



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

**DEPARTMENT OF CIVIL ENGINEERING**

**Professional Electives R20 (5 PE x 3 = 15 Credits)**

**(Department can offer Maximum 2 Subjects from Each PE, elected by the students)**

**Note: Student must choose subjects which were not opted earlier  
 PE starts from III-I**

<b>Professional Elective-I</b>	<b>Professional Elective-II</b>	<b>Professional Elective-III</b>	<b>Professional Elective-IV</b>	<b>Professional Elective-IV</b>
a) Construction Technology & Management	a) Advanced Structural Analysis	a) Advanced Structural Engineering	a) Ground Improvement Techniques	a) Design & Drawing of Irrigation Structures
b) Remote Sensing and GIS	b) Architecture and Town Planning	b) Bridge Engineering	b) Geo-Spatial Technologies	b) Earth & Rock fill Dams
c) Environmental Impact Assessment	c) Road Safety Engineering	c) Structural Dynamics	c) Disaster Management & Mitigation	c) Urban Hydrology
d) Low Cost Housing	d) Traffic Engineering	d) Urban Transportation Planning	d) Soil dynamics & Machine Foundations	SWAYAM / NPTEL / MOOCS COURSES (12 weeks duration)

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

**III B.TECH II SEMESTER**

S.No	Code	Course Title	Hours			Credits
			L	T	P	
1	PCC-10	Heat Transfer	3	0	0	3
2	PCC-11	Design of Machine Members-II	3	0	0	3
3	PCC-12	Introduction to Artificial Intelligence and Machine Learning	3	0	0	3
4	PE-2	1. Automobile Engineering 2. Smart Manufacturing 3. Advanced Mechanics of Solids 4. Statistical Quality Control 5. Industrial Hydraulics and Pneumatics 6. MOOCs (NPTEL/ Swayam) Course (12 Week duration)	3	0	0	3
5	OE-2	1. Industrial Robotics 2. Essentials of Mechanical Engineering 3. Advanced Materials 4. Introduction to Automobile Engineering	3	0	0	3
6	PCC-L8	Heat Transfer Lab	0	0	3	1.5
7	PCC-L9	CAE&CAM Lab	0	0	3	1.5
8	PCC-L10	Measurements & Metrology Lab	0	0	3	1.5
9	SOC-4	Artificial Intelligence and Machine Learning Lab	0	0	4	2
10	MC - 5	Research Methodology and IPR	2	0	0	0
			<b>Total credits</b>			<b>21.5</b>
Honors/Minor courses			4	0	0	4

\* At the end of III Year II Semester, students shall complete summer internship spanning between 1 to 2 months at Industries/ Higher Learning Institutions/ APSSDC.

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**KAKINADA – 533 003, Andhra Pradesh, India**  
**DEPARTMENT OF MECHANICAL ENGINEERING**

**IV B.TECH I SEMESTER**

S.No	Code	Course Title	Hours			Credits
			L	T	P	
1	PE-3	1. Mechanical Vibrations 2. Operations Research 3. Unconventional Machining Processes 4. Computational Fluid Dynamics 5. Gas Dynamics and Jet Propulsion 6. MOOCs (NPTEL/Swayam) Course (12 Week duration)	3	0	0	3
2	PE-4	1. Automation in Manufacturing 2. Power Plant Engineering 3. Big Data Analytics 4. Production Planning and Control 5. Condition Monitoring 6. MOOCs (NPTEL/Swayam) Course (12 Week duration)	3	0	0	3
3	PE-5	1. Advanced Manufacturing Processes 2. Mechatronics 3. Refrigeration & Air-Conditioning 4. Additive Manufacturing 5. Non Destructive Evaluation 6. MOOCs (NPTEL/Swayam) Course (12 Week duration)	3	0	0	3
4	OE-3	1. Additive Manufacturing 2. Mechatronics 3. Finite Element Methods 4. Introduction to Artificial Intelligence & Machine Learning	3	0	0	3
5	OE-4	1. Optimization Techniques 2. Smart Manufacturing 3. Safety Engineering 4. Operations Management	3	0	0	3
6	HSC-3	Universal Human Values: Understanding Harmony	3	0	0	3
7	SOC-5	Mechatronics Lab	0	0	4	2
Evaluation of Summer Internship which is completed at the end of III B.Tech II Semester						3
			<b>Total credits</b>			<b>23</b>
Honors/Minor courses			4	0	0	4

**IV B.TECH II SEMESTER**

S No.	Category	Code	Course Title	Hours per week			Credits
				L	T	P	
1	Major Project	PROJ	Project work*	0	4	16	12
<b>Total credits</b>							<b>12</b>

\*Students can complete Project work @ Industries/ Higher Learning Institutions/ APSSDC.

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**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA**  
**KAKINADA-533003, 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	Soft Skill Course:Employability Skills	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>TotalCredits</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:</b> Machine Learning with Python	2	0	0	2
10	MC	Research Methodology	2	0	0	0
<b>Total Credits</b>			<b>21.5</b>			
		Minors Course*	4	0	0	4
		Honors Course*	4	0	0	4

*(Signature)*  
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**KAKINADA-533003, 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 Alternating Current 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

**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

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

**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**

Open Electives to be offered by CSE for other Branches:

<b>Open Elective-I:</b> <ol style="list-style-type: none"><li>1. Data Structures</li><li>2. Object Oriented Programming through JAVA</li><li>3. Data Base Management Systems</li><li>4. Computer Graphics</li><li>5. Advanced UNIX Programming</li><li>6. Computer Organization and Architecture</li><li>7. Operating Systems</li></ol>	<b>Open Elective-II:</b> <ol style="list-style-type: none"><li>1. Python Programming</li><li>2. Web Technologies</li><li>3. Soft Computing</li><li>4. Distributed Computing</li><li>5. AI and ML for Robotics</li><li>6. Computer Networks</li><li>7. Big Data Analytics</li><li>8. Computational Tools</li></ol>
<b>Open Elective-III:</b> <ol style="list-style-type: none"><li>1. AI Tools &amp; Techniques</li><li>2. Image Processing</li><li>3. Information Security</li><li>4. Mobile Application Development</li><li>5. Data Science</li><li>6. Cyber Security</li><li>7. Introduction to Internet of Things</li></ol>	<b>Open Elective-IV:</b> <ol style="list-style-type: none"><li>1. MEAN Stack Technologies</li><li>2. Deep Learning Techniques</li><li>3. Cloud computing with AWS</li><li>4. Block Chain Technologies</li><li>5. Cryptography &amp; Network Security</li><li>6. Introduction to Machine Learning</li><li>7. Machine Learning with Python</li></ol>

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**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 PythonLab	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 Course*	4	0	0	4
		Honors Course*	4	0	0	4

**IVB.TechIISemester**

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>			

**HSMC:** Humanities and Social Science  
Including Management Courses  
**BSC** : Basic Science Courses  
**ESC:** Engineering Science Courses  
**PCC:** Professional Core Courses

**PEC** : Professional Elective Courses  
**OEC** : Open Elective Courses  
**PROJ** : Internship, Seminar, Project Wok  
**MC** : Mandatory Courses  
**SC** : Skill Oriented Courses

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# JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

KAKINADA-533003, 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 Alternating Current 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

### 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

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**Open Electives to be offered by CSE / IT for other Branches:**

<b>Open Elective-I:</b> <ol style="list-style-type: none"><li>1. Data Structures</li><li>2. Object Oriented Programming through JAVA</li><li>3. Data Base Management Systems</li><li>4. Computer Graphics</li><li>5. Advanced UNIX Programming</li><li>6. Computer Organization and Architecture</li><li>7. Operating Systems</li></ol>	<b>Open Elective-II:</b> <ol style="list-style-type: none"><li>1. Python Programming</li><li>2. Web Technologies</li><li>3. Soft Computing</li><li>4. Distributed Computing</li><li>5. AI and ML for Robotics</li><li>6. Computer Networks</li><li>7. Big Data Analytics</li><li>8. Computational Tools</li></ol>
<b>Open Elective-III:</b> <ol style="list-style-type: none"><li>1. AI Tools &amp; Techniques</li><li>2. Image Processing</li><li>3. Information Security</li><li>4. Mobile Application Development</li><li>5. Data Science</li><li>6. Cyber Security</li><li>7. Introduction to Internet of Things</li></ol>	<b>Open Elective-IV:</b> <ol style="list-style-type: none"><li>1. MEAN Stack Technologies</li><li>2. Deep Learning Techniques</li><li>3. Cloud computing with AWS</li><li>4. Block Chain Technologies</li><li>5. Cryptography &amp; Network Security</li><li>6. Introduction to Machine Learning</li><li>7. Machine Learning with Python</li></ol>



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**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA**
**KAKINADA – 533 003, Andhra Pradesh, India**
**DEPARTMENT OF MECHANICAL ENGINEERING**
**IV B.TECH I SEMESTER**

S.No	Code	Course Title	Hours			Credits
			L	T	P	
1	PE-3	1. Mechanical Vibrations 2. Operations Research 3. Unconventional Machining Processes 4. Computational Fluid Dynamics 5. Gas Dynamics and Jet Propulsion 6. MOOCs (NPTEL/Swayam) Course (12 Week duration)	3	0	0	3
2	PE-4	1. Automation in Manufacturing 2. Power Plant Engineering 3. Big Data Analytics 4. Production Planning and Control 5. Condition Monitoring 6. MOOCs (NPTEL/Swayam) Course (12 Week duration)	3	0	0	3
3	PE-5	1. Advanced Manufacturing Processes 2. Mechatronics 3. Refrigeration & Air-Conditioning 4. Additive Manufacturing 5. Non Destructive Evaluation 6. MOOCs (NPTEL/Swayam) Course (12 Week duration)	3	0	0	3
4	OE-3	1. Additive Manufacturing 2. Mechatronics 3. Finite Element Methods 4. Introduction to Artificial Intelligence & Machine Learning	3	0	0	3
5	OE-4	1. Optimization Techniques 2. Smart Manufacturing 3. Safety Engineering 4. Operations Management	3	0	0	3
6	HSC-3	Universal Human Values: Understanding Harmony	3	0	0	3
7	SOC-5	Mechatronics Lab	0	0	4	2
Evaluation of Summer Internship which is completed at the end of III B.Tech II Semester						3
<b>Total credits</b>						<b>23</b>
Honors/Minor courses						4
			4	0	0	4

**IV B.TECH II SEMESTER**

S No.	Category	Code	Course Title	Hours per week			Credits
				L	T	P	
1	Major Project	PROJ	Project work*	0	4	16	12
<b>Total credits</b>							<b>12</b>

\*Students can complete Project work @ Industries/ Higher Learning Institutions/ APSSDC.

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**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

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

**DEPARTMENT OF CIVIL ENGINEERING**

**OPEN ELECTIVES R20**

**(4 OE x 3 = 12 Credits)**

**Note: Student must choose subjects which were not opted earlier.  
(OE Starts from III-I)**

**Open Elective-1 in III year I semester:**

- a) Strength of Materials
- b) Fluid Mechanics
- c) Surveying and Geomatics

**Open Elective-2 in III year II semester:**

- a) Elements of Civil Engineering
- b) Environmental Engineering
- c) Disaster Management

**Open Elective-3 in IV year I semester:**

- a) Highway Engineering
- b) Safety Engineering
- c) Environmental Management
- d) Urban Planning

**Open Elective-4 in IV year II semester:**

- a) Water Resource Engineering
- b) Hydraulics and Hydraulic Machinery
- c) Green Technologies
- d) Remote Sensing & GIS

A handwritten signature in green ink, appearing to read 'S. R. K.', is written over a faint circular stamp.

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**DEPARTMENT OF MECHANICAL ENGINEERING**
**III B.TECH I SEMESTER**

S No	Code	Course Title	Hours			Credits
			L	T	P	
1	PCC-7	Thermal Engineering-II	3	0	0	3
2	PCC-8	Design of Machine Members-I	3	0	0	3
3	PCC-9	Machining, Machine Tools & Metrology	3	0	0	3
4	OE-1	1. Sustainable Energy Technologies 2. Operations Research 3. Nano Technology 4. Thermal Management of Electronic systems	3	0	0	3
5	PE-1	1. Finite Element Methods 2. Industrial Robotics 3. Advanced Materials 4. Renewable Energy Sources 5. Mechanics of Composites 6. MOOCs (NPTEL/ Swayam) Course (12 Week duration)	3	0	0	3
6	PCC-L6	Machine Tools Lab	0	0	3	1.5
7	PCC-L7	Thermal Engineering Lab	0	0	3	1.5
8	SOC-3	Advanced Communication Skills Lab	1	0	2	2
9	MC – 4	Professional Ethics and Human Values	2	0	0	0
Evaluation of Summer Internship which is completed at the end of II B.Tech II Semester						1.5
			<b>Total credits</b>			<b>21.5</b>
Honors/Minor courses			4	0	0	4

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**DEPARTMENT OF CIVIL ENGINEERING**

**OPEN ELECTIVES R20**

**(4 OE x 3 = 12 Credits)**

**Note: Student must choose subjects which were not opted earlier.**  
**(OE Starts from III-I)**

**Open Elective-1 in III year I semester:**

- a) Strength of Materials
- b) Fluid Mechanics
- c) Surveying and Geomatics

**Open Elective-2 in III year II semester:**

- a) Elements of Civil Engineering
- b) Environmental Engineering
- c) Disaster Management

**Open Elective-3 in IV year I semester:**

- a) Highway Engineering
- b) Safety Engineering
- c) Environmental Management
- d) Urban Planning

**Open Elective-4 in IV year II semester:**

- a) Water Resource Engineering
- b) Hydraulics and Hydraulic Machinery
- c) Green Technologies
- d) Remote Sensing & GIS

A handwritten signature in green ink, likely belonging to the Principal of SRK Institute of Technology.

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**DEPARTMENT OF MECHANICAL ENGINEERING**
**III B.TECH II SEMESTER**

S.No	Code	Course Title	Hours			Credits
			L	T	P	
1	PCC-10	Heat Transfer	3	0	0	3
2	PCC-11	Design of Machine Members-II	3	0	0	3
3	PCC-12	Introduction to Artificial Intelligence and Machine Learning	3	0	0	3
4	PE-2	1. Automobile Engineering 2. Smart Manufacturing 3. Advanced Mechanics of Solids 4. Statistical Quality Control 5. Industrial Hydraulics and Pneumatics 6. MOOCs (NPTEL/ Swayam) Course (12 Week duration)	3	0	0	3
5	OE-2	1. Industrial Robotics 2. Essentials of Mechanical Engineering 3. Advanced Materials 4. Introduction to Automobile Engineering	3	0	0	3
6	PCC-L8	Heat Transfer Lab	0	0	3	1.5
7	PCC-L9	CAE&CAM Lab	0	0	3	1.5
8	PCC-L10	Measurements & Metrology Lab	0	0	3	1.5
9	SOC-4	Artificial Intelligence and Machine Learning Lab	0	0	4	2
10	MC - 5	Research Methodology and IPR	2	0	0	0
			<b>Total credits</b>			<b>21.5</b>
Honors/Minor courses			4	0	0	4

\* At the end of III Year II Semester, students shall complete summer internship spanning between 1 to 2 months at Industries/ Higher Learning Institutions/ APSSDC.

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**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

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

**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**

## **COURSE STRUCTURE AND SYLLABUS**

**For UG – R20**

### **B. TECH - ELECTRONICS AND COMMUNICATION ENGINEERING**

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



**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA**

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

**III Year - I Semester**

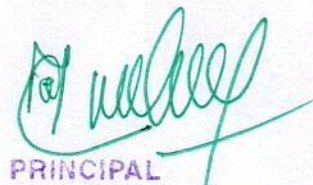
S. No	Category	Name of the subject	L	T	P	Credits
1	PC	Analog ICs and Applications	3	0	0	3
2	PC	Electromagnetic Waves and Transmission Lines	3	0	0	3
3	PC	Digital Communications	3	0	0	3
4	OE1	Open Elective Course/Job oriented elective-1	2	0	2	3
5	PE1	Professional Elective courses -1	3	0	0	3
6	LC	Analog ICs and Applications LAB	0	0	3	1.5
7	LC	Digital Communications Lab	0	0	3	1.5
8	SC	Data Structures using Java Lab	0	0	4	2
9	MC	Indian Traditional Knowledge	2	0	0	0
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>
<b>Honors/Minor courses (The hours distribution can be 3-0-2 or 3-1-0 also)</b>						<b>4</b>

**PE1:**

1. Antenna and Wave Propagation
2. Electronic Measurements and Instrumentation
3. Computer Architecture & Organization

**OE1:**

Candidate should select the subject from list of subjects offered by other departments



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**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**

**III Year -II Semester**

S. No	Category	Name of the subject	L	T	P	Credits
1	PC	Microprocessor and Microcontrollers	3	1	0	3
2	PC	VLSI Design	3	0	0	3
3	PC	Digital Signal Processing	3	0	0	3
4	PE2	Professional Elective courses - 2	3	0	0	3
5	OE 2	Open Elective Course/Job oriented elective -2	2	0	2	3
6	LC	Microprocessor and Microcontrollers - Lab	0	0	3	1.5
7	LC	VLSI Design Lab	0	0	3	1.5
8	LC	Digital Signal Processing Lab	0	0	3	1.5
9	SC	ARM based/ Aurdino based Programming	1	0	2	2
10	MC	Research Methodology	2	0	0	0
<b>Total credits</b>						<b>21.5</b>
<b>Honors/Minor courses (The hours distribution can be 3-0-2 or 3-1-0 also)</b>						<b>4</b>

**Industrial/Research Internship (Mandatory) 2 Months during summer vacation**

**PE2:**

1. Microwave Engineering
2. Mobile & Cellular Communication
3. Embedded Systems
4. CMOS Analog IC Design

**OE2:**

Candidate should select the subject from list of subjects offered by other departments

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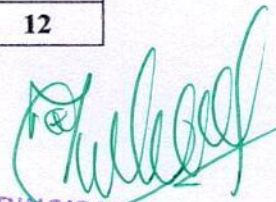
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**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**  
**IV Year –I Semester**

S. No	Category	Name of the subject	L	T	P	Credits
1	PE	Professional Elective courses -3	3	0	0	3
2	PE	Professional Elective courses -4	3	0	0	3
3	PE	Professional Elective courses -5	3	0	0	3
4	OE	Open Elective Courses/ Job oriented elective -3	2	0	2	3
5	OE	Open Elective Courses/ Job oriented elective -4	2	0	2	3
6	HS	<b>*Humanities and Social Science Elective</b>	3	0	0	3
7	SC	<b>Designer tools (HFSS, Microwave Studio CST. Cadence Virtuoso. Synopsys, Mentor Graphics, Xilinx.)</b>	1	0	2	2
<b>Industrial/Research Internship 2 Months (Mandatory) after third year (to be evaluated during VII semester</b>			0	0	0	3
<b>Total credits</b>						<b>23</b>
<b>Honors/Minor courses (The hours distribution can be 3-0-2 or 3-1-0 also)</b>						<b>4</b>

<u>PE 3:</u>	<u>PE5:</u>
<ul style="list-style-type: none"> <li>1. Optical Communication</li> <li>2. Digital Image Processing</li> <li>3. Low Power VLSI Design</li> </ul>	<ul style="list-style-type: none"> <li>1. Radar engineering</li> <li>2. Pattern recognition &amp; Machine Learning</li> <li>3. Internet of Things</li> </ul>
<u>PE4:</u>	
<ul style="list-style-type: none"> <li>1. Satellite Communications</li> <li>2. Soft Computing Techniques</li> <li>3. Digital IC Design using CMOS</li> </ul>	

**IV Year – II Semester**

S. No.	Category	Code	Course Title	Hours per week			Credits
1	Major Project	PROJ	Project work, seminar and internship in industry	-	-	-	12
<b>INTERNSHIP (6 MONTHS)</b>							
<b>Total credits</b>						<b>12</b>	

  
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Accredited by NAAC 'A' Grade

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

### ELECTIVES OFFERED

The following elective subjects are offered for III/IV B.Tech Electronics And Communication Engineering students for the academic year 2023-24 II Semester. Please exercise the elective options in the format given.

#### LIST OF ELECTIVES

##### PROFESSIONAL ELECTIVE-II

1. Microwave Engineering
2. Mobile and Cellular Communication
3. Embedded Systems
4. CMOS Analog IC Design

##### OPEN ELECTIVE-II

1. Python Programming
2. Industrial Robotics
3. AI & ML for Robotics

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**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**

## **COURSE STRUCTURE AND SYLLABUS**

**For UG –R20**

### **B. TECH - COMPUTER SCIENCE & ENGINEERING**

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



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

**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**

III B. Tech – II Semester						
S.No	Course Code	Courses	Hours per week			Credits
			L	T	P	
1	PC	Machine Learning	3	0	0	3
2	PC	Compiler Design	3	0	0	3
3	PC	Cryptography and Network Security	3	0	0	3
4	PE	<b>Professional Elective-II</b> 1.Mobile Computing 2.Big Data Analytics 3.Object Oriented Analysis and Design 4.Network Programming	3	0	0	3
5	Open Elective /Job Oriented	<b>Open Elective-II</b> Open Electives offered by other departments/ MEAN Stack Development ( <i>Job Oriented</i> )	3	0	0	3
6	PC	Machine Learning using Python Lab	0	0	3	1.5
7	PC	Compiler Design Lab	0	0	3	1.5
8	PC	Cryptography and Network Security Lab	0	0	3	1.5
9	SO	<b>Skill Oriented Course - IV</b> 1.Big Data:Spark OR 2.MEAN Stack Technologies-Module I (HTML 5, JavaScript, Node.js, Express.js and TypeScript)	0	0	4	2
10	MC	Employability skills-II	2	0	0	0
<b>Total credits</b>						<b>21.5</b>
<b>Industrial/Research Internship(Mandatory) 2 Months during summer vacation</b>						
11	Minor	Data Structures and Algorithms <sup>s</sup>	3	0	2	3+1
12	Honors	Any course from the Pool, as per the opted track	4	0	0	4
<b>Minor course through SWAYAM</b>			-	-	-	<b>2</b>

\$- Integrated Course

  
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**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**

## **COURSE STRUCTURE AND SYLLABUS**

**For UG –R20**

**B. TECH - COMPUTER SCIENCE & ENGINEERING**

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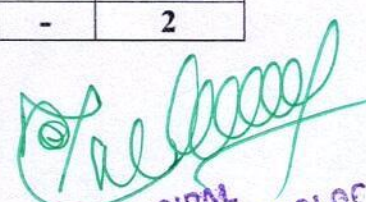
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**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**

IV B. Tech –I Semester						
S.No	Course Code	Course Title	Hours per week			Credits
			L	T	P	
1	PE	<b>Professional Elective-III</b> 1. Cloud Computing 2. Neural Networks and Soft Computing 3. Ad-hoc and Sensor Networks 4. Cyber Security & Forensics	3	0	0	3
2	PE	<b>Professional Elective-IV</b> 1. Deep Learning Techniques 2. Social Networks & Semantic Web 3. Computer Vision 4. MOOCS-NPTEL/SWAYAM%	3	0	0	3
3	PE	<b>Professional Elective-V</b> 1. Block-Chain Technologies 2. Wireless Network Security 3. Ethical Hacking 4. MOOCS-NPTEL/SWAYAM%	3	0	0	3
4	Open Elective /Job Oriented	<b>Open Elective-III</b> Open Electives offered by other departments/ API and Microservices (Job Oriented Course)	3	0	0	3
5	Open Elective /Job Oriented	<b>Open Elective-IV</b> Open Electives offered by other departments/ Secure Coding Techniques (Job Oriented Course)	3	0	0	3
6	HS	Universal Human Values 2: Understanding Harmony	3	0	0	3
7	SO	1. PYTHON: Deep Learning OR 2. MEAN Stack Technologies-Module II- Angular JS and MongoDB OR 3. APSSDC offered Courses	0	0	4	2
8	PR	<b>Industrial/Research Internship 2 months (Mandatory) after third year (to be evaluated during VII semester</b>	0	0	0	3
<b>Total credits</b>						<b>23</b>
11	Minor	Software Engineering <sup>S</sup> / any other from PART-B (For Minor)	3	0	2	3+1
12	Honors	Any course from the Pool, as per the opted track	4	0	0	4
<b>Minor course through SWAYAM</b>						<b>2</b>

\$- Integrated Course

% - MOOC Course

  
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**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**

**COURSE STRUCTURE AND SYLLABUS**

**For UG –R20**

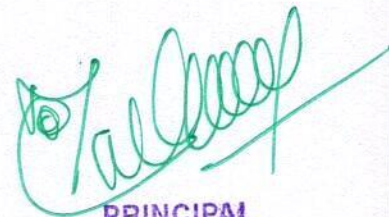
**B. TECH - COMPUTER SCIENCE & ENGINEERING**

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



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

**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**

<b>III B. Tech – I Semester</b>						
S.No	Course Code	Courses	Hours per week			Credits
			L	T	P	
1	PC	Computer Networks	3	0	0	3
2	PC	Design and Analysis of Algorithms	3	0	0	3
3	PC	Data Warehousing and Data Mining	3	0	0	3
4	Open Elective / Job Oriented	<b>Open Elective-I</b> Open Electives offered by other departments/ Optimization in Operations Research (Job oriented course)	3	0	0	3
5	PE	<b>Professional Elective-I</b> Artificial Intelligence Software Project Management Distributed Systems Advanced Unix Programming	3	0	0	3
6	PC	Data Warehousing and Data Mining Lab	0	0	3	1.5
7	PC	Computer Networks Lab	0	0	3	1.5
8	SO	<b>Skill Oriented Course – III</b> 1. Animation course: Animation Design OR 2. Continuous Integration and Continuous Delivery using DevOps	0	0	4	2
9	MC	Employability Skills-I	2	0	0	0
10	PR	<b>Summer Internship 2 Months</b> (Mandatory) after second year (to be evaluated during V semester	0	0	0	1.5
<b>Total credits</b>						<b>21.5</b>
11	Minor	Database Management Systems <sup>s</sup>	3	0	2	3+1
12	Honors	Any course from the Pool, as per the opted track	4	0	0	4

☉- Integrated Course

  
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**DEPARTMENT OF CSE - DATA SCIENCE**

**COURSE STRUCTURE AND SYLLABUS**

**For UG – R20**

**B. Tech - COMPUTER SCIENCE AND ENGINEERING with Specialization**

**DATA SCIENCE**

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



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**DEPARTMENT OF CSE - DATA SCIENCE**

III B. Tech – II Semester						
S.No	Course Code	Courses	Hours per week			Credits
			L	T	P	
1	PC	Computer Networks	3	0	0	3
2	PC	Big Data Analytics	3	0	0	3
3	PC	Design and Analysis of Algorithms	3	0	0	3
4	PE	<b>Professional Elective-II</b> 1. Deep Learning 2. Software Project Management 3. Distributed Systems 4. Data Wrangling in Data Science 5. ETL Principles	3	0	0	3
5	Open Elective/Job Oriented	<b>Open Elective-II</b> Open Electives offered by other departments/ MEAN Stack Development (Job Oriented Course)	3	0	0	3
6	PC	Computer Networks Lab	0	0	3	1.5
7	PC	Big Data Analytics Lab	0	0	3	1.5
8	PC	Deep Learning with Tensorflow	0	0	3	1.5
9	SO	<b>Skill Oriented Course - IV</b> 1. MEAN Stack Technologies- Module I-HTML5, Java Script, Node.js, express.js and Type Script <b>OR</b> 2. ETL Design Procedures-Spark	0	0	4	2
10	MC	Employability skills-II	2	0	0	0
<b>Total credits</b>						<b>21.5</b>
<b>Industrial/Research Internship(Mandatory) 2 Months during summer vacation</b>						
11	Minor	Data Science Applications <sup>s</sup>	3	0	2	4
<b>Minor courses through SWAYAM</b>			0	0	0	2

  
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**DEPARTMENT OF CSE - DATA SCIENCE**

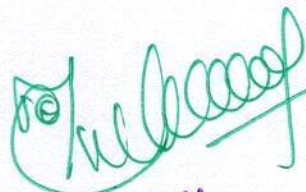
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**For UG – R20**

**B. Tech - COMPUTER SCIENCE AND ENGINEERING with Specialization**  
**DATA SCIENCE**

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



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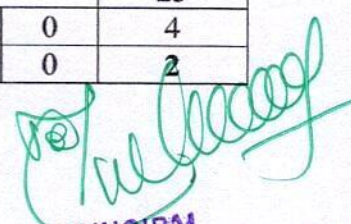
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**DEPARTMENT OF CSE - DATA SCIENCE**

**IV B. Tech –I Semester (Tentative)**

S.No	Course Code	Course Title	Hours per week			Credits
			L	T	P	
1	PE	<b>Professional Elective-III</b> 1. Reinforcement Learning 2. Nature Inspired Computing Techniques 3. Social Media Analytics 4. Block Chain Technologies	3	0	0	3
2	PE	<b>Professional Elective-IV</b> 1. SnowFlake Cloud Analytics 2. Cloud Computing 3. Information Retrieval Systems 4. NOSQL Databases	3	0	0	3
3	PE	<b>Professional Elective-V</b> 1. Social Network Analysis 2. Recommender Systems 3. AI Chatbots 4. Data Visualization	3	0	0	3
4	Open Elective /Job Oriented	<b>Open Elective-III</b> Open Electives offered by other departments/ API and Microservices (Job Oriented Course)	3	0	0	3
5	Open Elective /Job Oriented	<b>Open Elective-IV</b> Open Electives offered by other departments/ Secure Coding Techniques (Job Oriented Course)	3	0	0	3
6	HS	Universal Human Values 2: Understanding Harmony	3	0	0	3
7	SO	1.Machine Learning with Go (Infosys Spring Board) OR 2.MEAN Stack Technologies-Module II- Angular JS and MongoDB	0	0	4	2
8	PR	<b>Industrial/Research Internship 2 months (Mandatory) after third year (to be evaluated during VII semester</b>	0	0	0	3
<b>Total credits</b>						<b>23</b>
9	Minor	Data Wrangling in Data Science <sup>S</sup>	4	0	0	4
<b>Minor courses through SWAYAM</b>						<b>2</b>

\$- Integrated Course

  
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**DEPARTMENT OF CSE - DATA SCIENCE**

**COURSE STRUCTURE AND SYLLABUS**

**For UG – R20**

**B. Tech - COMPUTER SCIENCE AND ENGINEERING with Specialization**

**DATA SCIENCE**

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



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**DEPARTMENT OF CSE - DATA SCIENCE**

III B. Tech – I Semester						
S.No	Course Code	Courses	Hours per week			Credits
			L	T	P	C
1	PC	Compiler Design	3	0	0	3
2	PC	Operating Systems	3	0	0	3
3	PC	Machine Learning	3	0	0	3
4	Open Elective/Job Oriented	<b>Open Elective-I</b> Open Electives offered by other departments/ <b>Optimization in Operations Research (Job oriented course)</b>	3	0	0	3
5	PE	<b>Professional Elective-I</b> 1. Software Engineering 2. Object Oriented Analysis and Design <b>3. DevOps</b> 4. Internet of Things	3	0	0	3
6	PC	Operating Systems & Compiler Design Lab	0	0	3	1.5
7	PC	Machine Learning Lab	0	0	3	1.5
8	SO	<b>Skill Oriented Course - III</b> <b>1. Continuous Integration and Continuous Delivery using DevOps OR</b> 2. Helical Insight	0	0	4	2
9	MC	Employability Skills-I	2	0	0	0
10	PR	<b>Summer Internship 2 Months (Mandatory) after second year (to be evaluated during V semester)</b>	0	0	0	1.5
<b>Total credits</b>						<b>21.5</b>
11	Minor	Data Warehousing and Data Mining <sup>s</sup>	3	0	2	4

<sup>s</sup>- Integrated Course

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**DEPARTMENT OF CSE - ARTIFICIAL INTELLIGENCE & MACHINE LEARNING**

## **COURSE STRUCTURE AND SYLLABUS**

**For UG – R20**

**B. Tech - COMPUTER SCIENCE AND ENGINEERING with Specialization**

**Common to**

**(i) CSE (ARTIFICIAL INTELLIGENCE and MACHINE LEARNING)-Branch Code:42**

**(ii) ARTIFICIAL INTELLIGENCE and MACHINE LEARNING - Branch Code: 61**

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



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

**DEPARTMENT OF CSE - ARTIFICIAL INTELLIGENCE & MACHINE LEARNING**

III B. Tech – II Semester						
S.No	Course Code	Courses	Hours per week			Credits
			L	T	P	
1	PC	Computer Networks	3	0	0	3
2	PC	Deep Learning	3	0	0	3
3	PC	Design and Analysis of Algorithms	3	0	0	3
4	PE	<b>Professional Elective-II</b>	3	0	0	3
		1. Software Project Management				
		2. Distributed Systems				
		3. Internet of Things				
5	Open Elective/Job Oriented	<b>Open Elective-II</b>	3	0	0	3
		Open Electives offered by other departments/ MEAN Stack Development (Job Oriented Course)				
6	PC	Computer Networks Lab	0	0	3	1.5
7	PC	Algorithms for Efficient Coding Lab	0	0	3	1.5
8	PC	Deep Learning with Tensorflow	0	0	3	1.5
9	SO	<b>Skill Oriented Course - IV</b>	0	0	4	2
		MEAN Stack Technologies-Module I- HTML 5, JavaScript, Node.js, Express.js and TypeScript OR Big Data : Apache Spark				
10	MC	Employability skills-II	2	0	0	0
<b>Total credits</b>						<b>21.5</b>
<b>Industrial/Research Internship(Mandatory) 2 Months during summer vacation</b>						
11	Minor	Deep Learning <sup>s</sup>	3	0	2	4
<b>Minor courses through SWAYAM</b>			0	0	0	2

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**DEPARTMENT OF CSE - ARTIFICIAL INTELLIGENCE & MACHINE LEARNING**

## **COURSE STRUCTURE AND SYLLABUS**

**For UG – R20**

**B. Tech - COMPUTER SCIENCE AND ENGINEERING with Specialization**

**Common to**

- (i) CSE (ARTIFICIAL INTELLIGENCE and MACHINE LEARNING)–Branch Code:42**
- (ii) ARTIFICIAL INTELLIGENCE and MACHINE LEARNING – Branch Code: 61**

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



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

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**ENIKEPADU, VIJAYAWADA-521 108.**


**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA**
**KAKINADA – 533 003, Andhra Pradesh, India**
**DEPARTMENT OF CSE - ARTIFICIAL INTELLIGENCE & MACHINE LEARNING**
**IV B. Tech –I Semester (Tentative)**

S.No	Course Code	Course Title	Hours per week			Credits
			L	T	P	
1	PE	<b>Professional Elective-III</b> 1.Reinforcement Learning 2.Soft Computing 3. Cryptography and Network Security 4. Block Chain Technologies 5. Speech Processing	3	0	0	3
2	PE	<b>Professional Elective-IV</b> 1. Robotic Process Automation 2. Cloud Computing 3. Big Data Analytics 4. NOSQL Databases 5. Video Analytics	3	0	0	3
3	PE	<b>Professional Elective-V</b> 1. Social Network Analysis 2. Recommender Systems 3. AI Chatbots 4. Object Oriented Analysis and Design 5. Semantic Web	3	0	0	3
4	Open Elective /Job Oriented	<b>Open Elective-III</b> Open Electives offered by other departments/API and Microservices (Job Oriented Course)	3	0	0	3
5	Open Elective /Job Oriented	<b>Open Elective-IV</b> Open Electives offered by other departments/Secure Coding Techniques (Job Oriented Course)	3	0	0	3
6	HS	Universal Human Values 2: Understanding Harmony	3	0	0	3
7	SO	1.Machine Learning with Go (Infosys Spring Board) <b>OR</b> 2.MEAN Stack Technologies-Module II- Angular JS and MongoDB	0	0	4	2
8	PR	<b>Industrial/Research Internship 2 months (Mandatory) after third year (to be evaluated during VII semester</b>	0	0	0	3
<b>Total credits</b>						<b>23</b>
9	Minor	Reinforcement Learning	4	0	0	4
<b>Minor courses through SWAYAM</b>			0	0	0	2

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

**DEPARTMENT OF CSE - ARTIFICIAL INTELLIGENCE & MACHINE LEARNING**

## **COURSE STRUCTURE AND SYLLABUS**

**For UG – R20**

**B. Tech - COMPUTER SCIENCE AND ENGINEERING with Specialization**

**Common to**

**(i) CSE (ARTIFICIAL INTELLIGENCE and MACHINE LEARNING)-Branch Code:42**

**(ii) ARTIFICIAL INTELLIGENCE and MACHINE LEARNING - Branch Code: 61**

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

**DEPARTMENT OF CSE - ARTIFICIAL INTELLIGENCE & MACHINE LEARNING**

III B. Tech – I Semester						
S.No	Course Code	Courses	Hours per week			Credits
			L	T	P	
1	PC	Compiler Design	3	0	0	3
2	PC	Operating Systems	3	0	0	3
3	PC	Machine Learning	3	0	0	3
4	Open Elective/Job Oriented	<b>Open Elective-I</b> Open Electives offered by other departments/ <b>Optimization in Operations Research(Job oriented course)</b>	3	0	0	3
5	PE	<b>Professional Elective-I</b> 1. Software Engineering 2. Computer Vision 3. Data Visualization <b>4. DevOps</b> 5. Machine Learning for Engineering and Science Applications (NPTEL) ( <a href="https://nptel.ac.in/courses/106106198">https://nptel.ac.in/courses/106106198</a> )	3	0	0	3
6	PC	Operating Systems & Compiler Design Lab	0	0	3	1.5
7	PC	Machine Learning Lab	0	0	3	1.5
8	SO	<b>Skill Oriented Course - III</b> <b>Continuous Integration and Continuous Delivery using DevOps</b>	0	0	4	2
9	MC	Employability Skills-I	2	0	0	0
10	PR	<b>Summer Internship 2 Months (Mandatory) after second year(to be evaluated during V semester)</b>	0	0	0	1.5
<b>Total credits</b>						<b>21.5</b>
11	Minor	Machine Learning <sup>S</sup>	3	0	2	4

§- Integrated Course

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

**DEPARTMENT OF INFORMATION TECHNOLOGY**

III B. Tech – II Semester						
S.No	Course Code	Courses	Hours per week			Credits
			L	T	P	C
1	PC	Machine Learning	3	0	0	3
2	PC	Big Data Analytics	3	0	0	3
3	PC	Cryptography and Network Security	3	0	0	3
4	PE	Professional Elective-II	3	0	0	3
		1.Mobile Computing				
		2.MEAN Stack Development				
		3. Design Patterns				
4.Scripting Languages						
5	Open Elective/ Job Oriented	Open Elective-II	3	0	0	3
		Open Electives offered by other departments				
6	PC	Big Data Analytics lab	0	0	3	1.5
7	PC	Machine Learning using Python Lab	0	0	3	1.5
8	PC	Cryptography and Network Security Lab	0	0	3	1.5
9	SO	Skill Oriented Course - IV	0	0	4	2
		1.Data Science; Natural Language Processing OR				
		2.Video Analytics				
10	MC3201	Employability skills-II	2	0	0	0
<b>Total credits</b>						<b>21.5</b>
<b>Industrial/Research Internship(Mandatory) 2 Months during summer vacation</b>						
11	Minor	Data Structures and Algorithms <sup>S</sup>	3	0	2	3+1
12	Honors	Any course from the Pool, as per the opted track	4	0	0	4
<b>Minor course through SWAYAM</b>			-	-	-	2

<sup>S</sup>- Integrated Course

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DEPARTMENT OF INFORMATION TECHNOLOGY

S.No	Course Code	Course Title	Hours per week			Credits
			L	T	P	
1	PE	Professional Elective-III 1. Cloud Computing 2. Artificial Neural Networks 3. Internet of Things (IoT) 4. Cyber Security & Forensics	3	0	0	3
2	PE	Professional Elective-IV 1. Deep Learning Techniques 2. Social Networks Analysis 3. Advanced Databases 4. MOOCS-NPTEL/SWAYAM	3	0	0	3
3	PE	Professional Elective-V 1. Block-Chain Technologies 2. M-Commerce 3. Ethical Hacking 4. MOOCS-NPTEL/SWAYAM	3	0	0	3
4	Open Elective /Job Oriented	Open Elective-III Open Electives offered by other departments	2	0	2	3
5	Open Elective /Job Oriented	Open Elective-IV Open Electives offered by other departments	2	0	2	3
6	HS	Universal Human Values 2: Understanding Harmony	3	0	0	3
7	SO	PYTHON: Deep Learning OR Secure Coding Techniques OR APSSDC offered Courses	0	0	4	2
8	PR	Industrial/Research Internship 2 months (Mandatory) after third year (to be evaluated during VII semester)	0	0	0	3
<b>Total credits</b>						<b>23</b>
11	Minor	Software Engineering <sup>S</sup> / any other from PART-B (For Minor)	3	0	2	3+1
12	Honors	Any course from the Pool, as per the opted track	4	0	0	4
Minor course through SWAYAM			-	-	-	2

<sup>S</sup>- Integrated Course

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

**DEPARTMENT OF INFORMATION TECHNOLOGY**

**III B. Tech – I Semester**

S.No	Course Code	Courses	Hours per week			Credits
			L	T	P	
1	PC	Computer Networks	3	0	0	3
2	PC	Design and Analysis of Algorithms	3	0	0	3
3	PC	Data Mining Techniques	3	0	0	3
4	Open Elective/Job Oriented	<b>Open Elective-I</b> Open Electives offered by other departments/ DevOps (Job Oriented course)	3	0	0	3
5	PE	<b>Professional Elective-I</b> 1. Artificial Intelligence 2. Agile Software Process 3. Distributed Systems 4. Advanced Unix Programming	3	0	0	3
6	PC	Data Mining Techniques with R Lab	0	0	3	1.5
7	PC	Computer Networks Lab	0	0	3	1.5
8	SO	<b>Skill Oriented Course - III</b> 1. Animation course: Animation Design OR 2. Continuous Integration and Continuous Delivery using DevOps	0	0	4	2
9	MC	Employability Skills-I	2	0	0	0
10	PR	<b>Summer Internship 2</b> Months(Mandatory) after second year(to be evaluated during V semester)	0	0	0	1.5
<b>Total credits</b>						<b>21.5</b>
11	Minor	Computer Networks <sup>S</sup>	3	0	2	3+1
12	Honors	Any course from the Pool, as per the opted track	4	0	0	4

<sup>S</sup>- Integrated Course

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

**MASTER OF COMPUTER APPLICATIONS (MCA)**  
**(For Two-Year PG Programme)**

**COURSE STRUCTURE AND SYLLABUS**  
**For PG – R20**

**MASTER OF COMPUTER APPLICATIONS (MCA)**  
**(For Two-Year PG Programme)**

*(Applicable for batches admitted from 2020-21)*



**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA**

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

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

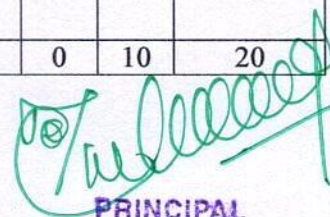
**MASTER OF COMPUTER APPLICATIONS (MCA)**  
**(For Two-Year PG Programme)**  
**COURSE STRUCTURE**

**I Semester**

S.No	Course Code	Course Name	Category	L	T	P	Credits
1	MCA1101	Business Communication	BS&H	2	0	0	2
2	MCA1102	Mathematical and Statistical Foundations	BS&H	3	0	0	3
3	MCA1103	Computer Organization & Operating Systems	PC	3	1	0	4
4	MCA1104	Data Structures	PC	3	0	0	3
5	MCA1105	Object Oriented Programming with JAVA	PC	3	0	0	3
6	MCA1106	Operating Systems and Linux Lab	PC	0	0	3	1.5
7	MCA1107	Data Structures Lab	PC	0	0	3	1.5
8	MCA1108	JAVA Programming Lab	PC	0	0	3	1.5
9	MCA1109	Socially Relevant Project using Design Thinking	MC	0	0	1	0.5
<b>Total</b>				<b>15</b>	<b>1</b>	<b>10</b>	<b>20</b>

**II Semester**

S.No	Course Code	Course Name	Category	L	T	P	Credits
1	MCA2101	Database Management Systems	PC	3	0	0	3
2	MCA2102	Computer Networks	PC	3	0	0	3
3	MCA2103	Software Engineering and Design Patterns	PC	3	0	0	3
4	MCA2104	Data Warehousing and Mining	PC	3	0	0	3
5	MCA2105	<b>Elective-I</b> <ul style="list-style-type: none"> <li>• No SQL Databases</li> <li>• Design and Analysis of Algorithms</li> <li>• Mobile Application Development</li> <li>• Artificial Intelligence</li> <li>• Accounting for Managers</li> </ul>	PE	3	0	0	3
6	MCA2106	DBMS Lab	PC	0	0	3	1.5
7	MCA2107	Computer Networks Lab	PC	0	0	3	1.5
8	MCA2108	Software Engineering and Design Patterns Lab	PC	0	0	3	1.5
9	MCA2109	Employability Skills	MC	0	0	1	0.5
10	MCA2110	Bridge Course (Python Programming to be taken through MOOCs)	MC	0	0	0	0
<b>Total</b>				<b>15</b>	<b>0</b>	<b>10</b>	<b>20</b>

  
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**(For Two-Year PG Programme)**

**III Semester**

S.No	Course Code	Course Name	Category	L	T	P	Credits
1	MCA3101	Machine Learning with Python	PC	3	0	0	3
2	MCA3102	Internet of Things	PC	3	0	0	3
3	MCA3103	Web Technologies	PC	3	0	0	3
4	MCA3104	Cryptography and Network Security	PC	3	0	0	3
5	MCA3105	<b>Elective-II</b> <ul style="list-style-type: none"> <li>• Soft Computing</li> <li>• <b>Software Project Management</b></li> <li>• Cloud Computing</li> <li>• Optimization Techniques</li> <li>• Cyber Security</li> </ul>	PE	3	0	0	3
6	MCA3106	Machine Learning with Python Lab	PC	0	0	3	1.5
7	MCA3107	IoT Lab	PC	0	0	3	1.5
8	MCA3108	Web Technologies Lab	PC	0	0	4	2
9	MCA3109	Internship / Industry Oriented Mini Project/ Skill Development Course (Minimum 6-weeks)	PR	0	0	0	2
Total				15	0	10	22

**IV Semester**

S.No	Course Code	Course Name	Category	L	T	P	Credits
1	MCA4101	<b>Elective-III *</b> <ul style="list-style-type: none"> <li>• Digital Marketing</li> <li>• <b>Human Resource Management</b></li> <li>• Deep Learning</li> <li>• Ad-hoc and Sensor Networks</li> <li>• MOOCs-1 (NPTEL/SWAYAM)                - Full Stack Technologies                - Any recommended course</li> </ul>	PE	3	0	0	3
2	MCA4102	<b>Elective-IV *</b> <ul style="list-style-type: none"> <li>• Network Programming</li> <li>• Block Chain technologies</li> <li>• <b>Software Testing Methodologies</b></li> <li>• Big Data Analytics</li> <li>• MOOCs-2 (NPTEL/SWAYAM)                -Data Science                -Any recommended course</li> </ul>	PE	3	0	0	3
3	MCA4103	Project Work/ Dissertation	PR	0	0	0	12
Total				6	0	0	18

\*Students going for Industrial Project/Thesis will complete these courses through MOOCs (even in earlier semester)

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# SRK INSTITUTE OF TECHNOLOGY

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Approved by AICTE, Permanently Affiliated to JNTUK, Kakinada

(ISO 9001:2015 Certified Institution)

DEPARTMENT OF BUSINESS ADMINISTRATION



## MBA COURSE STRUCTURE MBA-SRK 23 I YEAR I SEMESTER

S.N o	Course Code	Courses	Marks	L	T	P	C
1	C-101	Management and Organizational Behavior	100	4	0	0	4
2	C-102	Managerial Economics	100	4	0	0	4
3	C-103	Accounting for Managers	100	4	0	0	4
4	C-104	Quantitative Analysis for Business Decisions	100	4	0	0	4
5	C-105	Legal and Business Environment	100	4	0	0	4
6	C-106	Business Communication and Soft skills	100	4	0	0	4
7	C-107 Open Elective	Cross Cultural Management Rural Innovation projects MOOCs : SWAYAM/NPTEL- Related to Management Courses other than listed courses in the syllabus	100	4	0	0	4
8	C-108	Business Communication and Soft skills Lab	50	0	0	2	2
9	C-109	Information Technology – Lab1 (Spreadsheet and Tally)	50	0	0	2	2
<b>Total</b>			<b>800</b>	<b>28</b>	<b>0</b>	<b>4</b>	<b>32</b>

## I YEAR II SEMESTER

S No	Course Code	Courses	Marks	L	T	P	C
1	C-201	Financial Management	100	4	0	0	4
2	C-202	Human Resource Management	100	4	0	0	4
3	C-203	Marketing Management	100	4	0	0	4
4	C-204	Operations Management	100	4	0	0	4
5	C-205	Business Research Methods	100	4	0	0	4
6	C-206 open elective	Project Management Technology Management Lean Management Database Management System	100	4	0	0	4
7	C-207	IT-lab 2 (Programming R)	50	0	0	2	2
<b>Total</b>			<b>650</b>	<b>24</b>	<b>0</b>	<b>2</b>	<b>26</b>

*B. Sreenivasulu Reddy*  
CHAIRMAN  
Board of Studies  
Dept. of Business Administration  
SRK Institute of Technology  
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Andhra Pradesh, India- Pin 521 108.

*P. Subbarao*  
PRINCIPAL  
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DEPARTMENT OF BUSINESS ADMINISTRATION



## MBA COURSE STRUCTURE MBA-SRK 23 I YEAR I SEMESTER

S.No	Course Code	Courses	Marks	L	T	P	C
1	C-101	Management and Organizational Behavior	100	4	0	0	4
2	C-102	Managerial Economics	100	4	0	0	4
3	C-103	Accounting for Managers	100	4	0	0	4
4	C-104	Quantitative Analysis for Business Decisions	100	4	0	0	4
5	C-105	Legal and Business Environment	100	4	0	0	4
6	C-106	Business Communication and Soft skills	100	4	0	0	4
7	C-107 Open Elective	Cross Cultural Management Rural Innovation projects MOOCs : SWAYAM/NPTEL- Related to Management Courses other than listed courses in the syllabus	100	4	0	0	4
8	C-108	Business Communication and Soft skills Lab	50	0	0	2	2
9	C-109	Information Technology – Lab1(Spreadsheet and Tally)	50	0	0	2	2
<b>Total</b>			<b>800</b>	<b>28</b>	<b>0</b>	<b>4</b>	<b>32</b>

## I YEAR II SEMESTER

S.No	Course Code	Courses	Marks	L	T	P	C
1	C-201	Financial Management	100	4	0	0	4
2	C-202	Human Resource Management	100	4	0	0	4
3	C-203	Marketing Management	100	4	0	0	4
4	C-204	Operations Management	100	4	0	0	4
5	C-205	Business Research Methods	100	4	0	0	4
6	C-206 open elective	Project Management Technology Management Lean Management Database Management System	100	4	0	0	4
7	C-207	IT-lab 2(Programming R )	50	0	0	2	2
<b>Total</b>			<b>650</b>	<b>24</b>	<b>0</b>	<b>2</b>	<b>26</b>

*B. B. Reddy*  
CHAIRMAN  
Board of Studies  
Dept. of Business Administration  
SRK Institute of Technology  
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Andhra Pradesh, India-Pin 521 108.

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