<b>20</b>

**III Year - II SEMESTER**

S. No	Course Code	Subjects	Category	L	T	P	Credits
1		Electric Drives	EE	3	--	--	3
2		Power System Analysis	EE	3	--	--	3
3		Data Structures	ES	3	--	--	3
4		Digital Control Systems	EE	3	--	--	3
5		<b>Elective - I</b>	EL	3	--	--	3
6		<b>Open Elective - I</b>	OE	3	--	--	3
7		Power Electronics Laboratory	EE	--	--	3	1.5
8		Microprocessors & Microcontrollers Laboratory	EE	--	--	3	1.5
9		Employability Skills	MC	3	--	--	0
<b>Total Credits</b>				<b>18</b>		<b>6</b>	<b>21</b>

  
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**COURSE STRUCTURE-R19**

**IV Year – I SEMESTER**

S. No	Course Code	Subjects	Category	L	T	P	Credits
1		Switchgear & Protection	EE	3	--	--	3
2		OOPs through JAVA	ES	3	--	--	3
3		Renewable Energy Systems	EE	3	--	--	3
4		Elective – II	EL	3	--	--	3
5		Elective - III	EL	3	--	--	3
6		Linear & Digital IC Applications Laboratory	ES	--	--	2	1
7		Power Systems& Simulation Laboratory	EE	--	--	2	1
		Industrial Training /Skill Development Programmes / Research Project	Project	--	--	2	1
8		Project-I	Project			4	2
<b>Total Credits</b>				<b>15</b>	<b>0</b>	<b>10</b>	<b>20</b>

**IV Year – II SEMESTER**

S. No	Course Code	Subjects	Category	L	T	P	Credits
1		Power System Operation & Control	EE	3	--	--	3
2		Open Elective - II	OE	3	--	--	3
3		Elective - IV	EL	3	--	--	3
4		Project-II	Project	--	--	16	8
<b>Total Credits</b>				<b>09</b>		<b>16</b>	<b>17</b>

BS – Basic Sciences  
 HS – Humanity Sciences  
 ES – Engineering Sciences

EE – Electrical Engineering  
 OE – Open Elective  
 EL – Elective  
 Proj- Project  
 MC–Mandatory Course





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**COURSE STRUCTURE-R19**

**Elective - I:**

1. Digital IC Applications
2. Communication Systems
3. **Computer Networks**
4. Internet of Things applications to Electrical Engineering
5. VLSI Design
6. Cloud Computing

**Elective - II:**

1. Utilization of Electrical Energy
2. Data Base Management System
3. **Advanced Control Systems**
4. Electrical Machine Design
5. Hybrid Electric Vehicles
6. Swayam Course

**Elective - III:**

1. **Operating Systems**
2. Neural Networks & Fuzzy Logic
3. High Voltage Engineering
4. Energy Auditing and Demand Side Management
5. Data Analytics with Python
6. Swayam Course

**Elective - IV:**

1. Electrical Distribution Systems
2. **HVAC & DC Transmission**
3. Flexible Alternating Current Transmission Systems
4. Power Quality
5. Smart Grid
6. Special Electrical Machines





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**COURSE STRUCTURE-R19**

**Open Electives offered by EEE Department for Other Branches( Except for EEE Branch)**

**Open Elective-I:**

1. Renewable Energy Sources
2. Essentials of Analog and Digital Electronics
3. Electrical Estimation and Costing
4. **Power Electronic Devices & Circuits**
5. Fundamentals of Electrical Machines

**Open Elective-II:**

1. **Measurements & Instrumentation**
2. Fundamentals of Utilization of Electrical Energy
3. Concepts of Power System Engineering
4. Basics of Control Systems
5. Energy Audit





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**DEPARTMENT OF MECHANICAL ENGINEERING**

**COURSE STRUCTURE AND SYLLABUS**

**For**

**B. TECH MECHANICAL ENGINEERING**

*(Applicable for batches admitted from 2019-2020)*



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**DEPARTMENT OF MECHANICAL ENGINEERING**

**I Year – I SEMESTER**

Sl. No	Course Code	Subjects	L	T	P	Credits
1	BS1101	Mathematics – I	3	0	0	3
2	BS1102	Mathematics – II	3	0	0	3
3	BS1108	Engineering Physics	3	0	0	3
4	ES1101	Programming for Problem Solving Using C	3	0	0	3
5	ES1103	Engineering Drawing	1	0	3	2.5
6	HS1102	English Lab	0	0	3	1.5
7	BS1109	Engineering Physics Lab	0	0	3	1.5
8	ES1102	Programming for Problem Solving Using C Lab	0	0	3	1.5
9	MC1104	Constitution of India	2	0	0	0
<b>Total Credits</b>			<b>15</b>	<b>0</b>	<b>12</b>	<b>19</b>

**I Year – II SEMESTER**

Sl. No	Course Code	Subjects	L	T	P	Credits
1	HS1201	English	3	0	0	3
2	BS1210	Engineering Chemistry	3	0	0	3
3	ES1204	Engineering Mechanics	3	0	0	3
4	ES1206	Basic Electrical & Electronics Engineering	3	0	0	3
5	ES1207	Computer Aided Engineering Drawing	1	0	3	2.5
6	HS1203	Communication Skills Lab	0	0	2	1
7	BS1211	Engineering Chemistry Lab	0	0	2	1.5
8	ES1208	Basic Electrical & Electronics Engineering Lab	0	0	3	1.5
9	ES1219	Workshop Practice Lab	0	0	3	1.5
10	PR1201	Engineering Exploration Project	0	0	2	1
<b>Total Credits</b>			<b>13</b>	<b>0</b>	<b>15</b>	<b>21</b>

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**DEPARTMENT OF MECHANICAL ENGINEERING**

**II YEAR I SEMESTER**

S. No.	Course Code	Course Title	L	T	P	Credits
1	BSC	Vector Calculus & Fourier Transforms	3	--	--	3
2	PCC-ME	Mechanics of Solids	3	--	--	3
3	PCC-ME	Material Science & Metallurgy	3	--	--	3
4	PCC-ME	Production Technology	3	--	--	3
5	PCC-ME	Thermodynamics	3	--	--	3
6	PCC-ME	Machine Drawing	1	--	3	2.5
7	PCC-Lab1	Metallurgy & Mechanics of Solids Lab	--	--	3	1.5
8	PCC-Lab2	Production Technology Lab	--	--	3	1.5
9	MC2101	Environmental Science	3	--	--	--
10	PROJ-2101	Socially Relevant Project				0.5
		<b>Total Credits</b>	<b>19</b>	<b>--</b>	<b>9</b>	<b>21</b>

**II YEAR II SEMESTER**

S.No	Course Code	Course Title	L	T	P	Credits
1	BSC	Complex Variables & Statistical Methods	3	--	--	3
2	PCC-ME	Kinematics of Machinery	3	--	--	3
3	PCC-ME	Applied Thermodynamics	3	--	--	3
4	PCC-ME	Fluid Mechanics & Hydraulic Machines	3	--	--	3
5	PCC-ME	Metal Cutting & Machine Tools	3	--	--	3
6	PCC-ME	Design of Machine Members-I	3	--	--	3
7	PCC-Lab5	Fluid Mechanics & Hydraulic Machines Lab	--	--	3	1.5
8	PCC-Lab6	Machine Tools Lab	--	--	3	1.5
9	MC2201	Essence of Indian Traditional Knowledge	2	--	--	--
		<b>Total Credits</b>	<b>20</b>	<b>--</b>	<b>6</b>	<b>21</b>

  
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**III YEAR I SEMESTER**

S. No.	Course Code	Course Title	L	T	P	Credits
1	PCC-ME	Dynamics of Machinery	3	--	--	3
2	PCC-ME	Design of Machine Members-II	3	--	--	3
3	PCC-ME	Mechanical Measurements & Metrology	3	--	--	3
4	HSIMS	Managerial Economics and Financial Accountancy	3	--	--	3
5	PCC-ME	IC Engines & Gas turbines	3	--	--	3
6	PCC-Lab	Thermal Engineering Lab	--	--	3	1.5
7	PCC-Lab	Theory of Machines Lab	--	--	3	1.5
8	PCC-Lab	Mechanical Measurements & Metrology Lab	--	--	3	1.5
9	PROJ-3101	Socially Relevant Project				0.5
		<b>Total Credits</b>	<b>15</b>	<b>--</b>	<b>9</b>	<b>20</b>

**III YEAR II SEMESTER**

S. No	Course Code	Course Title	L	T	P	Credits
1	PCC-ME	Operations Research	3	--	--	3
2	PCC-ME	Heat Transfer	3	--	--	3
3	PCC-ME	CAD/CAM	3	--	--	3
4	PEC-ME1	1. Composite Materials 2. Refrigeration & Air Conditioning 3. Unconventional Machining Processes 4. Advanced Mechanics of Solids 5. MOOCS(NPTEL/Swayam)	3	--	--	3
5	PEC-ME2	1. Material Characterization 2. Tribology 3. Automobile Engineering 4. Mechatronics 5. MOOCS(NPTEL/Swayam)	3	--	--	3
6	PCC-Lab	Simulation of Mechanical Systems Lab	--	--	2	1
7	PCC-Lab	Heat Transfer Lab	--	--	3	1.5
8	PCC-Lab	CAD /CAM Lab	--	--	3	1.5
9	PROJ- ME	Summer Internship*	--	--		1
		<b>Total Credits</b>	<b>15</b>	<b>--</b>	<b>9</b>	<b>20</b>

**-The students have to undergo a summer internship for minimum of Four weeks duration from Industries/R&D/ Govt. Organizations after B.Tech III year II-Semester and credits will be awarded in B.Tech IV year I-Semester after evaluation.**

  
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**DEPARTMENT OF MECHANICAL ENGINEERING**

**IV YEAR I SEMESTER**

S. No.	Course Code	Course Title	L	T	P	Credits
1	HSIMS	Industrial Management	3	--	--	3
2	PCC-ME	Finite Element Methods	3	--	--	3
3	PEC-3	1. Mechanical Vibrations 2. Renewable Energy Sources 3. Production Planning & Control 4. Machine Tool Design 5. MOOCs (NPTEL/Swayam)	3	--	--	3
4	PEC-4	1. Industrial Automation and Robotics 2. Micro and Nano manufacturing 3. Power Plant Engineering 4. Optimization Techniques 5. MOOCs (NPTEL/Swayam)	3	--	--	3
5	OEC-1	<b>OPEN ELECTIVE -I</b>	3	--	--	3
6	PCC-ME Lab	Finite Element Simulation Lab	--	--	2	1
7	PROJ-I	Project-I	--	--	4	2
		<b>Total Credits</b>	<b>15</b>	<b>--</b>	<b>6</b>	<b>18</b>

**OPEN ELECTIVE -I:**

1. MEMS
2. Optimization Methods
3. Operations Management
4. Nano Technology
5. Finite Element Analysis



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**IV YEAR II SEMESTER (VIII SEMESTER)**

S. No.	Course Code	Course Title	L	T	P	Credits
1	PEC-5	1. Additive Manufacturing 2. Gas Dynamics and Jet Propulsion 3. Product design and development 4. Reliability Engineering 5. MOOCs (NPTEL/Swayam)	3	--	--	3
2	PEC-6	1. Condition Monitoring 2. Computational Fluid Dynamics 3. Non Destructive Evaluation 4. Control Systems 5. Entrepreneurship Development	3	--	--	3
3	OEC-2	OPEN ELECTIVE -II	3	--	--	3
4	OEC-3	OPEN ELECTIVE -III	3	--	--	3
5	PROJ-II	Project-II	--	--	16	8
<b>Total Credits</b>			<b>12</b>	<b>--</b>	<b>16</b>	<b>20</b>

**OPEN ELECTIVE-II:**

1. Green Energy Systems
2. Robotics
3. Energy Consumption and Management
4. 3D Printing Technologies
5. Mechatronics

**OPEN ELECTIVE-III:**

1. Total Quality Management
2. Supply Chain Management
3. Product Design & Development
4. Entrepreneurship
5. Advanced Materials

**Note:**

- 1) Professional Elective course (PEC) /Open Elective course (OEC) can also be completed via MOOCs (NPTEL/Swayam) Course (12 Week duration)
- 2) The list of MOOCs courses shall be approved by the chairperson of BOS.
- 3) The tutorial class can be of one hour duration as per requirements of a particular subject.

  
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 ANDHRA PRADESH

# **COURSE STRUCTURE AND SYLLABUS**

**For**

## **ELECTRONICS AND COMMUNICATION ENGINEERING**

*(Applicable for batches admitted from 2016-2017)*



**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY: KAKINADA**  
**KAKINADA - 533 003, Andhra Pradesh, India**




### I Year - I Semester

S.No.	Subjects	L	T	P	Credits
1-HS	English - I	4	--	--	3
2-BS	Mathematics - I	4	--	--	3
3-ES	Mathematics -II (Numerical Methods and Complex Variables)	4	--	--	3
4-BS	Applied Physics	4	--	--	3
5-ES	Computer Programming	4	--	--	3
6-ES	Engineering Drawing	1	--	3	3
7-HS	English - Communication Skills Lab -1	--	--	3	2
8-BS	Applied / Engineering Physics Laboratory	--	--	3	2
9-BS	Applied / Engineering Physics - Virtual Labs - Assignments	--	--	2	--
10-ES	Engineering Workshop & IT Workshop	--	--	3	2
<b>Total Credits</b>					<b>24</b>

### I Year - II Semester

S.No.	Subjects	L	T	P	Credits
1-HS	English - II	4	--	--	3
2-BS	Mathematics -III	4	--	--	3
3-BS	Applied Chemistry	4	--	--	3
4-ES	Electrical and Mechanical Technology	4	--	--	3
5-HS	Environmental Studies	4	--	--	3
6-ES	Data Structures	4	--	--	3
7-BS	Applied / Engineering Chemistry Laboratory	--	--	3	2
8-HS	English - Communication Skills Lab -2	--	--	3	2
9-ES	Computer Programming Lab	--	--	3	2
<b>Total Credits</b>					<b>24</b>

  
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## II Year - I Semester

S.No.	Subjects	L	T	P	Credits
1	Electronic Devices and Circuits	4	--	--	3
2	Switching Theory and Logic Design	4	--	--	3
3	Signals and Systems	4	--	--	3
4	Network Analysis	4	--	--	3
5	Random Variables and Stochastic Process	4	--	--	3
6	Managerial Economics & Financial Analysis	4	--	--	3
7	Electronic Devices and Circuits Lab	--	--	3	2
8	Networks & Electrical Technology Lab	--	--	3	2
<b>Total Credits</b>					<b>22</b>

## II Year - II Semester

S.No.	Subjects	L	T	P	Credits
1	Electronic Circuit Analysis	4	--	--	3
2	Control Systems	4	--	--	3
3	Electromagnetic Waves and Transmission Lines	4	--	--	3
4	Analog Communications	4	--	--	3
5	Pulse and Digital Circuits	4	--	--	3
6	Management Science	4	--	--	3
7	Electronic Circuit Analysis Lab	--	--	3	2
8	Analog Communications Lab	--	--	3	2
<b>Total Credits</b>					<b>22</b>

  
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### III Year - I Semester

S.No.	Subjects	L	T	P	Credits
1	Computer Architecture and Organization	4	--	--	3
2	Linear I C Applications	4	--	--	3
3	Digital I C Applications	4	--	--	3
4	Digital Communications	4	--	--	3
5	Antenna and Wave Propagation	4	--	--	3
6	Pulse and Digital Circuits Lab	--	--	3	2
7	Linear I C Applications Lab	--	--	3	2
8	Digital I C Applications Lab	--	--	3	2
MC	Professional Ethics & Human Values	--	3	--	--
<b>Total Credits</b>					<b>21</b>

### III Year - II Semester

S.No.	Subjects	L	T	P	Credits
1	Micro Processors & Micro Controllers	4	--	--	3
2	Micro Wave Engineering	4	--	--	3
3	VLSI Design	4	--	--	3
4	Digital Signal Processing	4	--	--	3
5	<b>OPEN ELECTIVE</b> 1. OOPs through Java 2. Data Mining 3. Industrial Robotics 4. Power Electronics 5. Bio-Medical Engineering 6. Artificial Neural Networks	4	--	--	3
6	Micro Processors & Micro Controllers Lab	--	--	3	2
7	VLSI Lab	--	--	3	2
8	Digital Communications Lab	--	--	3	2
MC	IPR & Patents	--	2	--	--
<b>Total Credits</b>					<b>21</b>





#### IV Year - I Semester

S.No.	Subjects	L	T	P	Credits
1	Radar Systems	4	--	--	3
2	Digital Image Processing	4	--	--	3
3	Computer Networks	4	--	--	3
4	Optical Communications	4	--	--	3
5	<b>Elective I</b> 1. TV Engineering 2. Electronic Switching Systems 3. System Design through Verilog	4	--	--	3
6	<b>Elective II</b> 1. Embedded Systems 2. Analog IC Design 3. Network Security & Cryptography	4	--	--	3
7	Micro Wave Engineering & Optical Lab	--	--	2	2
8	Digital Signal Processing Lab	--	--	2	2
<b>Total Credits</b>					<b>22</b>

#### IV Year - II Semester

S.No.	Subjects	L	T	P	Credits
1	Cellular Mobile Communications	4	--	--	3
2	Electronic Measurements and Instrumentation	4	--	--	3
3	Satellite Communications	4	--	--	3
4	<b>Elective III</b> 1. Wireless sensors & Networks 2. Digital IC Design 3. Operating Systems	4	--	--	3
5	Seminar	--	3	--	2
6	Project	--	--	--	10
<b>Total Credits</b>					<b>24</b>

**Total Course Credits = 48+44 + 42 + 46 = 180**

  
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