



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

## **COURSE STRUCTURE AND SYLLABUS**

**For**

### **B. TECH ELECTRICAL AND ELECTRONICS ENGINEERING**

*(Applicable for batches admitted from 2020-2021)*



**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA**

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



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

**I B. Tech I SEMESTER**

Sl. No	Course Components	Subjects	L	T	P	Credits
1	HSMC	Communicative English	3	0	0	3
2	BSC	Mathematics-I (Calculus and Differential Equations)	3	0	0	3
3	BSC	Mathematics-II (Linear Algebra and Numerical Methods)	3	0	0	3
4	ESC	Programming for Problem Solving Using C	3	0	0	3
5	ESC	Engineering Drawing & Design	1	0	4	3
6	HSMC	English Communication Skills Laboratory	0	0	3	1.5
7	BSC	Electrical Engineering Workshop	0	1	3	1.5
8	ESC	Programming for Problem Solving Using C Lab	0	0	3	1.5
<b>Total Credits</b>			<b>19.5</b>			

**I B. Tech II SEMESTER**

Sl. No	Course Components	Subjects	L	T	P	Credits
1	BSC	Mathematics-III (Vector Calculus, Transforms and PDE)	3	0	0	3
2	BSC	Applied Physics	3	0	0	3
3	ESC	Data Structures Through C	3	0	0	3
4	ESC	Electrical Circuit Analysis -I	3	0	0	3
5	ESC	Basic Civil and Mechanical Engineering	3	0	0	3
6	BSC	Applied Physics Lab	0	0	3	1.5
7	ESC	Basic Civil and Mechanical Engineering Lab	0	0	3	1.5
8	ESC	Data Structures through C Lab	0	0	3	1.5
9	Mandatory Course	Constitution of India	2	0	0	0
<b>Total Credits</b>			<b>19.5</b>			



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

**II B. Tech I Semester**

Sl. No	Course Components	Subjects	L	T	P	Credits
1	BSC	Mathematics – IV	3	0	0	3
2	PCC	Electronic Devices and Circuits	3	0	0	3
3	PCC	Electrical Circuit Analysis –II	3	0	0	3
4	PCC	DC Machines and Transformers	3	0	0	3
5	PCC	Electro Magnetic Fields	3	0	0	3
6	PCC	Electrical Circuits Lab	0	0	3	1.5
7	PCC	DC Machines and Transformers Lab	0	0	3	1.5
8	PCC	Electronic Devices and Circuits lab	0	0	3	1.5
9	SC	Skill oriented course- Design of Electrical Circuits using Engineering Software Tools	0	0	4	2
10	MC	Professional Ethics & Human Values	2	0	0	0
<b>Total Credits</b>			<b>21.5</b>			

**II B. Tech II Semester**

Sl. No	Course Components	Subjects	L	T	P	Credits
1	ESC	Python Programming	3	0	0	3
2	PCC	Digital Electronics	3	0	0	3
3	PCC	Power System-I	3	0	0	3
4	PCC	Induction and Synchronous Machines	3	0	0	3
5	HSMC	Managerial Economics & Financial Analysis	3	0	0	3
6	ESC	Python Programming Lab	0	0	3	1.5
7	PCC	Induction and Synchronous Machines Lab	0	0	3	1.5
8	PCC	Digital Electronics Lab	0	0	3	1.5
9	SC	Skill oriented course- IoT Applications of Electrical Engineering	0	0	4	2
<b>Total Credits</b>			<b>21.5</b>			
		Minors/ Honors	4	0	0	4



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

### III B. Tech I Semester

Sl. No	Course Components	Subjects	L	T	P	Credits
1	PCC	Power Systems-II	3	0	0	3
2	PCC	Power Electronics	3	0	0	3
3	PCC	Control Systems	3	0	0	3
4	OEC	Open Elective- I/ Job Oriented Elective-I	3	0	0	3
5	PEC	Professional Elective - I	3	0	0	3
6	PCC	Control Systems Lab	0	0	3	1.5
7	PCC	Power Electronics Lab	0	0	3	1.5
8	SC	<b>Soft Skill Course: Employability Skills</b>	2	0	0	2
9	MC	Environmental Science	2	0	0	0
10	PROJ	Summer Internship 2 Months (Mandatory) after second year (to be evaluated during V semester)	0	0	0	1.5
<b>Total Credits</b>			<b>21.5</b>			
		Minors Course*	4	0	0	4
		Honors Course*	4	0	0	4

### III B. Tech II Semester

Sl. No	Course Components	Subjects	L	T	P	Credits
1	PCC	Microprocessors and Microcontrollers	3	0	0	3
2	PCC	Electrical Measurements and Instrumentation	3	0	0	3
3	PCC	Power System Analysis	3	0	0	3
4	PEC	Professional Elective - II	3	0	0	3
5	OEC	Open Elective –II/ Job Oriented Elective-II	3	0	0	3
6	PCC	Electrical Measurements and Instrumentation Lab	0	0	3	1.5
7	PCC	Microprocessors and Microcontrollers Lab	0	0	3	1.5
8	PCC	Power Systems and Simulation Lab	0	0	3	1.5
9	SC	<b>Skill Advanced Course: Machine Learning with Python</b>	2	0	0	2
10	MC	Research Methodology	2	0	0	0
<b>Total Credits</b>			<b>21.5</b>			
		Minors/ Honors	4	0	0	4



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

**IV B. Tech I Semester**

Sl. No	Course Components	Subjects	L	T	P	Credits
1	PEC	Professional Elective – III	3	0	0	3
2	PEC	Professional Elective – IV	3	0	0	3
3	PEC	Professional Elective – V	3	0	0	3
4	OEC	Open Elective- III /Job Oriented Elective-III	3	0	0	3
5	OEC	Open Elective-IV /Job Oriented Elective-IV	3	0	0	3
6	HSMC	Universal Human Values-2: Understanding Harmony	3	0	0	3
7	SC	<b>Skill Advanced Course</b> Machine Learning with Python Lab	0	0	4	2
8	PROJ	Industrial / Research Internship 2 Months (Mandatory) after third year (to be evaluated during VII Semester)	0	0	3	3
<b>Total Credits</b>			<b>23</b>			
		Minors/ Honors	4	0	0	4

**IV B. Tech II Semester**

Sl. No	Course Components	Subjects	L	T	P	Credits
1	Major Project	Project work, seminar and internship in industry (6 Months)	--	--	--	12
<b>Total Credits</b>			<b>12</b>			



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

**Professional Elective Subjects offered to EEE Branch Students:**

**Professional Elective – I:**

1.	Linear IC Applications
2.	Utilization of Electrical Energy
3.	Computer Architecture and Organization
4.	Optimization Techniques
5.	Object Oriented Programming through Java

**Professional Elective – II:**

1.	Signal and Systems
2.	Electric Drives
3.	Advanced Control Systems
4.	Switchgear and Protection
5.	Big Data Analytics

**Professional Elective –III:**

1.	Digital Signal Processing
2.	Renewable and Distributed Energy Technologies
3.	Flexible AC Transmission Systems
4.	Power Systems Deregulation
5.	Data Base Management Systems

**Professional Elective – IV:**

1.	Hybrid Electric Vehicles
2.	High Voltage Engineering
3.	Programmable Logic Controllers and Applications
4.	Cloud Computing with AWS
5.	Deep Learning Techniques

**Professional Elective – V:**

1.	Power System Operation and Control
2.	Switched Mode Power Conversion
3.	AI Applications to Electrical Engineering
4.	Data Science
5.	MEAN Stack Technologies



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

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

**Open Elective-I:**

1.	Renewable Energy Sources
2.	Concepts of Optimization Techniques
3.	Concepts of Control Systems

**Open Elective-II:**

1.	Battery Management Systems and Charging Stations
2.	Fundamentals of utilization of Electrical Energy
3.	Indian Electricity Act

**Open Elective-III:**

1.	Concepts of Microprocessors and Microcontrollers
2.	Fundamentals of Electric Vehicles
3.	Concepts of Internet of Things

**Open Elective-IV:**

1.	Concepts of Power System Engineering
2.	Concepts of Smart Grid Technologies



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

**\*Honors Engineering Courses offered EEE Branch students**

**II B.Tech II Semester:**

1.	Communication Systems
2.	Electrical Wiring, Estimation & Costing
3.	Electrical Distribution Systems

**III B.Tech I Semester:**

1.	Advanced Computer Networks
2.	Power Quality
3.	Special Electrical Machines

**III B.Tech II Semester:**

1.	Digital Control Systems
2.	Analysis of Power Electronic Converters
3.	HVDC Transmission

**IV B.Tech I Semester:**

1.	EHV AC Transmission
2.	Smart Grid Technologies
3.	Power Electronic Control of Electrical Drives





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

**\*Minor Engineering Courses offered by EEE Department for Other Branches**  
**(Except EEE Branch)**

**II B.Tech II Semester:**

1.	Fundamentals of Electrical Circuits
2.	Concepts of Electrical Measurements

**III B.Tech I Semester:**

1.	Analysis of Linear Systems
2.	Energy Auditing, Conservation and Management

**III B.Tech II Semester:**

1.	Evolutionary Algorithms
2.	Fundamentals of Power Electronics

**IV B.Tech I Semester:**

1.	Neural Networks and Fuzzy Logic
2.	Concepts of Electric Drives and Its Applications