

DEPARTMENT OF CIVIL ENGINEERING

III B.Tech I SEMESTER

S.No	Subject	Course Code	Cat.Code	Internal Marks	External Marks	Total Marks	L	T	P	Credits
1	Design and Drawing of Reinforced Concrete Structures	R23CE3101	PC	30	70	100	3	0	0	3
2	Engineering Hydrology	R23CE3102	PC	30	70	100	3	0	0	3
3	Geotechnical Engineering -I	R23CE3103	PC	30	70	100	3	0	0	3
4	Construction Technology and Management	R23CE3106	PE-1	30	70	100	3	0	0	3
5	1. Entrepreneurship Development & Venture Creation 2. Green Buildings 3. Environmental Pollution & Control 4. Climate Change impact on Eco system	R23OE3103	OE-1	30	70	100	3	0	0	3
6	Geotechnical Engineering Lab	R23CE31L1	PC	30	70	100	0	0	3	1.5
7	Fluid Mechanics & Hydraulic Machines Lab	R23CE31L2	PC	30	70	100	0	0	3	1.5
8	Estimation, Costing & Contracts	R23CE31L3	SEC	30	70	100	0	1	2	2
9	Tinkering Lab	R23CE31L4	ES	30	70	100	0	0	2	1
10	Evaluation of Community Service Internship	R23CE31CSP					-	-	-	2
Mandatory Community Service Project Internship of 08 weeks duration during summer vacation										
<b>TOTAL</b>										<b>23</b>



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DEPARTMENT OF CIVIL ENGINEERING

III Year II Semester

	Category	Title	L	T	P	Credits
1	Professional Core	Design and Drawing of Steel Structures	3	0	0	3
2	Professional Core	Highway Engineering	3	0	0	3
3	Professional Core	Environmental Engineering	3	0	0	3
4	Professional Elective-II	1. Ground Improvement Techniques 2. Repair and Rehabilitation of Structures 3. Valuation and Quantity Survey	3	0	0	3
5	Professional Elective-III	1. Finite element method 2. Bridge Engineering 3. Water Resource Engineering	3	0	0	3
6	Open Elective-II	1. Disaster management 2. Sustainability in Engineering practices 3. Water Supply Systems 4. Environmental Pollution and Control	3	0	0	3
7	Professional Core	Environmental Engineering lab	0	0	3	1.5
8	Professional Core	High Way Engineering lab	0	0	3	1.5
9	Skill Enhancement course	CAD Lab	0	1	2	2
<b>Total</b>			<b>18</b>	<b>1</b>	<b>08</b>	<b>23</b>
10	Audit course	Technical paper writing & IPR	2	0	0	-
Mandatory Industry Internship of 08 weeks duration during summer vacation						



  
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**OPEN ELECTIVES**

S.NO	Category	Titles
1	Open Elective -1	1. Entrepreneurship Development & Venture Creation 2. Green Buildings 3. Environmental Pollution & Control 4. Climate Change impact on Eco system
2	Open Elective-2	1. Disaster management 2. Sustainability in Engineering practices 3. Water Supply Systems 4. Alternative Construction Technology
3	Open Elective-3	1. Building technology for engineers 2. Environmental impact assessment 3. Ground water development and management 4. Low Cost Housing
4	Open Elective-4	1. Geo-Spatial Technologies 2. Solid waste management 3. Air Pollution and control 4. Traffic Safety



  
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**DEPARTMENT OF CIVIL ENGINEERING**

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**III Year II Semester**

	Category	Title	L	T	P	Credits
1	Professional Core	Design and Drawing of Steel Structures	3	0	0	3
2	Professional Core	Highway Engineering	3	0	0	3
3	Professional Core	Environmental Engineering	3	0	0	3
4	Professional Elective-II	1. Ground Improvement Techniques 2. Repair and Rehabilitation of Structures 3. Valuation and Quantity Survey	3	0	0	3
5	Professional Elective-III	1. Finite element method 2. Bridge Engineering 3. Water Resource Engineering	3	0	0	3
6	Open Elective-II	1. Disaster management 2. Sustainability in Engineering practices 3. Water Supply Systems 4. Environmental Pollution and Control	3	0	0	3
7	Professional Core	Environmental Engineering lab	0	0	3	1.5
8	Professional Core	High Way Engineering lab	0	0	3	1.5
9	Skill Enhancement course	CAD Lab	0	1	2	2
<b>Total</b>			<b>18</b>	<b>1</b>	<b>08</b>	<b>23</b>
10	Audit course	Technical paper writing & IPR	2	0	0	-
Mandatory Industry Internship of 08 weeks duration during summer vacation						



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DEPARTMENT OF CIVIL ENGINEERING

**OPEN ELECTIVES**

S.NO	Category	Titles
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2	Open Elective-2	1. Disaster management 2. Sustainability in Engineering practices 3. Water Supply Systems 4. Alternative Construction Technology
3	Open Elective-3	1. Building technology for engineers 2. Environmental impact assessment 3. Ground water development and management 4. Low Cost Housing
4	Open Elective-4	1. Geo-Spatial Technologies 2. Solid waste management 3. Air Pollution and control 4. Traffic Safety



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III B. Tech. - I SEMESTER

S. No.	Subject Code	Subject	Cat. Code	L	T	P	Internal Marks	External Marks	Total Marks	Credits
1	R20EE3101	Problem Solving with Python	PC	3	0	0	30	70	100	3
2	R20EE3102	Power Electronics	PC	3	0	0	30	70	100	3
3	R20EE3103	Power Generation and Transmission	PC	3	0	0	30	70	100	3
4	R20CC1OE03	<b>Open Elective-I</b> a. Micro Electro Mechanical System	OE	3	0	0	30	70	100	3
	R20CC1OE04	b. Fundamentals of Electrical Engineering								
5	R20EE3106	<b>Professional Elective-I</b> a. Digital Control System	PE	3	0	0	30	70	100	3
	R20EE3107	b. Signals and Systems								
	R20EE3108	c. Special Electrical Machines								
	R20EE3109	d. Energy Conservation and Auditing								
6	R20EE31L1	Problem Solving with Python Programming Lab	PC	0	0	3	15	35	50	1.5



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III B. Tech. - II SEMESTER

S. No.	Subject Code	Subject	Cat. Code	L	T	P	Internal Marks	External Marks	Total Marks	Credits
1	R20EE3201	Microprocessor & Microcontrollers	PC	3	0	0	30	70	100	3
2	R20EE3202	Power System Analysis	PC	3	0	0	30	70	100	3
3	R20EE3203	Measurements & Instrumentation	PC	3	0	0	30	70	100	3
4	R20EE3204	<b>Professional Elective-II</b> a. Renewable and Distributed Energy System	PE	3	0	0	30	70	100	3
	R20EE3205	b. Electric Drives								
	R20EE3206	c. Utilization of Electrical Energy								
	R20EE3207	d. Big Data Analytics								
5	R20CC2OE03	<b>Open Elective-II</b> a. Hybrid Electric Vehicle	OE	3	0	0	30	70	100	3
	R20CC2OE04	b. Energy Audit and Conservation								
6	R20EE32L1	Microprocessors and Microcontrollers Lab	PC	0	0	3	15	35	50	1.5
7	R20EE32L2	Measurements and Instrumentation Lab	PC	0	0	3	15	35	50	1.5
8	R20EE32L3	Power System Simulation Lab	PC	0	0	3	15	35	50	1.5

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

IV B. Tech. - I SEMESTER

S. No.	Subject Code	Subject	Cat. Code	L	T	P	Internal Marks	External Marks	Total Marks	Credits
1	R20EE4102	<b>Professional Elective-III</b> a. High Voltage Engineering	PE	3	0	0	30	70	100	3
	R20EE4103	b. Power System Stability								
	R20EE4104	c. Flexible AC Transmission Systems								
	R20EE4105	d. Smart Grid Technology								
2	R20EE4106	<b>Professional Elective-IV</b> a. Power Quality	PE	3	0	0	30	70	100	3
	R20EE4107	b. Electrical and Hybrid Vehicles								
	R20EE4108	c. Introduction to Embedded Systems								
	R20EE4109	d. Power System Operation and Control								
3	R20EE4110	<b>Professional Elective-V</b> a. HVDC Transmission	PE	3	0	0	30	70	100	3
	R20EE4111	b. Switchgear and Protection								
	R20EE4112	c. Electrical Machine Design								
	R20EE4113	d. AI Techniques to power System								
4	R20CC3OE03	<b>Open Elective-III</b> a. Concept of Smart Grid Technology	OE	3	0	0	30	70	100	3
	R20CC3OE04	b. Industrial Automation								

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

5	R20CC4OE03	<b>Open Elective-IV</b> a. Non-Conventional Energy Resources	OE	3	0	0	30	70	100	3
	R20CC4OE04	b. Electrical Safety								
6	R20CC4101	<b>Humanities and Social Science Elective</b> a. Business Management Concepts for Engineers	HSE	3	0	0	30	70	100	3
	R20CC4117	b. Entrepreneurship & Innovation								
7	R20EE41SC1	<b>Machine Learning with Python</b>	SC	1	0	2	-	50	50	2
8	R20CC41IN	Internship / Community Service Project	PROJ	0	0	0	0	50	50	1.5
9	R20CC41MC	MOOCs Course	PC	-	-	-	-	-	-	1.5
<b>Total</b>				<b>19</b>	<b>-</b>	<b>2</b>	<b>180</b>	<b>520</b>	<b>700</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>

IV B. Tech. - II SEMESTER

S. No.	Subject Code	Subject	Cat. Code	L	T	P	Internal Marks	External Marks	Total Marks	Credits
1	R20CC42PW	Major Project and Internship	PROJ	0	0	0	-	-	-	12
		<b>Total</b>		<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>12</b>



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DEPARTMENT OF MECHANICAL ENGINEERING

III B.TECH – I SEMESTER

S. No	Subject	Course Code	Cat. Code	Internal Marks	External Marks	Total Marks	L	T	P	Credits
1	Artificial Intelligence and Machine Learning	R20ME3101	PC	30	70	100	3	0	0	3
2	Heat Power Engineering	R20ME3102	PC	30	70	100	2	1	0	3
3	Design of Machine Elements-I	R20ME3103	PC	30	70	100	2	1	0	3
4	<b>Open Elective Course/Job Oriented Elective -I</b>		OE	30	70	100	3	0	0	3
	RPT &3D Printing (Other than ME)	R20CC1OE06								
	Operations Research	R20CC1OE07								
5	<b>Professional Elective Course -I</b>		PC	30	70	100	3	0	0	3
	Automobile Engineering	R20ME3105								
	Refrigeration & Air Conditioning	R20ME3106								
	Metal Cutting & Machine Tools	R20ME3107								
Work Study	R20ME3108									
6	Artificial Intelligence and Machine Learning Lab	R20ME31L1	PC	15	35	50	0	0	3	1.5
7	Heat power Engineering Lab	R20ME31L2	PC	15	35	50	0	0	3	1.5
8	Robotics & 3D Printing Lab	R20ME31SC3	SC	-	50	50	0	0	4	2
9	PE&HV	R20CC31MC01	MC				2	0	0	0
10	Internship/ Community Service Project	R20CC31IN	SI	-	50	50	0	0	3	1.5
<b>Total</b>										<b>21.5</b>
11	Honors / Minors Course	-	HC	30	70	100	4	0	0	4



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DEPARTMENT OF MECHANICAL ENGINEERING

III B.TECH – II SEMESTER

S. No	Subject	Course Code	Cat. Code	Internal Marks	External Marks	Total Marks	L	T	P	Credits
1	Design of Machine Elements-II	R20ME3201	PC	30	70	100	2	1	0	3
2	Heat Transfer	R20ME3202	PC	30	70	100	2	1	0	3
3	Dynamics of Machinery	R20ME3203	PC	30	70	100	2	1	0	3
4	<b>Professional Elective Course -II</b>									
	Advanced Mechanics of Solids	R20ME3204	PE	30	70	100	3	0	0	3
	Nonconventional Sources of energy	R20ME3205								
	Quality concepts in Design	R20ME3206								
Robotics & Applications	R20ME3207									
5	<b>Open Elective Course/Job Oriented Elective - II</b>		OE	30	70	100	3	0	0	3
	Industrial Engineering & Management (Other than ME)	R20CC2OE05								
	Industrial Robotics (Other than ME)	R20CC2OE06								
6	Heat Transfer Lab	R20ME32L1	PC	15	35	50	0	0	3	1.5
7	Machine Tools & Machine Dynamics Lab	R20ME32L2	PC	15	35	50	0	0	3	1.5
8	Pneumatics & HVAC Lab	R20ME32L3	PC	15	35	50	0	0	3	1.5
9	English for Employability Skills	R20CC32SC1	SC	-	50	50	0	0	4	2
10	Essence of Indian Traditional Knowledge	R20CC32MC1	MC				2	0	0	0
<b>Total</b>										<b>21.5</b>
11	Honors / Minors Course		HC	30	70	100	4	0	0	4



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DEPARTMENT OF MECHANICAL ENGINEERING

IV B.TECH – I SEMESTER

S. No	Subject	Course Code	Cat. Code	Internal Marks	External Marks	Total Marks	L	T	P	Credits
1	<b>Professional Elective Course-III</b>		PE	30	70	100	3	0	0	3
	Digital Manufacturing	R20ME4102								
	Design for Manufacturing	R20ME4103								
	Power Plant Engineering	R20ME4104								
	Optimization Techniques	R20ME4105								
Total Quality Management	R20ME4106									
2	<b>Professional Elective Course-IV</b>		PE	30	70	100	3	0	0	3
	Finite Element Method	R20ME4107								
	Experimental Stress Analysis	R20ME4108								
	Solar Energy Systems	R20ME4109								
	Big Data Analytics	R20ME4110								
Automation in Manufacturing	R20ME4111									
3	<b>Professional Elective Course-V</b>		PE	30	70	100	3	0	0	3
	Industrial Engineering & Management	R20ME4112								
	Mechanical Vibrations	R20ME4113								
	Waste Heat Recovery Systems	R20ME4114								
	Production Planning and Control	R20ME4115								
Electric & Hybrid Vehicles	R20ME4116									
4	<b>Open Elective Course/Job Oriented Elective –III</b>		OE	30	70	100	3	0	0	3
	Automotive Vehicles	R20CC3OE05								
	Nano Technology	R20CC3OE06								
5	<b>Open Elective Course/Job Oriented Elective -IV</b>		OE	30	70	100	3	0	0	3
	Pneumatics & Hydraulic Automation	R20CC4OE05								
	Mechatronics	R20CC4OE06								
6	<b>Humanity &amp; Social Service Elective</b>		HSSE	30	70	100	3	0	0	3



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DEPARTMENT OF MECHANICAL ENGINEERING

	1. Business Management Concepts for Engineering	R20CC4101									
	2. Entrepreneurship & Innovation	R20CC4117									
7	Mechatronics & Simulation Lab	R20ME41SC4	SC	-	50	50	0	0	4		2
8	Internship/ Community Service Project	R20CC41IN	SI	-	50	50	0	0	0		1.5
9	MOOCS Course	R20CC41MC	MC				0	0	0		1.5
<b>Total</b>											<b>23</b>
10	Honors / Minor Courses (MOOCS)		HC	30	70	100	4	0	0		4

IV B.TECH- II SEMESTER

S. No	Subject	Course Code	Cat. Code	Internal Marks	External Marks	Total Marks	L	T	P	Credits
1	Major Project & Internship	R20CC42PW	PR				0	0	0	12
<b>Total</b>										<b>12</b>
<b>Credits Grand Total</b>										<b>160</b>



  
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**LIST OF HONORS**

1. The subjects opted for Honors should be advanced type which are not covered in regular curriculum.
2. Students has to acquire 16 credits with minimum one subject from each pool.
3. Concerned BoS can add or delete the subjects as per the decision of the board.
4. Pre requisites to be defined by the board for each course.
5. Compulsory MOOC / NPTEL Courses for 04 credits (02 courses@ 2 credits each)

**POOL - 1**  
**AUTOMOTIVE DESIGN**

S. No	Subject	Sub Code	Cat. Code	Internal Marks	External Marks	Total Marks	L	T	P	Credits
1	Automobile Engine Design	R20MEHN01	PC	30	70	100	4	0	0	4
2	Automotive Transmission	R20MEHN02	PC	30	70	100	4	0	0	4
3	Autotronics and Safety	R20MEHN03	PC	30	70	100	4	0	0	4
4	Alternative Energy Sources for Automobiles	R20MEHN04	PC	30	70	100	4	0	0	4

**POOL-2**  
**ROBOTICS AND MECHATRONICS**

S. No	Subject	Sub Code	Cat. Code	Internal Marks	External Marks	Total Marks	L	T	P	Credits
1	Robotics Modelling & Analysis	R20MEHN05	PC	30	70	100	4	0	0	4
2	Modelling and Analysis of Dynamic Systems	R20MEHN06	PC	30	70	100	4	0	0	4
3	Theory and Design of Control Systems	R20MEHN07	PC	30	70	100	4	0	0	4
4	Smart Materials for Mechatronic applications	R20MEHN08	PC	30	70	100	4	0	0	4



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**POOL- 3**

**PRODUCT DESIGN AND DEVELOPMENT**


S. No	Subject	Sub Code	Cat. Code	Internal Marks	External Marks	Total Marks	L	T	P	Credits
1	Advanced Mechanical Vibrations	R20MEHN09	PC	30	70	100	4	0	0	4
2	Product Design	R20MEHN10	PC	30	70	100	4	0	0	4
3	Flexible Manufacturing systems	R20MEHN11	PC	30	70	100	4	0	0	4
4	Rapid Prototyping	R20MEHN12	PC	30	70	100	4	0	0	4

**POOL 4**

**THERMAL SCIENCE AND ENGINEERING**

S. No	Subject	Sub Code	Cat. Code	Internal Marks	External Marks	Total Marks	L	T	P	Credits
1	Advanced Thermodynamics	R20MEHN13	PC	30	70	100	4	0	0	4
2	Advanced Heat Transfer	R20MEHN14	PC	30	70	100	4	0	0	4
3	Gas turbines and Jet Propulsion	R20MEHN15	PC	30	70	100	4	0	0	4
4	Computational Fluid Dynamics	R20MEHN16	PC	30	70	100	4	0	0	4


  
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**B.TECH MECHANICAL ENGINEERING**  
**(R23 – COURSE STRUCTURE & SYLLABUS)**

**B.Tech – III Year I Semester**

S.No.	Category	Title	L	T	P	Credits
1	Professional Core	Machine Tools and Metrology	3	0	0	3
2	Professional Core	Thermal Engineering	3	0	0	3
3	Professional Core	Design of Machine Elements	3	0	0	3
4	Professional Elective	Professional Elective - I	3	0	0	3
5	Open Elective-I	1. Sustainable Energy Technologies 2. Applied Operations Research 3. Nano Technology 4. Thermal Management of Electronic systems 5. Entrepreneurship	3	0	0	3
6	Professional Core	Thermal Engineering Lab	0	0	3	1.5
7	Professional Core	Theory of Machines Lab	0	0	3	1.5
8	Skill Enhancement course	Machine tools and Metrology Lab	0	0	4	2
9	Engineering Science	Tinkering Lab	0	0	2	1
10	Evaluation of Community Service Internship	Community Service Internship	-	-	-	2
<b>Total</b>			<b>15</b>	<b>0</b>	<b>10</b>	<b>23</b>

**Professional Elective – I**

- 1) Design for Manufacturing
- 2) Conventional and futuristic vehicle technology
- 3) Renewable Energy Technologies
- 4) Non-destructive Evaluation



  
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**B.TECH MECHANICAL ENGINEERING**  
**(R23 – COURSE STRUCTURE & SYLLABUS)**

**B.Tech - III Year II Semester**

S.No.	Category	Title	L	T	P	Credits
1	Professional Core	Heat Transfer	3	0	0	3
2	Professional Core	Artificial Intelligence and Machine Learning	3	0	0	3
3	Professional Core	Finite Element Methods	3	0	0	3
4	Professional Elective	Professional Elective-II	3	0	0	3
5	Professional Elective	Professional Elective-III	3	0	0	3
6	Open Elective - II	1.Introduction to Industrial Robotics 2. Industrial Management 3. Additive Manufacturing 4.Vehicle Technology 5. Industrial Safety	3	0	0	3
7	Professional Core	Heat Transfer Lab	0	0	3	1.5
8	Professional Core	Artificial Intelligence and Machine Learning Lab	0	0	3	1.5
9	Skill Enhancement course	Robotics and Drone Technologies Lab	0	0	4	2
10	Audit Course	Technical paper writing and IPR	2	0	0	-
<b>Total</b>			<b>20</b>	<b>0</b>	<b>10</b>	<b>23</b>
<b>Mandatory Industry Internship of 08 weeks duration during summer vacation</b>						

**Professional Elective-II**

1. Mechanical Vibrations
2. Advanced Manufacturing Processes
3. Micro Electro Mechanical Systems
4. Sensors and Instrumentation

**Professional Elective-III**

1. Energy Storage Technologies
2. Industrial Hydraulics and Pneumatics
3. Industrial Robotics
4. Refrigeration & Air-Conditioning



  
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**B.TECH MECHANICAL ENGINEERING**  
**(R23 – COURSE STRUCTURE & SYLLABUS)**

**B.Tech – IV Year I Semester**

S.No.	Category	Title	L	T	P	Credits
1	Professional Core	CAD/CAM ( <b>Digital Manufacturing</b> )	2	0	0	2
2	Management Course- II	Operations Research	2	0	0	2
3	Professional Core	CAD/CAM Lab	0	0	2	1
4	Professional Elective	Professional Elective-IV	3	0	0	3
5	Professional Elective	Professional Elective-V	3	0	0	3
6	Open Elective - III	1. Finite Element Methods 2. Introduction to Mechatronics 3. Product design and development 4. Advanced Materials 5. Smart Manufacturing	3	0	0	3
7	Open Elective-IV	1. Optimization Techniques 2. Advanced Manufacturing Processes ( <b>Automotive Vehicles/Electric &amp; Hybrid Vehicles</b> ) 3. Total Quality Management 4. Operations Management 5. Energy Auditing	3	0	0	3
8	Skill Enhancement Course	Mechatronics Lab	0	0	4	2
9	Audit Course	Constitution of India	2	0	0	-
	Internship	Evaluation of Industry Internship	-	-	-	2
<b>Total</b>			<b>18</b>	<b>0</b>	<b>06</b>	<b>21</b>

**B.Tech. – IV Year II Semester**

S.No.	Category	Title	L	T	P	Credits
1	PR	Internship and Project	-	-	24	12


**Professional Elective-IV**

1. Mechatronics
2. Computational Fluid Dynamics
3. Advanced Material Science
4. Embedded Systems and Programming

**Professional Elective-V**

1. Hydrogen and Fuel Cell Technology
2. Smart manufacturing
3. Cryogenics
4. Electrical drives and actuators



  
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**DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING**

**III B.TECH. - I SEMESTER**

S.No.	SUBJECT	SUBJECT CODE	Cat. Code	L	T	P	INTERNAL MARKS	EXTERNAL MARKS	TOTAL MARKS	CREDITS
1	Linear & Digital IC Applications	R20EC3101	PC	3	0	0	30	70	100	3
2	Antennas and Wave Propagation	R20EC3102	PC	3	0	0	30	70	100	3
3	Digital Signal Processing	R20EC3103	PC	3	0	0	30	70	100	3
4	Open Elective - I									
	i. Principles of Signals, Systems & Communications (Other than ECE)	R20EC3104	OE	3	0	0	30	70	100	3
	ii. Introduction to Data Science	R20EC3105								
5	Professional Elective-I:									
5	i. Electronic Measurements and Instrumentation	R20EC3106	PE	3	0	0	30	70	100	3
	ii. Data Communication and Computer Networks	R20EC3107								
	iii. Statistical Methods in AI	R20EC3108								
	iv. Signals and Transform Techniques	R20EC3109								
6	DSP Lab	R20EC31L1	PC	0	0	3	15	35	50	1.5
7	LDICA Lab	R20EC31L2	PC	0	0	3	15	35	50	1.5
8	Embedded Systems and Robotics Lab	R20EC31SC3	SC	1	0	2	-	50	50	2
9	Professional Ethics and Human Values	R20CC31MC01	MC	2	0	0	-	-	-	0
10	Summer Internship/Community Service Project	R20CC31IN	PR	0	0	0	-	50	50	1.5
	<b>Total</b>			<b>17</b>	<b>0</b>	<b>10</b>	<b>195</b>	<b>505</b>	<b>700</b>	<b>21.5</b>
	<b>Honors/Minor course</b>			<b>4</b>	<b>0</b>	<b>0</b>	<b>30</b>	<b>70</b>	<b>100</b>	<b>4</b>



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**NARASARAOPETA ENGINEERING COLLEGE**  
 (AUTONOMOUS)  
 NARASARAOPET - 522 601, Palnadu (Dist.), A.P.

**DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING**

**III B.TECH., - II SEMESTER**

S.No.	SUBJECT	SUBJECT CODE	Cat. Code	L	T	P	INTERNAL MARKS	EXTERNAL MARKS	TOTAL MARKS	CREDITS
1	Micro wave and Optical communications	R20EC3201	PC	3	1	0	30	70	100	3
2	VLSI Design	R20EC3202	PC	3	0	0	30	70	100	3
3	Microprocessors and Microcontrollers	R20EC3203	PC	3	0	0	30	70	100	3
4	Professional Elective - II:		PE	3	0	0	30	70	100	3
	i. Data Acquisition and Transmission	R20EC3204								
	ii. Satellite Communications	R20EC3205								
	iii. Introduction to Machine Learning	R20EC3206								
iv. Digital Image Processing	R20EC3207									
5	Open Elective - II		OE	3	0	0	30	70	100	3
	i. Fundamentals of Image Processing (Other than ECE)	R20CC2OE07								
	ii. Global Positioning System (GPS)	R20CC2OE08								
6	MP&MC Lab	R20EC32L1	PC	0	0	3	15	35	50	1.5
7	VLSI Lab	R20EC32L2	PC	0	0	3	15	35	50	1.5
8	MW&OC Lab	R20EC32L3	PC	0	0	3	15	35	50	1.5
9	English Employability Skills	R20CC32SC1	SC	1	0	2	0	50	50	2
10	Essence of Indian Traditional Knowledge	R20CC32MC1	MC	2	0	0	-	-	-	0
	<b>Total</b>			<b>17</b>	<b>1</b>	<b>13</b>	<b>195</b>	<b>505</b>	<b>700</b>	<b>21.5</b>
	<b>Honors/Minor course</b>			<b>4</b>	<b>0</b>	<b>0</b>	<b>30</b>	<b>70</b>	<b>100</b>	<b>4</b>



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 NARASARAOPET - 522 601, Palnadu (Dist.), A.P.

**IV B.TECH., - I SEMESTER**

S.No.	SUBJECT	SUBJECT CODE	Cat. Code	L	T	P	INTERNAL MARKS	EXTERNAL MARKS	TOTAL MARKS	CREDITS
1	Professional Elective - III:		PE	3	0	0	30	70	100	3
	i. PC based Instrumentation	R20EC4101								
	ii. Cellular and Mobile Communication	R20EC4102								
	iii. Introduction to Deep Learning	R20EC4103								
	iv. Speech Processing	R20EC4104								
2	Professional Elective - IV:		PE	3	0	0	30	70	100	3
	i. Bio Medical Instrumentation	R20EC4105								
	ii. Radar Systems	R20EC4106								
	iii. Soft Computing Techniques	R20EC4107								
	iv. DSP Architectures	R20EC4108								
3	Professional Elective - V:		PE	3	0	0	30	70	100	3
	i. Analytical Instrumentation	R20EC4109								
	ii. Advanced communication Technologies	R20EC4110								
	iii. Edge Computing	R20EC4111								
	iv. Multimedia Signal Processing	R20EC4112								
4	Open Elective - III		OE	3	0	0	30	70	100	3
	i. Introduction to Micro Processors & Micro Controllers (Other than ECE)	R20CC3OE07								
	ii. Nano Electronics	R20CC3OE08								
5	Open Elective - IV:		OE	3	0	0	30	70	100	3
	i. Introduction to Embedded Systems (Other than ECE)	R20CC4OE07								
	ii. Embedded and Real time Operating System	R20CC4OE08								



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NARASARAOPETA ENGINEERING COLLEGE  
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NARASARAOPET - 522 601, Palnadu (Dist.), A.P.

**DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING**

6	Humanities and Social Science Elective: i. Business Management Concepts for Engineers	R20CC4101	HSSE	3	0	0	30	70	100	3
	ii. Entrepreneurship and Innovation	R20CC4117								
7	Python Programming for Deep Learning/Mobile App Development	R20EC41SC1	SC	1	0	2	0	50	50	2
8	Internship/Community Service Project	R20CC41IN	PR	0	0	0	-	50	50	1.5
9	MOOCS	R20CC41MC	PE	-	-	-	-	-	-	1.5
<b>Total</b>				<b>17</b>	<b>0</b>	<b>6</b>	<b>195</b>	<b>505</b>	<b>700</b>	<b>23</b>
<b>Honors/Minor course</b>				<b>4</b>	<b>0</b>	<b>0</b>	<b>30</b>	<b>70</b>	<b>100</b>	<b>4</b>

**IV B.TECH. - II SEMESTER**

S.No.	SUBJECT	SUBJECT CODE	Cat. Code	L	T	P	INTERNAL MARKS	EXTERNAL MARKS	TOTAL MARKS	CREDITS
1	Internship and Project Work	R20CC42PW	PR	0	0	0	60	140	200	12



  
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 NARASARAOPET - 522 001, Palnadu (Dist.), A.P.

**R20 COURSE STRUCTURE  
III B.TECH – I SEMESTER**

S.No.	Subject Code	SUBJECT	Cat. Code	INTERNAL MARKS	EXTERNAL MARKS	TOTAL MARKS	L	T	P	CREDITS
1	R20CC3103	Design and Analysis of Algorithms	PC	30	70	100	3	0	0	3
2	R20CC3104	Computer Networks	PC	30	70	100	3	0	0	3
3	R20CS3105	Compiler Design	PC	30	70	100	3	0	0	3
4	R20CC3101	Operating Systems	PC	30	70	100	3	0	0	3
5	R20CC3102 R20CC3106 R20CC3107 R20CS3108	<b>Professional Elective – I</b> 1. Data Warehousing and Data Mining 2. Computer Graphics 3. Software Testing Methodologies 4. Distributed Systems	PE	30	70	100	3	0	0	3
6	R20CS31L3	DAA and CD Lab	PC	15	35	50	0	0	3	1.5
7	R20CC31L2	CN and OS Lab	PC	15	35	50	0	0	3	1.5
8	R20CC31SC1	English Employability Skills	SC	-	50	50	0	0	4	2
9	R20CC31IN	Summer Internship / Community Service Project	PR	-	50	50	0	0	0	1.5
10	R20CC31MC02	Essence of Indian Traditional Knowledge	MC	-	-	-	2	0	0	0
<b>TOTAL</b>										21.5
11	<b>Honors / Minor Course</b>			30	70	100	4	0	0	4



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NARASARAOPETA - 522 501, Palnadu (Dist.), A.P

# DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

## R20 COURSE STRUCTURE III B.TECH – II SEMESTER

S.No.	Subject Code	SUBJECT	Cat. Code	INTERNAL MARKS	EXTERNAL MARKS	TOTAL MARKS	L	T	P	CREDITS
1	R20CC3204	Machine Learning	PC	30	70	100	3	0	0	3
2	R20CC3205	Advanced Java and Web Technologies	PC	30	70	100	3	0	0	3
3	R20CC3201	Cryptography and Network Security	PC	30	70	100	3	0	0	3
4	R20CC3206 R20CC3202 R20CC3207 R20CS3203	<b>Professional Elective – II</b> 1. Big Data Analytics 2. Mobile Computing 3. Design Patterns 4. High Performance Computing	PE	30	70	100	3	0	0	3
5	<b>Open Elective – II</b>		OE	30	70	100	3	0	0	3
6	R20CC32L1	Advanced Java and Web Technologies Lab	PC	15	35	50	0	0	3	1.5
7	R20CC32L2	Machine Learning Lab	PC	15	35	50	0	0	3	1.5
8	R20CC32L3	Software Lab	ES	15	35	50	0	0	3	1.5
9	R20CC32SC4	Internet of Things	SC	-	50	50	0	0	4	2
10	R20CC32MC2	Professional Ethics and Human Values	MC	-	-	-	2	0	0	0
<b>TOTAL</b>										21.5
11	<b>Honors / Minor Course</b>			30	70	100	4	0	0	4




  
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# DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

## R20 COURSE STRUCTURE IV B.TECH – I SEMESTER

S.No	Subject Code	SUBJECT	Cat. Code	INTERNAL MARKS	EXTERNAL MARKS	TOTAL MARKS	L	T	P	CREDITS
1	R20CS4107 R20CS4108 R20CC4103 R20CS4109	<b>Professional Elective – III</b> 1. Cyber Security 2. Mobile Adhoc and Sensor Networks 3. Service Oriented Architecture 4. Web and Micro Services	PE	30	70	100	3	0	0	3
2	R20CC4110 R20CC4111 R20CS4112 R20CC4104	<b>Professional Elective – IV</b> 1. Deep Learning 2. DevOps 3. Inter-Networking With Tcp/Ip 4. E- Commerce	PE	30	70	100	3	0	0	3
3	R20CS4113 R20CC4106 R20CS4114 R20CC4105 R20CC4102	<b>Professional Elective – V</b> 1. Social Media Analytics 2. Natural Language Processing 3. Software Defined Networks 4. Software Project Management 5. Human Computer Interaction	PE	30	70	100	3	0	0	3
4	<b>Open Elective – III</b>		OE	30	70	100	3	0	0	3
5	<b>Open Elective – IV</b>		OE	30	70	100	3	0	0	3
6	R20CC4101 R20CC4117	1. Business Management Concepts for Engineers 2. Entrepreneurship and Innovation	HS	30	70	100	3	0	0	3
7	R20CC41SC1	Agile with SCRUM	SC	-	50	50	0	0	4	2
8	R20CC41IN	Summer Internship / Community Service Project	PR	-	50	50	0	0	0	1.5
9	R20CC41MC	MOOCS								1.5
<b>TOTAL</b>										23



  
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**NARASARAOPETA ENGINEERING COLLEGE**  
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 NARASARAOPETA - 522 601, Balaadry (Dist.) A.P.

# DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

## R20 COURSE STRUCTURE IV B.TECH – II SEMESTER

S.No.	Subject Code	SUBJECT	Cat. Code	INTERNAL MARKS	EXTERNAL MARKS	TOTAL MARKS	L	T	P	CREDITS
1	R20CC42PW	Major Project & Internship	PR	60	140	200	-	-	-	12
TOTAL										12



  
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 NARASARAOPETA - 522 601, Palnadu (Dist.), A.P.

LIST OF OPEN ELECTIVES OFFERED BY ALL DEPARTMENTS

OPEN ELECTIVE-I

S.No.	Open Elective-I Subject Title	Department Offering the Subject	Sub Code	No.of periods per week			No.of Credits
				L	T	P	C
1	Disaster Management	CE	R20CC1OE01	3	0	0	3
2	Green Technology	CE	R20CC1OE02	3	0	0	3
3	Micro Electro Mechanical System	EEE	R20CC1OE03	3	0	0	3
4	Fundamentals of Electrical Engineering	EEE	R20CC1OE04	3	0	0	3
5	Rapid Prototyping & 3D Printing (Other than ME)	ME	R20CC2OE05	3	0	0	3
6	Operations Research	ME	R20CC2OE06	3	0	0	3
7	Principles of Signals, Systems & Communications (Other than ECE)	ECE	R20CC1OE08	3	0	0	3
8	Medical Electronics	ECE	R20CC1OE08	3	0	0	3
9	DBMS (Other Than CSE)	CSE	R20CC1OE09	3	0	0	3
10	Web Development Using Mean Stack Tech	CSE	R20CC1OE11	3	0	0	3
11	Front End UI and Frame Work	IT	R20CC1OE10	3	0	0	3
12	Web Development Using Mean Stack Tech	IT	R20CC1OE12	3	0	0	3
13	Financial Institutions, Markets and Services	MBA	R20CC1OE13	3	0	0	3
14	Human Resource Practices	MBA	R20CC1OE14	3	0	0	3
15	OOP Through JAVA	AI	R20CC1OE15	3	0	0	3
16	Computer Organization	AI	R20CC1OE16	3	0	0	3



**OPEN ELECTIVE-II**

S.No.	Open Elective-II Subject Title	Department Offering the Subject	Sub Code	No.of periods per week			No.of Credits
				L	T	P	
1	Remote Sensing And GIS	CE	R20CC2OE01	3	0	0	3
2	Traffic Safety	CE	R20CC2OE02	3	0	0	3
3	Hybrid Electric Vehicle	EEE	R20CC2OE03	3	0	0	3
4	Energy Audit and Conservation	EEE	R20CC2OE04	3	0	0	3
5	Industrial Engineering & Management (Other than ME)	ME	R20CC2OE05	3	0	0	3
6	Industrial Robotics (Other than ME)	ME	R20CC2OE06	3	0	0	3
7	Fundamentals of Image Processing (Other than ECE)	ECE	R20CC2OE07	3	0	0	3
8	Global Positioning System(GPS)	ECE	R20CC2OE08	3	0	0	3
9	Artificial Intelligence	CSE	R20CC2OE09	3	0	0	3
10	OOPS through JAVA	CSE	R20CC2OE10	3	0	0	3
11	Introduction to AI	IT	R20CC2OE11	3	0	0	3
12	OOP Through JAVA	IT	R20CC2OE12	3	0	0	3
13	Digital Marketing	MBA	R20CC2OE13	3	0	0	3
14	Personal Finance Planning	MBA	R20CC2OE14	3	0	0	3
15	Database Management Systems	AI	R20CC2OE15	3	0	0	3
16	Cloud Computing	AI	R20CC2OE16	3	0	0	3



*[Signature]*  
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NARASARAOPETA ENGINEERING COLLEGE  
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NARASARAOPETA-522 001, Parthadu (Dist.), A.P.

**OPEN ELECTIVE-III**

S.No.	Open Elective-III Subject Title	Department Offering the Subject	Sub Code	No.of periods per week			No.of Credits
				L	T	P	
1	Railway, Airport & Harbour Engineering	CE	R20CC3OE01	3	0	0	3
2	Low Cost Housing	CE	R20CC3OE02	3	0	0	3
3	Concept of Smart Grid Technology	EEE	R20CC3OE03	3	0	0	3
4	Industrial Automation	EEE	R20CC3OE04	3	0	0	3
5	Automotive Vehicles	ME	R20CC3OE05	3	0	0	3
6	Nano Technology	ME	R20CC3OE06	3	0	0	3
7	Introduction to Micro Processors & Micro Controllers(Other than ECE)	ECE	R20CC3OE07	3	0	0	3
8	Nano Electronics	ECE	R20CC3OE08	3	0	0	3
9	Cloud Computing	CSE	R20CC3OE09	3	0	0	3
10	Block Chain Technologies	CSE	R20CC3OE10	3	0	0	3
11	Digital Marketing	IT	R20CC3OE11	3	0	0	3
12	Augmented Reality	IT	R20CC3OE12	3	0	0	3
13	Performance Management	MBA	R20CC3OE13	3	0	0	3
14	Services Marketing	MBA	R20CC3OE14	3	0	0	3
15	Block Chain Technologies	AI	R20CC3OE15	3	0	0	3
16	Human Computer Interaction	AI	R20CC3OE16	3	0	0	3

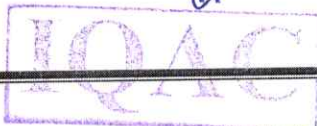


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NARASARAOPETA ENGINEERING COLLEGE  
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NARASARAOPET - 522601, Palnadu (Dist.), A.P.

**OPEN ELECTIVE-IV**

S.No.	Open Elective-IV Subject Title	Department Offering the Subject	Sub Code	No.of periods per week			No.of Credits
				L	T	P	C
1	Environmental Pollution & Control	CE	R20CC4OE01	3	0	0	3
2	Construction Technology and Management	CE	R20CC4OE02	3	0	0	3
3	Non-Conventional Energy Resources	EEE	R20CC4OE03	3	0	0	3
4	Electrical Safety	EEE	R20CC4OE04	3	0	0	3
5	Pneumatics & Hydraulic Automation	ME	R20CC4OE05	3	0	0	3
6	Mechatronics	ME	R20CC4OE06	3	0	0	3
7	Introduction to Embedded Systems (Other than ECE	ECE	R20CC4OE07	3	0	0	3
8	Embedded and Real time Operating System	ECE	R20CC4OE08	3	0	0	3
9	Cyber Security	CSE	R20CC4OE09	3	0	0	3
10	Ethical Hacking	CSE	R20CC4OE10	3	0	0	3
11	Ethical Hacking	IT	R20CC4OE11	3	0	0	3
12	E-Commerce	IT	R20CC4OE12	3	0	0	3
13	Quality Management	MBA	R20CC4OE13	3	0	0	3
14	Logistics and Supply Chain Management	MBA	R20CC4OE14	3	0	0	3
15	DevOps	AI	R20CC4OE15	3	0	0	3
16	E-Commerce	AI	R20CC4OE16	3	0	0	3






**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA**  
**KAKINADA – 533 003, Andhra Pradesh, India**  
**B.TECH- IT (R23-COURSE STRUCTURE & SYLLABUS)**

**B.Tech. – III Year I Semester**

S.No.	Category	Title	L	T	P	Credits
1	Professional Core	Advanced Java	3	0	0	3
2	Professional Core	Computer Networks	3	0	0	3
3	Professional Core	Automata Theory & Compiler Design	3	0	0	3
4	Professional Elective-I	1. Object Oriented Analysis and Design 2. Cyber Security 3. Artificial Intelligence 4. Microprocessors & Microcontrollers 5. Data Warehousing & Data Mining 6. 12 week MOOC Swayam/NPTEL course recommended by the BoS	3	0	0	3
5	Open Elective- I		3	0	0	3
6	Professional Core	Advanced Java Lab	0	0	3	1.5
7	Professional Core	Computer Networks Lab	0	0	3	1.5
8	Skill Enhancement course	Full Stack Development 1	0	1	2	2
9	Engineering Science	User Interface Design using Flutter / SWAYAM Plus - Android Application Development (with Flutter)	0	0	2	1
10	Evaluation of Community Service Internship		-	-	-	2
Total			15	1	10	23
MC	Minor Course (Student may select from the same specialized minors pool)		3	0	0	3
MC	Minor Course through SWAYAM/NPTEL (minimum 12 week, 3 credit course)		3	0	0	3
HC	Honors Course (Student may select from the same honors pool)		3	0	0	3
HC	Honors Course ( Student may select from the same honors pool)		3	0	0	3

  
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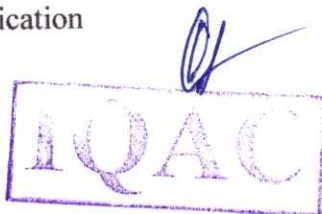


**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA**  
**KAKINADA – 533 003, Andhra Pradesh, India**  
**B.TECH- IT (R23-COURSE STRUCTURE & SYLLABUS)**

**B.Tech. III Year II Semester**

S.No.	Category	Title	L	T	P	Credits
1	Professional Core	Cloud Computing	3	0	0	3
2	Professional Core	Cryptography & Network Security	3	0	0	3
3	Professional Core	Machine Learning	3	0	0	3
4	Professional Elective-II	1. Software Testing Methodologies 2. Augmented Reality & Virtual Reality 3. DevOps 4. Generative AI 5. 12 week MOOC Swayam/NPTEL course recommended by the BoS	3	0	0	3
5	Professional Elective-III	1. Software Project Management 2. Mobile Adhoc Networks 3. Natural Language Processing 4. Distributed Operating System 5. 12 week MOOC Swayam/NPTEL course recommended by the BoS	3	0	0	3
6	Open Elective – II		3	0	0	3
7	Professional Core	Cloud Computing Lab	0	0	3	1.5
8	Professional Core	Machine Learning Lab	0	0	3	1.5
9	Skill Enhancement course	Soft skills // SWAYAM Plus - 21st Century Employability Skills	0	1	2	2
10	Audit Course	Technical Paper Writing & IPR	2	0	0	-
<b>Total</b>			<b>20</b>	<b>1</b>	<b>08</b>	<b>23</b>
Mandatory Industry Internship / Mini Project of 08 weeks duration during summer vacation						
MC	Minor Course (Student may select from the same specialized minors pool)		3	0	3	4.5
HC	Honors Course (Student may select from the same honors pool)		3	0	0	3

\* Under Industry Internship interested students can pursue SWAYAM Plus courses viz., Hands-on Masterclass on Data Analytics OR Artificial Intelligence for Real-World Application



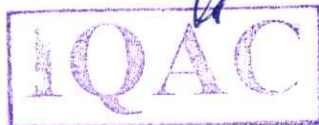
  
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**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA**  
**KAKINADA – 533 003, Andhra Pradesh, India**  
**B.TECH- IT (R23-COURSE STRUCTURE & SYLLABUS)**

**B.Tech. IV Year I Semester**

S.No	Category	Title	L	T	P	Credits
1	Professional Core	Internet of Things	3	0	0	3
2	Management Course- II	Human Resources & Project Management	2	0	0	2
3	Professional Elective-IV	1. Software Architecture & Design Pattern 2. Deep Learning 3. Computer Vision 4. Block chain Technology 5. 12 week MOOC Swayam/NPTEL course recommended by the BoS	3	0	0	3
4	Professional Elective-V	1. Agile methodologies 2. Big Data Analytics 3. Mobile Computing 4. Cyber Physical Systems 5. 12 week MOOC Swayam/NPTEL course recommended by the BoS	3	0	0	3
5	Open Elective-III		3	0	0	3
6	Open Elective-IV		3	0	0	3
7	Skill Enhancement Course	Prompt Engineering/ SWAYAM Plus - Certificate program in Prompt Engineering and ChatGPT	0	1	2	2
8	Audit Course	Constitution of India	2	0	0	-
9	Internship	Evaluation of Industry Internship / Mini Project	-	-	-	2
<b>Total</b>			<b>19</b>	<b>1</b>	<b>02</b>	<b>21</b>
MC	Minor Course (Student may select from the same specialized minors pool)		3	0	0	3
HC	Honors Course ( Student may select from the same honors pool)		3	0	0	3
HC	Honors Course ( Student may select from the same honors pool)		3	0	0	3



  
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**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA**  
**KAKINADA – 533 003, Andhra Pradesh, India**  
**B.TECH- IT (R23-COURSE STRUCTURE & SYLLABUS)**

**B.Tech. IV Year II Semester**

S.No.	Category	Title	L	T	P	Credits
1	Internship & Project Work	Full semester Internship / Project Work	0	0	24	12

**Note :** *Student need to do at least ONE MOOC/NPTEL Course (of 3 credits out of 160 credits) to meet the mandatory requirement (11<sup>th</sup> criteria, as per R23 Regulations); they are allowed to register one semester in advance*

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DEPARTMENT OF CSE (ARTIFICIAL INTELLIGENCE)

III B. TECH - I SEMESTER

S.No.	Category	Title	L	T	P	C
1	Professional Core	Deep Learning	3	0	0	3
2	Professional Core	Computer Networks	3	0	0	3
3	Professional Core	Operating Systems	3	0	0	3
4	Professional Elective-I	1. Object Oriented Analysis and Design 2. Automata Theory & Compiler Design 3. Soft computing 4. Big Data Analytics	3	0	0	3
5	Open Elective- I	Course offered by other departments OR Entrepreneurship Development & Venture Creation	3	0	0	3
7	Professional Core	Deep Learning Lab	0	0	3	1.5
8	Professional Core	Computer Networks Lab	0	0	3	1.5
9	Skill Enhancement course	Full Stack development-2 / SWAYAM Plus – Data Engineer / AI Engineer /	0	1	2	2
10	ES	Tinkering Lab (User Interface Design using Flutter) / SWAYAM Plus - Android Application Development (with Flutter)	0	0	2	1
11	Evaluation of Community Service Project Internship		-	-	-	2
<b>Total</b>			<b>15</b>	<b>1</b>	<b>10</b>	<b>23</b>
MC	Students may select from the Same Minor Pool		3	0	3	4.5
MC	Minor Course through SWAYAM / NPTEL (Minimum 12 Week, 3 credit course)		3	0	0	3
HC	Students may select from the Same Honors Pool		3	0	0	3
IIC	Students may select from the Same Honors Pool		3	0	0	3

L-LECTURE HOURS, T- TUTORIAL HOURS, P-PRACTICAL HOURS, C-CREDITS



  
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**DEPARTMENT OF CSE (ARTIFICIAL INTELLIGENCE)**


**III B. TECH - II SEMESTER**

S.No.	Category	Title	L	T	P	C
1	Professional Core	Software Engineering	3	0	0	3
2	Professional Core	Generative A.I.	3	0	0	3
3	Professional Core	Data Visualization	3	0	0	3
4	Professional Elective-II	1. Software Testing Methodology 2. Cryptography & Network Security 3. Recommender Systems 4. DevOps 5. Social Media Analytics 6. Any of the 12-Week SWAYAM /NPTEL Course suggested by the BoS	3	0	0	3
5	Professional Elective-III	1. Software Project Management 2. Mobile Ad hoc Networks 3. Computer Vision 4. Cloud Computing 5. Any of the 12-Week SWAYAM /NPTEL Course suggested by the BoS	3	0	0	3
6	Open Elective - II	Introduction to Embedded Systems offered by Dept. of ECE)	3	0	0	3
7	Professional Core	Generative A.I. Lab	0	0	3	1.5
8	Professional Core	Data Visualization Lab	0	0	3	1.5
9	Skill Enhancement course	Soft skills / SWAYAM Plus - 21st Century Employability Skills/NEC Design Thinking & Idea Lab	0	1	2	2
10	Audit Course	Technical Paper Writing & IPR	2	0	0	-
<b>Total</b>			<b>20</b>	<b>1</b>	<b>8</b>	<b>23</b>
*Mandatory Industry Internship/Mini Project of 08 weeks duration during summer vacation						
MC	Students may select from the same minor's pool		3	0	3	4.5
MC	Minor Course (Student may select from the same specialized minors pool)		3	0	0	3
HC	Students may select from the same honors pool		3	0	0	3
IIC	Honors Course (Student may select from the honors pool)		3	0	0	3

*\* Under Industry Internship interested students can pursue SWAYAM Plus courses viz., Hands-on Masterclass on Data Analytics OR Artificial Intelligence for Real-World Application*

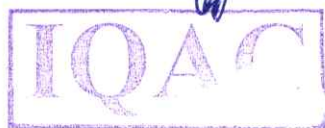
L-LECTURE HOURS, T- TUTORIAL HOURS, P-PRACTICAL HOURS, C-CREDITS



  
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### III B.TECH. – I SEMESTER

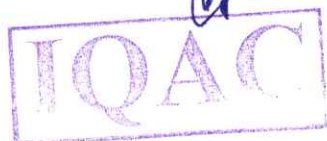
S.No.	Subject Code	Subject	Cat. Code	Internal Marks	External Marks	Total Marks	L	T	P	Credits
1	R20CC3110	Principles Of Machine Learning	PC	30	70	100	3	0	0	3
2	R20CC3102	Data Warehousing and Data Mining	PC	30	70	100	3	0	0	3
3	R20CC3104	Computer Networks	PC	30	70	100	3	0	0	3
4	R20CS3105 R20CC3109 R20AM3101 R20AM3103	Professional Elective - I <ul style="list-style-type: none"> <li>• Compiler Design</li> <li>• Devops</li> <li>• Computer Vision</li> <li>• High Performance Computing</li> </ul>	PE	30	70	100	3	0	0	3
5	<b>Open Elective – I</b>		OE	30	70	100	3	0	0	3
6	R20CC31L4	Machine Learning Lab	PC	15	35	50	0	0	3	1.5
7	R20CC31L1	Data Warehousing and Data Mining Lab	PC	15	35	50	0	0	3	1.5
8	R20CC31SC1	Mean Stack Technologies Lab	SC	-	50	50	1	0	2	2
9	R20CSP	Community Service Project	PR	-	50	50	0	0	0	1.5
10	R20CC31MC01	Professional Ethics and Human Values	MC			-	2	0	0	0
<b>TOTAL</b>										<b>21.5</b>
11		<b>Honors/Minor Course</b>		30	70	100	4	0	0	4



  
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### III B.TECH. – II SEMESTER

S.No.	Subject Code	Subject	Cat. Code	Internal Marks	External Marks	Total Marks	L	T	P	Credits
1	R20AM3203	Deep Learning techniques	PC	30	70	100	3	0	0	3
2	R20CC3208	Design and Analysis of Algorithms	PC	30	70	100	3	0	0	3
3	R20AM3204	Soft Computing	PC	30	70	100	3	0	0	3
4	R20AM3205 R20CC3209 R20CC3201 R20AM3207	Professional Elective - II <ul style="list-style-type: none"> <li>• Software Project Management</li> <li>• Artificial Neural Networks</li> <li>• Cryptography and Network Security</li> <li>• Distributed Systems</li> </ul>	PE	30	70	100	3	0	0	3
5	<b>Open Elective – II</b>		OE	30	70	100	3	0	0	3
6	R20AM32L1	Deep Learning Lab	PC	15	35	50	0	0	3	1.5
7	R20AM32L2	Soft Computing Lab	PC	15	35	50	0	0	3	1.5
8	R20AM32L3	Artificial Intelligence and Neural Networks Lab	ES	15	35	50	0	0	3	1.5
9	R20CC32SC1	English Employability Skills	SC	-	-	50	0	0	4	2
10	R20CC32MC1	Essence of Indian Traditional Knowledge	MC			-	2	0	0	0
<b>TOTAL</b>										<b>21.5</b>
11		<b>Honors/Minor Course</b>		30	70	100	4	0	0	4




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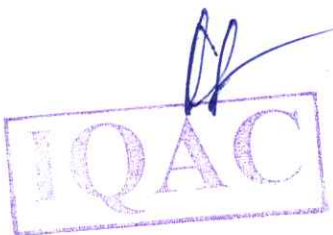
### List of Open Electives offered by Department

S.No.	Open Elective -1 Subject Code	Subject Title	Internal Marks	External Marks	Total Marks	L	T	P	Credits
1	R20CC10E17	Mean Stack Technologies	30	70	100	3	0	0	3
2	R20CC10E18	Artificial Intelligence	30	70	100	3	0	0	3

S.No.	Open Elective -2 Subject Code	Subject Title	Internal Marks	External Marks	Total Marks	L	T	P	Credits
1	R20CC20E16	Cloud Computing	30	70	100	3	0	0	3
2	R20CC20E17	Principles Of Machine Learning	30	70	100	3	0	0	3

S.No.	Open Elective -3 Subject Code	Subject Title	Internal Marks	External Marks	Total Marks	L	T	P	Credits
1	R20CC30E17	Cryptography and Network Security	30	70	100	3	0	0	3
2	R20CC30E18 /R20CC4118	NOSQL Databases	30	70	100	3	0	0	3

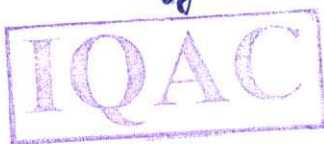
S.No.	Open Elective -4 Subject Code	Subject Title	Internal Marks	External Marks	Total Marks	L	T	P	Credits
1	R20CC40E16/ R20CC4104	e-Commerce	30	70	100	3	0	0	3
2	R20CC40E17/ R20CC4106	Natural Language Processing	30	70	100	3	0	0	3



  
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**III B.TECH. – I SEMESTER**

S.No.	Subject Code	Subject	Cat. Code	Internal Marks	External Marks	Total Marks	L	T	P	Credits
1	R20CC3101	Operating Systems	PC	30	70	100	3	0	0	3
2	R20DS3102	Big Data Analytics	PC	30	70	100	3	0	0	3
3	R20CC3104	Computer Networks	PC	30	70	100	3	0	0	3
4	R20CC3103 R20DS3103 R20CC3107 R20CS3108	Professional Elective - I <ul style="list-style-type: none"> <li>• Object Oriented Analysis and Design</li> <li>• DevOps</li> <li>• Software Testing Methodologies</li> <li>• Distributed Systems</li> </ul>	PE	30	70	100	3	0	0	3
5	<b>Open Elective – I</b>		OE	30	70	100	3	0	0	3
6	R20DS31L1	Big Data Analytics Lab	PC	15	35	50	0	0	3	1.5
7	R20CC31L2	Computer Networks & Operating Systems Lab	PC	15	35	50	0	0	3	1.5
8	R20DS31SC1	Mean Stack Technologies Lab	SC	-	50	50	0	0	4	2
9	R20CSP	Community Service Project	PR	-	-	50	0	0	0	1.5
10	R20CC31MC01	Professional Ethics and Human Values	MC			-	2	0	0	0
<b>TOTAL</b>										<b>21.5</b>
11		Honors/Minor Course		30	70	100	4	0	0	4

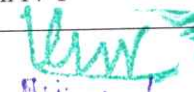


  
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**III B.TECH. – II SEMESTER**

S.No.	Subject Code	Subject	Cat. Code	Internal Marks	External Marks	Total Marks	L	T	P	Credits
1	R20DS3201	Data Analytics & Visualization	PC	30	70	100	3	0	0	3
2	R20CC3208	Design and Analysis of Algorithms	PC	30	70	100	3	0	0	3
3	R20DS3202	Principles Of Machine Learning	PC	30	70	100	3	0	0	3
4	R20DS3203	Professional Elective - II • Recommender Systems • Web Development using React JS • ETL Principles • Artificial Neural Networks	PE	30	70	100	3	0	0	3
	R20DS3204									
	R20DS3205									
	R20DS3209									
5	<b>Open Elective – II</b>		OE	30	70	100	3	0	0	3
6	R20DS32L1	Data Analytics & Visualization Lab	PC	15	35	50	0	0	3	1.5
7	R20DS32L3	React JS Lab	PC	15	35	50	0	0	3	1.5
8	R20CC32L2	Machine Learning Lab	ES	15	35	50	0	0	3	1.5
9	R20CC32SC1	English Employability Skills	SC	-	-	50	0	0	4	2
10	R20CC32MC1	Essence of Indian Traditional Knowledge	MC			-	2	0	0	0
<b>TOTAL</b>										<b>21.5</b>
11		Honors/Minor Course		30	70	100	4	0	0	4
Community Service Project / Internship to be evaluated in IV-I										



  
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**List of Open Electives offered by Department**

S.No.	Open Elective -1 Subject Code	Subject Title	Internal Marks	External Marks	Total Marks	L	T	P	Credits
1	R20CC10E19	Cloud Computing	30	70	100	3	0	0	3
2	R20CC10E20/ R20DS3102	Big Data Analytics	30	70	100	3	0	0	3

S.No.	Open Elective -2 Subject Code	Subject Title	Internal Marks	External Marks	Total Marks	L	T	P	Credits
1	R20CC20E18	Mean Stack Technologies	30	70	100	3	0	0	3
2	R20CC20E19/ R20DS3201	Data Analytics & Visualization	30	70	100	3	0	0	3

S.No.	Open Elective -3 Subject Code	Subject Title	Internal Marks	External Marks	Total Marks	L	T	P	Credits
1	R20CC30E19/ R20CC4106	Natural Language Processing	30	70	100	3	0	0	3
2	R20CC30E18/ R20CC4118	NoSQL Databases	30	70	100	3	0	0	3

S.No.	Open Elective -4 Subject Code	Subject Title	Internal Marks	External Marks	Total Marks	L	T	P	Credits
1	R20CC40E16/ R20CC4104	e-Commerce	30	70	100	3	0	0	3
2	R20CC40E318/ R20DS4103	Data Science Applications	30	70	100	3	0	0	3




  
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## DEPARTMENT OF CSE (CYBER SECURITY)

### III B.TECH. – II SEMESTER

S.No.	Subject Code	Subject	Cat. Code	Internal Marks	External Marks	Total Marks	L	T	P	Credits
1	R20CY3201	Introduction to Cyber Security	PC	30	70	100	3	0	0	3
2	R20CY3202	Malware Analysis & Reverse Engineering	PC	30	70	100	3	0	0	3
3	R20CY3203	Ethical Hacking	PC	30	70	100	3	0	0	3
4	R20CY3204	Professional Elective - II • Data analytics for fraud detection • Block Chain Technologies • Big data Analytics • Secure Coding	PE	30	70	100	3	0	0	3
	R20CY3205									
	R20CC3206									
	R20CY3207									
5	<b>Open Elective – II ((Mean Stack))</b>		OE	30	70	100	3	0	0	3
6	R20CY32L1	Cyber Security Lab	PC	15	35	50	0	0	3	1.5
7	R20CY32L2	Malware Analysis and Reverse Engineering Lab	PC	15	35	50	0	0	3	1.5
8	R20CY32L3	Mean Stack Technologies Lab	ES	15	35	50	0	0	3	1.5
9	R20CC32SC1	English Employability Skills	SC	-	-	50	0	0	4	2
10	R20CC32MC1	Essence of Indian Traditional Knowledge	MC			-	2	0	0	0
<b>TOTAL</b>										<b>21.5</b>
11		<b>Honors/Minor Course</b>		30	70	100	4	0	0	4
Community Service Project / Internship to be evaluated in IV-I										



  
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## DEPARTMENT OF CSE (CYBER SECURITY)

### III B.TECH. – I SEMESTER

S.No.	Subject Code	Subject	Cat. Code	Internal Marks	External Marks	Total Marks	L	T	P	Credits
1	R20CY3101	Cryptography and Network Security	PC	30	70	100	3	0	0	3
2	R20CC3103	Design and Analysis of Algorithms	PC	30	70	100	3	0	0	3
3	R20CC3110	Principles of Machine Learning	PC	30	70	100	3	0	0	3
4	R2CC3107	Professional Elective - I <ul style="list-style-type: none"> <li>• Software Testing Methodologies</li> <li>• Data Analytics &amp; Visualization</li> <li>• Devops</li> <li>• Compiler Design</li> </ul>	PE	30	70	100	3	0	0	3
	R20CY3102									
	R20CC3109									
	R20CS3105									
5	Open Elective – I		OE	30	70	100	3	0	0	3
6	R20CY31L1	Cryptography and Network Security Lab	PC	15	35	50	0	0	3	1.5
7	R20CC31L4	Machine Learning Lab	PC	15	35	50	0	0	3	1.5
8	R20CY31SC1	Data Analytics & Visualization Lab	SC	-	50	50	0	0	4	2
9	R20CSP	Community Service Project	PR	-	-	50	0	0	0	1.5
10	R20CC31MC01	Professional Ethics and Human Values	MC			-	2	0	0	0
<b>TOTAL</b>										<b>21.5</b>
11		<b>Honors/Minor Course</b>		30	70	100	4	0	0	4



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**List of Open Electives offered by Department**

S.No.	Open Elective -1 Subject Code	Subject Title	Internal Marks	External Marks	Total Marks	L	T	P	Credits
1	R20CC10E21	Mean Stack Technologies	30	70	100	3	0	0	3
2	R20CC10E22/ R20CY3101	Cryptography and Network Security	30	70	100	3	0	0	3

S.No.	Open Elective -2 Subject Code	Subject Title	Internal Marks	External Marks	Total Marks	L	T	P	Credits
1	R20CC20E16	Cloud Computing	30	70	100	3	0	0	3
2	R20CC20E20/ R20CY3203	Ethical Hacking	30	70	100	3	0	0	3

S.No.	Open Elective -3 Subject Code	Subject Title	Internal Marks	External Marks	Total Marks	L	T	P	Credits
1	R20CC30E21/ R20CY3201	Introduction to Cyber Security	30	70	100	3	0	0	3
2	R20CC30E22	Malware Analysis & Reverse Engineering	30	70	100	3	0	0	3

S.No.	Open Elective -4 Subject Code	Subject Title	Internal Marks	External Marks	Total Marks	L	T	P	Credits
1	R20CC40E16/ R20CC4104	e-Commerce	30	70	100	3	0	0	3
2	R20CC40E19/ R20CY4112	Data Privacy	30	70	100	3	0	0	3



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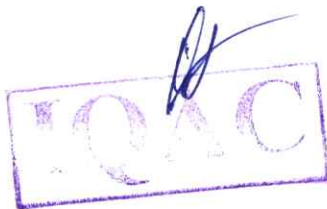
# NARASARAOPETA ENGINEERING COLLEGE

(AUTONOMOUS)

## DEPARTMENT OF MASTER OF COMPUTER APPLICATIONS R20 SYLLABUS AND COURSE STRUCTURE

### II SEMESTER

S. No.	Course Code	Course Name	Cat	L	T	P	Credits
1	R20MCA201	Computer Networks	PC	3	0	0	3
2	R20MCA202	Object oriented Programming using JAVA	PC	3	0	0	3
3	R20MCA203	Software Engineering	PC	3	0	0	3
4	R20MCA204	Design and Analysis of Algorithm	PC	3	0	0	3
5	R20MCA205 R20MCA206 R20MCA207 R20MCA2MC	<b>Program Elective-1</b> 1. Artificial Intelligence- R20MCA205 2. Advanced Unix Programming- R20MCA206 3. Data Warehousing and Data mining- R20MCA207 4. MOOCs-1 - R20MCA2MC (NPTEL/SWAYAM/ COURSERA) Any recommended course	PC / PE	3	0	0	3
6	R20MCA2L1	Object Oriented Programming using JAVA Lab	PC	0	0	4	2
7	R20MCA2L2	Statistical Programming with R Lab	PC	0	0	4	2
8	R20MCA2L3	Employability Skills Lab	BS&H	0	0	4	2
			Total	15	0	12	21



  
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### III SEMESTER

S. No.	Course Code	Course Name	Cat	L	T	P	Credits
1	R20MCA301	Machine Learning with Python	PC	3	0	0	3
2	R20MCA302	Web Technologies	PC	3	0	0	3
3	R20MCA303	Unified Modeling Languages	PC	3	0	0	3
4		<b>Program Elective-2</b> 1. Cloud Computing - R20MCA304 2. Digital Image Processing - R20MCA305 3. Internet of Things - R20MCA306 4. Network Security and Cryptography - R20MCA307 5. MOOCs-2- R20MCA3MC (NPTEL/SWAYAM/ COURSERA) Any recommended course	PE	3	0	0	3
5	R20MCA308	Human Resource Management	MS	3	0	0	3
6	R20MCA3L1	Web Technologies Lab	PC	0	0	4	2
7	R20MCA3L2	Machine Learning with Python Lab	PC	0	0	4	2
8	R20MCA3L3	Unified Modeling Languages Lab	PC	0	0	4	2
9	R20MCA3MNC	Employability Skills-2	AC	1	0	0	0
10	R20MCA3MP	Internship / Industry Oriented Mini Project#	PW				1
Total				16	0	12	22



  
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### IV Semester

S. No.	Course Code	Course Name	Cat	L	T	P	Credits
1	R20MCA	<b>Program Elective-3</b> 1. Block Chain technologies- R20MCA401 2. Design Patterns- R20MCA402 3. E-Commerce- R20MCA403 4. MOOCs-3- R20MCA4MC1 (NPTEL/SWAYAM/ COURSERA) 1. Full Stack Technologies 2. Any recommended course	PE	3	0	0	3
2		<b>Program Elective-4</b> 1. Big Data Analytics- R20MCA404 2. Cyber Security- R20MCA405 3. Human Computer Interaction- R20MCA406 4. MOOCs-4- R20MCA4MC2 (NPTEL/SWAYAM) 1. Data Science 2. Any recommended course	PE	3	0	0	3
3		Project Work/ Dissertation- R20MCA4PW	PW	0	0	0	10
Total				6	0	0	16

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



  
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# NARASARAOPETA ENGINEERING COLLEGE (AUTONOMOUS)

## DEPARTMENT OF MASTER OF COMPUTER APPLICATIONS R24 SYLLABUS AND COURSE STRUCTURE II SEMESTER

S.No	Course Code	Course Name	Category	L	T	P	Credits
1	R24MCA201	Computer Networks	PC	3	0	0	3
2	R24MCA202	Network Security and Cyber Security	PC	3	0	0	3
3	R24MCA203	Object Oriented Programming Using JAVA	PC	3	0	0	3
4	R24MCA204	Software Engineering	PC	3	0	0	3
5	R24MCA205	Artificial Intelligence	PC	3	0	0	3
		<b>Program Elective-1</b>					
6	R24MCA206	Design and Analysis of Algorithms					
	R24MCA207	Advanced Unix Programming					
	R24MCA208	Data Warehousing and Data Mining	PC/ PE	3	0	0	3
	R24MCA209	Web Technologies					
	R24MCA2MC	MOOCS-1(NPTEL /SWAYAM) (Recommended 12 week course with 3 credits)					
7	R24MCA2L1	Object Oriented Programming Using JAVA Lab	PC	0	0	3	1.5
8	R24MCA2L2	Networks and Security Lab	PC	0	0	3	1.5
9	R24MCA2MNC	Employability Skills-1 <sup>s</sup>	AC	1	0	0	0
			Total	19	0	6	21



  
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**DEPARTMENT OF MASTER OF BUSINESS ADMINISTRATION (MBA)**

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**I Year II Semester**

S.No	Course Code	Courses	M	L	T	P	C
1	R24MBA201	Financial Management	100	4	0	0	4
2	R24MBA202	Human Resource Management	100	4	0	0	4
3	R24MBA203	Operations Management	100	4	0	0	4
4	R24MBA204	Marketing Management	100	4	0	0	4
5	R24MBA205	Research Methods for Business Decisions	100	4	0	0	4
	R24MBA206	Business Analytics	100	4	0	0	4
6	R24MBA207 R24MBA208 R24MBA209 R24MBA210	A. Cross Cultural management B. Project Management C. Lean Management D. Database Management System	100	3	0	0	3
7	R24MBA2L1	R-Programming Lab	50	0	0	4	2
8	R24MBA2L2	IT Lab (Spread sheets and SQL)	50	0	0	4	2
9	R24MBA2EP	Entrepreneur Project –II Study on different loan approaches of State and Central Govt. Prepare the Business Development plan.	50	0	0	4	2
<b>Total</b>			<b>850</b>	<b>27</b>	<b>0</b>	<b>12</b>	<b>33</b>



  
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**DEPARTMENT OF MBA**

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**R19 MBA**

**COURSE STRUCTURE**

**I MBA- I SEMESTER**

S.No	Course Code	Subject	L	T	P	Internal Marks	External Marks	Total Marks	Credits
1	19MBA1TH01	Management Theory & Organizational Behaviour	4	0	-	40	60	100	4
2	19MBA1TH02	Economics for Managers	4	0	-	40	60	100	4
3	19MBA1TH03	Accounting for Managers	4	0	-	40	60	100	4
4	19MBA1TH04	Managerial Communication & Soft Skills	4	0	-	40	60	100	4
5	19MBA1TH05	Business Environment	4	0	-	40	60	100	4
6	19MBA1TH06	Quantitative Analysis for Business Decisions	4	0	-	40	60	100	4
7	19MBA1LB01	IT for Managers-I	-	-	4	40	60	100	2
<b>TOTAL</b>			24	0	4	280	420	700	26

**I MBA- II SEMESTER**

S.No	Course Code	Subject	L	T	P	Internal Marks	External Marks	Total Marks	Credits
1	19MBA2TH01	Financial Management	4	0	-	40	60	100	4
2	19MBA2TH02	Human Resource Management	4	0	-	40	60	100	4
3	19MBA2TH03	Marketing Management	4	0	-	40	60	100	4
4	19MBA2TH04	Production and Operations Management	4	0	-	40	60	100	4
5	19MBA2TH05	Business Research Methodology	4	0	-	40	60	100	4
6	19MBA2TH06	Business Laws	4	0	-	40	60	100	4
7	19MBA2LB01	IT for Managers-II	-	-	4	40	60	100	2
8	19MBA2MP01	Mini Project	-	-	-	100	-	100	2
<b>TOTAL</b>			24	0	4	380	420	850	28



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**DEPARTMENT OF MBA**

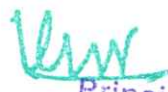
**FINANCE ELECTIVES**

Sem	Course Code	Subject	L	T	P	Internal Marks	External Marks	Total Marks	Credits
III	19MBA3THF1	Investment and Portfolio Management	4	0	-	40	60	100	4
III	19MBA3THF2	Corporate Taxation	4	0	-	40	60	100	4
III	19MBA3THF3	Banking & Insurance	4	0	-	40	60	100	4
III	19MBA3THF4	Personal Financial Planning	4	0	-	40	60	100	4
IV	19MBA4THF1	Financial Risk Management & Derivatives	4	0	-	40	60	100	4
IV	19MBA4THF2	Financial Institutions & Services	4	0	-	40	60	100	4
IV	19MBA4THF3	International Financial Management	4	0	-	40	60	100	4
IV	19MBA4THF4	Strategic Investment and Financial Decisions	4	0	-	40	60	100	4

**HRM ELECTIVES**

Sem	Course Code	Subject	L	T	P	Internal Marks	External Marks	Total Marks	Credits
III	19MBA3THH1	Management of IR	4	0	-	40	60	100	4
III	19MBA3THH2	Compensation and Reward Management	4	0	-	40	60	100	4
III	19MBA3THH3	Performance Management	4	0	-	40	60	100	4
III	19MBA3THH4	Employee Engagement & Retention Management	4	0	-	40	60	100	4
IV	19MBA4THH1	International HRM	4	0	-	40	60	100	4
IV	19MBA4THH2	Leadership	4	0	-	40	60	100	4
IV	19MBA4THH3	Human Resource Development	4	0	-	40	60	100	4
IV	19MBA4THH4	Industrial Jurisprudence & Labour Legislations	4	0	-	40	60	100	4



  
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**I - Semester**

S.No	CourseName	Category	L	T	P	C	Marks
1	Theory of Elasticity	Core	3	0	--	3	100
2	Structural Dynamics	Core	3	0	--	3	100
3	Elective I	Elective	3	0	--	3	100
	a) Matrix Analysis of Structures						
	b) Analytical & Numerical Methods for Structural Engineering						
	c) Design of RCC Foundations						
	d) Advanced structural engineering						
4	Program Elective II	Elective	3	0	--	3	100
	a) Bridge Engineering						
	b) Repair and Rehabilitation of Structures						
	c) Advanced Reinforced Concrete Design						
	d) Design of tall structures		2	0	0	2	100
5	Research Methodology & IPR		-	-	0	2	
6	Advanced Concrete Technology Laboratory	Lab	-	--	4	2	100
7	Advanced Structural Engineering Laboratory	Lab	-	--	4	2	100
8	Audit Course -1(Disaster Management)	Audit	2	0	0	0	100
<b>Total Credits /Marks</b>						<b>18</b>	<b>800</b>

**II - Semester**

S.No.	Course Name	Category	L	T	P	C	Marks
1	Finite Element Methods in Structural Engineering	Core	3	0	--	3	100
2	Theory of Plates and Shells	Core	3	0	--	3	100
3	Elective III	Elective	3	0	--	3	100
	a) Stability of Structures						
	b) Advanced Steel Design						
	c) Analysis of Offshore Structures						
	d) Building information modeling						
4	Elective IV	Elective	3	0	--	3	100
	a) Earthquake Resistant Design of Buildings						
	b) Precast and Prefabricated Structures						
	c) Earth Retaining Structures						
	d) Plastic structural analysis						
5	Computer Aided Design Laboratory		--	--	4	2	100
6	Structural Design laboratory	Lab	--	--	4	2	100
7	Mini Project with Seminar		0	0	4	2	100
8	Audit Course -2(Value Education)	Audit	2	0	0	0	100
<b>Total Credits / Marks</b>						<b>18</b>	<b>800</b>



**III – Semester**

S.No.	Course Name	Category	L	T	P	C	Marks
1	Elective 5: Program Elective /MOOCS**	Elective	3	0	--	3	100
	a) Design of Prestressed Concrete structures						
	b) Structural Health Monitoring						
	c) Industrial Structures						
	d) Advanced Foundation Engineering						
2	Open Elective / MOOCS** a) Artificial Intelligence Technique b) Construction Management c) Green Technology d) Ground Improvement Techniques	Elective	3	0	--	3	100
3	Dissertation Phase-I / Industrial Project (To be continued and Evaluated next Semester) *		--	--	20	10	
<b>Total Credits / Marks</b>						<b>16</b>	<b>200</b>

\* Evaluated and displayed in 4<sup>th</sup> Semester marks list

\*\* Students Going for Industrial Project / Thesis will complete these courses through MOOCS. Students can also choose SWAYAM or NPTEL with a 12 weeks' course duration in PG level with 3 credits, but the chosen subject should not be covered in their M. Tech Course

**IV - Semester**

SI No.	Course Name	Category	L	T	P	C	Marks
1	Project / Dissertation Phase II (Continued from III Semester)		0	0	32	16	100
<b>Total Credits / Marks</b>						<b>16</b>	<b>100</b>

**Audit course 1 & 2**

1. English for Research Paper Writing
2. Disaster Management
3. Sanskrit for Technical Knowledge
4. Value Education
5. Constitution of India
6. Pedagogy Studies
7. Stress Management by Yoga
8. Personality Development through Life Enlightenment Skills.

**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**

**M.TECH COURSE STRUCTURE**

**DIGITAL ELECTRONICS AND COMMUNICATION SYSTEMS (DECS)**

**I M.TECH-I SEMESTER**

S.No.	Name of Subject	L	T	P	Internal Marks	External Marks	Total Marks	Credits
1	Digital System Design	4	-	-	40	60	100	3
2	Embedded Real Time Operating Systems	4	-	-	40	60	100	3
3	VLSI Technology and Design	4	-	-	40	60	100	3
4	Optical Communication Technology	4	-	-	40	60	100	3
	<b>Elective I</b>							
5	i. Digital data communications ii. Adhoc Networks iii. System modeling and simulation iv. Design for IoT v. Image and Video Processing	4	-	-	40	60	100	3
	<b>Elective II</b>							
6	i. Wireless communication and networks ii. Digital design using HDL iii. Radar Signal Processing iv. Adaptive Signal Processing v. Soft computing techniques	4	-	-	40	60	100	3
7	<b>Laboratory</b> Design and Simulation Laboratory	-	-	6	40	60	100	3
	<b>TOTAL</b>	<b>24</b>	<b>-</b>	<b>6</b>	<b>280</b>	<b>420</b>	<b>700</b>	<b>21</b>



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## I M.TECH-II SEMESTER

S.No.	Name of Subject	L	T	P	Internal Marks	External Marks	Total Marks	Credits
1	Coding Theory and Applications	4	-	-	40	60	100	3
2	Detection and Estimation Theory	4	-	-	40	60	100	3
3	DSP Processors and Architectures	4	-	-	40	60	100	3
4	Advanced Computer Architecture	4	-	-	40	60	100	3
	<b>Elective III</b>							
5	i. CMOS Analog and Digital IC Design ii. Advanced Digital Signal Processing iii. RF Circuit Design iv. Embedded C v. Advanced mobile communication	4	-	-	40	60	100	3
	<b>Elective IV</b>							
6	i. VLSI design automation ii. Nano technology iii. Advanced digital communication iv. Antennas for wireless Communication v. Advanced Microprocessors and Microcontrollers	4	-	-	40	60	100	3
7	<b>Laboratory</b> Advanced Communications Laboratory	-	-	6	40	60	100	3
	<b>TOTAL</b>	<b>24</b>	<b>-</b>	<b>6</b>	<b>280</b>	<b>420</b>	<b>700</b>	<b>21</b>

## II M.TECH-III & IV SEMESTERS

S.No.	Name of Subject	Total Marks	Credits
1	Seminar	100	1
2	Comprehensive Viva-Voce	100	2
3	Project	-	35
	<b>TOTAL</b>	<b>200</b>	<b>38</b>

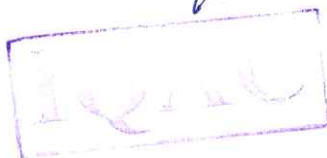


COURSE STRUCTURE & SYLLABUS  
FOR

M.Tech-ECE-DIGITAL SYSTEMS AND COMPUTER ELECTRONICS (DSCE)

I M.Tech-I SEMESTER

S.No.	Name of Subject	L	T	P	Internal Marks	External Marks	Total Marks	Credits
1	Digital System Design	4	-	-	40	60	100	3
2	VLSI Technology and Design	4	-	-	40	60	100	3
3	Wireless Communication and Networks	4	-	-	40	60	100	3
4	Advanced Computer Architecture	4	-	-	40	60	100	3
5	<b>Elective I</b> i. Digital Data Communications ii. Digital Design Using HDL iii. Analog and Digital IC Design iv. Internet Protocols v. Pattern Recognition	4	-	-	40	60	100	3
6	<b>Elective II</b> i. System Modelling and Simulation ii. Network Security and Cryptography iii. Image and Video Processing iv. Mobile Computing Technologies v. Algorithms for VLSI Design Automation	4	-	-	40	60	100	3
7	Design and Simulation Laboratory	-	-	6	40	60	100	3
<b>TOTAL</b>		<b>24</b>	<b>-</b>	<b>6</b>	<b>280</b>	<b>420</b>	<b>700</b>	<b>21</b>



  
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**I M.Tech-II SEMESTER**

S.No.	Name of Subject	L	T	P	Internal Marks	External Marks	Total Marks	Credits
1	CMOS Analog and Digital IC Design	4	-	-	40	60	100	3
2	DSP Processors and Architectures	4	-	-	40	60	100	3
3	Embedded System Design	4	-	-	40	60	100	3
4	Adhoc & Wireless Sensor Networks	4	-	-	40	60	100	3
5	<b>Elective III</b>	4	-	-	40	60	100	3
	i. System On Chip Design							
	ii. Soft Computing Techniques							
	iii. Cyber Security							
	iv. Advanced Digital System Design							
v. Coding Theory & Applications								
6	<b>Elective IV</b>	4	-	-	40	60	100	3
	i. Embedded Real Time Operating System							
	ii. High Speed Networks							
	iii. Data Communication and Networks							
	iv. Advanced Digital Communication							
v. Embedded Networking								
7	Embedded Systems Laboratory	-	-	6	40	60	100	3
<b>TOTAL</b>		<b>24</b>	<b>-</b>	<b>6</b>	<b>280</b>	<b>420</b>	<b>700</b>	<b>21</b>

**M.Tech-III & IV SEMESTERS**

S.No.	Name Of Subject	Total Marks	Credits
1	Seminar	100	1
2	Comprehensive Viva-Voce	100	2
3	Dissertation	-	35
<b>TOTAL</b>		<b>200</b>	<b>38</b>



  
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**NARASARAOPETA ENGINEERING COLLEGE, NARASARAOPET  
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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**

**M.TECH COURSE STRUCTURE  
VLSI & Embedded Systems (VLSI&ES)**

**I M.TECH-I SEMESTER**

	Name of Subject	L	T	P	Internal Marks	External Marks	Total Marks	Credits
1	RTL Simulation and Synthesis with PLDs	4	-	-	40	60	100	3
2	Microcontrollers and Programmable Digital Signal Processors	4	-	-	40	60	100	3
3	VLSI signal processing	4	-	-	40	60	100	3
4	CAD of Digital System	4	-	-	40	60	100	3
5	<b>Elective I</b> i. Digital Signal and Image Processing ii. Parallel Processing iii. IOT and Its Applications	4	-	-	40	60	100	3
6	<b>Elective II</b> i. Programming Languages for Embedded Systems ii. System Design with Embedded Linux iii. Hardware Software co-design	4	-	-	40	60	100	3
7	<b>Laboratory</b> RTL Simulation and Synthesis with PLDs Lab	-	-	3	40	60	100	1.5
8	<b>Laboratory</b> Microcontrollers and Programmable Digital Signal Processors Lab	-	-	3	40	60	100	1.5
	<b>TOTAL</b>	<b>24</b>	<b>-</b>	<b>6</b>	<b>320</b>	<b>480</b>	<b>800</b>	<b>21</b>



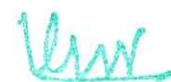
## I M.TECH-II SEMESTER

S.No.	Name of Subject	L	T	P	Internal Marks	External Marks	Total Marks	Credits
1	Analog and Digital CMOS VLSI Design	4	-	-	40	60	100	3
2	Real Time Operating Systems	4	-	-	40	60	100	3
3	SoC Design	4	-	-	40	60	100	3
4	Network Security and Cryptography	4	-	-	40	60	100	3
	<b>Elective III</b>							
	i. Memory Architectures							
	ii. Low power VLSI Design							
5	iii. Artificial Intelligence	4	-	-	40	60	100	3
	<b>Elective IV</b>							
	i. Algorithms for VLSI design automation							
6	ii. Communication Buses and Interfaces							
	iii. Physical design automation	4	-	-	40	60	100	3
7	<b>Laboratory</b> Analog and Digital CMOS VLSI Design Lab	-	-	3	40	60	100	1.5
8	<b>Laboratory</b> Real Time Operating Systems Lab	-	-	3	40	60	100	1.5
	<b>TOTAL</b>	<b>24</b>	<b>-</b>	<b>6</b>	<b>320</b>	<b>480</b>	<b>800</b>	<b>21</b>

## II M.TECH-III & IV SEMESTERS

S.No.	Name of Subject	Total Marks	Credits
1	Seminar	100	1
2	Comprehensive Viva-Voce	100	2
3	Project	-	35
	<b>TOTAL</b>	<b>200</b>	<b>38</b>





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## Programme Structure

### R25 MTech (VLSI & ES) Structure

#### MTech (VLSI & ES) I – Semester

S. No.	Course Code	Course Title	L	T	P	C
1	PC	Advanced Digital Systems Design	3	1	0	4
2	PC	Embedded Hardware Platforms and Programming	3	1	0	4
3	PC	FPGA Design	3	1	0	4
4	PE-I	Program Elective-I	3	0	0	3
5	PE-II	Program Elective-II	3	0	0	3
6		Advanced Digital Systems Design Lab	0	1	2	2
7		Embedded Systems lab	0	1	2	1
8		Seminar-I	0	0	2	1
<b>Total</b>			<b>15</b>	<b>5</b>	<b>6</b>	<b>23</b>

#### List of Professional Elective Courses in I Semester (Electives – I & II)

S.No.	Course Code	Course Title
1	PE -I	SCRIPTING LANGUAGES FOR VLSI
2	PE -I	VLSI Architectures
3	PE -I	VLSI System Design
4	PE -I	VLSI Testing & Testability
5	PE -II	System on Programming chip design
6	PE -II	Embedded system design using FPGA
7	PE -II	ARM Microcontroller based Design
8	PE -II	Cryptography and Network Security

@ Minimum 2/3 themes per elective



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### MTech (VLSI & ES) II – Semester

Sl. No.	Course Code	Course Title	L	T	P	C
1	PC	Digital CMOS Circuit Design	3	1	0	4
2	PC	System design with Embedded Linux	3	1	0	4
3	PC	Embedded Real Time Operating Systems (RTOS)	3	1	0	4
4	PE-III	Program Elective-III	3	0	0	3
5	PE-IV	Program Elective-IV	3	0	0	3
6		Digital CMOS Circuit design lab	0	1	2	2
7		System Design with Embedded Linux Lab	0	1	2	2
8		Seminar-II	0	0	2	1
<b>Total</b>			<b>15</b>	<b>5</b>	<b>6</b>	<b>23</b>

### List of Professional Elective Courses in II Semester (Electives III & IV)

S.No.	Course Code	Course Title
1	PE -III	VLSI Signal processing
2	PE -III	Advanced VLSI Interconnects
3	PE -III	Quantum Computing
4	PE -III	VLSI Testing & Testability
5	PE -IV	System design using embedded Processors
6	PE -IV	Architectures for DSP
7	PE -IV	Internet of Things
8	PE -IV	Embedded Network and Protocols

@ Minimum 2/3 themes per elective



  
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**R19-COURSE STRUCTURE**

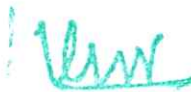
**M.Tech-POWER & INDUSTRIAL DRIVES**

**I M. TECH. - I SEMESTER**

S. No.	Subject	L	T	P	Internal Marks	External Marks	Total Marks	Credits
1	Electrical Machine Modelling and Analysis	3	-	-	40	60	100	3
2	Distributed generation and its impacts	3	-	-	40	60	100	3
3	Analysis of Power Electronic Converters and Inverters	3	-	-	40	60	100	3
4	Flexible AC Transmission System	3	-	-	40	60	100	3
5	<b>Elective – I</b>	3	-	-	40	60	100	3
	a. Power Semiconductor Devices and protection							
	b. Energy Management and Auditing							
	c. Micro controller and its Applications							
6	<b>Elective – II</b>	3	-	-	40	60	100	3
	a. Reactive Power Compensation and Management							
	b. Special Machines and Control							
	c. Modern Control Theory							
7	Power Electronics System Simulation Lab	-	-	6	40	60	100	3
	Total	18	-	6	280	420	700	21

L: Lecture  
T: Tutorial  
P: Practical



  
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**I M. TECH. - II SEMESTER**

S. No.	Subject	L	T	P	Internal Marks	External Marks	Total Marks	Credits
1	Control of DC and AC Drives	3	-	-	40	60	100	3
2	Soft Computing Techniques	3	-	-	40	60	100	3
3	Power Electronics in Renewable Energy Systems	3	-	-	40	60	100	3
4	Power System Deregulation	3	-	-	40	60	100	3
5	<b>Elective – III</b> a. Smart Grid b. Power Quality c. Power System Stability	3	-	-	40	60	100	3
6	<b>Elective – IV</b> a. Custom Power Devices b. Digital Control Systems c. High Voltage DC Transmission	3	-	-	40	60	100	3
7	Power Converters Lab	-	-	6	40	60	100	3
	<b>Total</b>	<b>18</b>	<b>-</b>	<b>6</b>	<b>280</b>	<b>420</b>	<b>700</b>	<b>21</b>

**II M. TECH. – III & IV SEMESTERS**

S. NO.	NAME OF THE SUBJECT	Total Marks	Credits
1	Seminar	100	1
2	Comprehensive Viva-Voce	100	2
3	Project	-	35
	<b>Total</b>	<b>200</b>	<b>38</b>

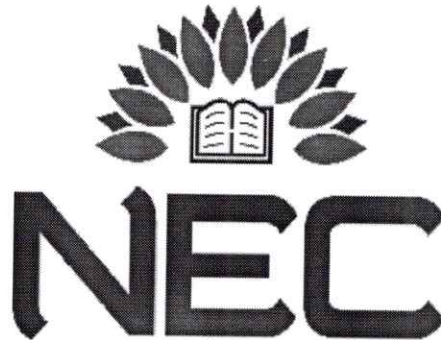


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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE STRUCTURE & SYLLABUS  
M.Tech for  
COMPUTER SCIENCE & ENGINEERING PROGRAMME

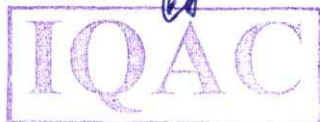


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**Academic Regulations (R24) for M.Tech. (Regular)**  
(Effective for the students admitted into I year from the Academic Year 2024-2025 onwards)

## M. Tech. (CSE) I SEMESTER

S.No	Course Code	Courses	Category	L	T	P	C
1	R24MCS101	<b>Program Core-1</b> Mathematical Foundations of Computer Science	PC	3	0	0	3
2	R24MCS102	<b>Program Core-2</b> Advanced Data Structures & Algorithms	PC	3	0	0	3
3	R24MCS103 R24MCS104 R24MCS105 R24MCS106	<b>Program Elective-1</b> 1. <b>Big Data Analytics</b> 2. Digital Image Processing 3. Advanced Operating Systems 4. Computer Graphics	PE	3	0	0	3
4	R24MCS107 R24MCS108 R24MCS109 R24MCS110	<b>Program Elective-2</b> 1. Advanced Computer Networks 2. <b>Internet of Things</b> 3. Object Oriented Software Engineering 4. Artificial Intelligence	PE	3	0	0	3
5	R24MCS111	<b>Research Methodology and IPR</b>	CC			0	2
6	R24MCS1L1	<b>Laboratory-1</b> Advanced Data Structures & Algorithms Lab	LB	0	0	4	2
7	R24MCS1L2	<b>Laboratory-2</b> Advanced Computing Lab	LB	0	0	4	2
8	R24MCS1NMC	<b>Audit Course-1*</b>	AC	2	0	0	0
<b>Total Credits</b>							18



  
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## M. Tech. (CSE) II SEMESTER

S.No	Course Code	Courses	Category	L	T	P	C
1	R24MCS201	<b>Program Core-3</b> Machine learning	PC	3	0	0	3
2	R24MCS202	<b>Program Core-4</b> Digital marketing	PC	3	0	0	3
3	R24MCS203 R24MCS204 R24MCS205 R24MCS206	<b>Program Elective-3</b> 1. Databases and Mining 2. Ad Hoc & Sensor Networks 3. Soft Computing 4. <b>Cryptography and Network Security</b>	PE	3	0	0	3
4	R24MCS207 R24MCS208 R24MCS209 R24MCS210	<b>Program Elective-4</b> 1. Cloud Computing 2. Principles of computer security 3. High Performance Computing 4. <b>E-Commerce</b>	PE	3	0	0	3
5	R24MCS2L1	<b>Laboratory-3</b> Machine Learning with python lab	LB	0	0	4	2
6	R24MCS2L2	<b>Laboartory-4</b> Tableau and Power BI Lab	LB	0	0	4	2
7	R24MCS2MP	<b>Mini Project with Seminar</b>	MP	2	0	0	2
8	R24MCS2NMC	<b>Audit Course-2 *</b>	AC	2	0	0	0
<b>Total Credits</b>							18

Student has to choose any one audit course listed below.

### Audit Course 1 & 2:

1. English for Research Paper Writing

2. **Disaster Management**

3. Sanskrit for Technical Knowledge

4. **Value Education**

5. Constitution of India

6. Pedagogy Studies

7. Stress Management by Yoga

8. Personality Development through Life

Enlightenment Skills



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### M. Tech. (CSE) III SEMESTER

S.No	Course Code	Courses	Category	L	T	P	C
1	R24MCS301 R24MCS302 R24MCS303 R24MCS304	<b>Program Elective-5</b> 1. Deep Learning 2. Social Network Analysis 3. MOOCs (NPTEL/SWAYAM) 4. <b>Human Computer Interaction</b>	PE	3	0	0	3
2	R24MCS304 R24MCS305 R24MCS306	<b>Open Elective</b> 1. <b>Devops</b> 2. Software Testing Methodologies 3. MOOCs (NPTEL/SWAYAM)	OE	3	0	0	3
3	R24MCS3PW	<b>Dissertation-I/ Industrial Project-I #</b>	PJ	0	0	20	10
<b>Total Credits</b>							16

#Students going for Industrial Project/Thesis will complete these courses through MOOCs

### M. Tech. (CSE) IV SEMESTER

S.No	Course Code	Courses	Category	L	T	P	C
1	R24MCS4PW	<b>Project-II</b>	PJ	0	0	32	16
<b>Total Credits</b>							16

#### Open Electives offered by the Department of CSE

1. Python Programming
2. Principles of Cyber Security
3. Internet of Things
4. Machine Learning
5. Digital forensics
6. Next Generation Databases



  
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NARASARAOPETA ENGINEERING COLLEGE (AUTONOMOUS)

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

M. Tech (R-19) COURSE STRUCTURE

I M.Tech (R-19)- I SEMESTER

S. NO.	NAME OF THE SUBJECT	L	T	P	INTERNAL MARKS	EXTERNAL MARKS	TOTAL MARKS	CREDITS
1	Advanced Data Structures and Algorithm Analysis	3	-	-	40	60	100	3
2	Computer Organization and Operating Systems	3	-	-	40	60	100	3
3	Database Management Systems	3	-	-	40	60	100	3
4	Mathematical Foundations of Computer Science	3	-	-	40	60	100	3
5	Computer Networks	3	-	-	40	60	100	3
6	Advanced Software Engineering	3	-	-	40	60	100	3
7	Data Structures and Database Management Systems Lab	-	-	6	40	60	100	3
	Total	18	0	6	280	420	700	21

L: Lecture

T: Tutorial

P: Practical



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## NARASARAOPETA ENGINEERING COLLEGE (AUTONOMOUS)

### I M.Tech (R-19) - II SEMESTER

S. NO.	NAME OF THE SUBJECT	L	T	P	INTERNAL MARKS	EXTERNAL MARKS	TOTAL MARKS	CREDITS
1	Block Chain Technologies	3	-	-	40	60	100	3
2	Foundations of data Science	3	-	-	40	60	100	3
3	Artificial Intelligence and Machine Learning	3	-	-	40	60	100	3
4	Service Oriented Architecture	3	-	-	40	60	100	3
5	<b>Professional Elective - I</b> Mobile Computing Big Data Analytics Internet of Things High Performance Computing	3	-	-	40	60	100	3
6	<b>Professional Elective - II</b> Cloud Computing Deep Learning Data Mining and Data warehousing Functional Programming	3	-	-	40	60	100	
7	Data Science Lab	-	-	6	40	60	100	3
	Total	18	0	6	280	420	700	21

### II M. Tech (R-19) – III & IV SEMESTERS

S. NO.	NAME OF THE SUBJECT	Total Marks	Credits
1	Seminar	100	1
2	Comprehensive Viva-Voce	100	2
3	Project	-	35
	Total	200	38



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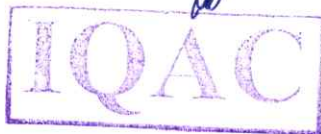
# NARASARAOPETA ENGINEERING COLLEGE

(AUTONOMOUS)

DEPARTMENT OF MECHANICAL ENGINEERING

## I -SEMESTER

S.No	Course Code	Course Title	L	T	P	C	
1	TE 101(Core-1)	Advanced Heat Transfer	3	1	0	4	
2	TE102 (Core-2)	Advanced Fluid Mechanics	3	1	0	4	
	TE103 (Core-3)	AI&ML for Mechanical Engineering	3	1	0	4	
3	Program Elective – I TE 104	TE 1041	Advanced Power Plant Engineering	3	0	0	3
		TE 1042	Cryogenic Engineering				
		TE 1043	Turbo Machines				
		TE 1044	Advanced Thermodynamics & Combustion				
4	Program Elective – II TE 105	TE 1051	Renewable Sources of Energy	3	0	0	3
		TE 1052	Fuel Cells and Hydrogen Technologies				
		TE 1053	Analysis of IC Engines				
		TE 1054	Jet Propulsion and Rocket Engineering				
5	TE 106	Thermal Engineering Lab	0	0	4	2	
6	TE 107	Computational Laboratory	0	0	4	2	
7	TE 108	Seminar I	0	0	2	1	
Total			15	3	10	23	



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## II -SEMESTER

S. No	Course Code	Course Title	L	T	P	C	
1	TE 201 (Core-1)	Computational Fluid Dynamics	3	1	0	4	
2	TE 202 (Core-2)	Experimental Analysis and Instrumentation	3	1	0	4	
	TE 203 (Core-3)	Advanced Finite Element Methods	3	1	0	4	
3	Program Elective- III TE 204	TE 2041	HVAC Systems	3	0	0	3
		TE 2042	Fundamentals Of Microfluidics				
		TE 2043	Industrial Food Preservation				
		TE 2044	Industrial Hydraulics and Pneumatics				
4	Program Elective- IV TE 205	TE 2051	Thermal Management in EV Battery and Fuel Cell System	3	0	0	3
		TE 2052	Micro and Nano Scale Heat Transfer				
		TE 2053	Design of Heat Transfer Equipment				
		TE 2054	Introduction to Quantum Technologies				
5	TE 206	Computational Fluid Dynamics Lab	0	0	4	2	
6	TE 207	Thermal Simulation Laboratory	0	0	4	2	
7	TE 208	Seminar II	0	0	2	1	
Total			15	3	10	23	

**Note: Students are informed to complete Summer Internship (duration 8-10 weeks) at the end of the II Semester.**



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# NARASARAOPETA ENGINEERING COLLEGE

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DEPARTMENT OF MECHANICAL ENGINEERING

## III- SEMESTER

S. No	Course Code	Course Title	L	T	P	C
1		Research Methodology and IPR/Swayam 12 Week MOOC Course RM&IPR	3	0	0	3
2		Summer Internship/Industrial Training (8-10 Weeks)	-	-	-	3
3		Comprehensive Viva	-	-	-	2
4		Dissertation Part - A	-	-	20	10
TOTAL			3	-	20	18

## IV -SEMESTER

S. No	Course Code	Course Title	L	T	P	C
1		Dissertation Part - B	-	-	32	16
TOTAL			-	-	32	16



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**B.TECH MECHANICAL ENGINEERING**  
**(R23 – COURSE STRUCTURE & SYLLABUS)**

**For Honors :**

**I. Machine Design (Any 5 theory and 2 Labs)**

1. Advanced Mechanics of Solids
2. Mechanical Vibrations and Acoustics
3. Advanced Finite Element Methods
4. Product Design
5. Geometric Modeling
6. Advanced Mechanisms & Robotics
7. Advanced Machine Design
8. Fracture Mechanics
9. Mechanisms and Robotics Lab
10. Vibration and Acoustics Lab

**II. CAD/CAM (Any 5 theory and 2 Labs)**

1. Advanced Finite Element Methods
2. Advanced CAD
3. Advanced CAM
4. Optimization & Reliability
5. Mechanical Behavior of Materials
6. Industrial Robotics & Automation
7. Materials Characterization Techniques
8. Product Design and Development
9. CAD/CAM Lab
10. Robotics & Automation Lab

**III. Thermal Engineering (Any 5 theory and 2 Labs)**

1. Advanced Heat Transfer
2. Advanced Fluid Mechanics
3. Advanced Thermodynamics & Combustion
4. Cryogenic Engineering
5. Turbo Machines
6. Thermal Management in EV Battery and Fuel Cell System
7. Design of Heat Transfer Equipment
8. HVAC Systems
9. Advanced Heat Transfer Lab
10. CFD lab



NARASARAOPETA ENGINEERING COLLEGE (Autonomous):: NARASARAOPET  
 M.Tech. (Machine Design)

**R25 M.TECH MACHINE DESIGN COURSE STRUCTURE AND SYLLABUS**

**M. Tech (MACHINE DESIGN)**

**I -SEMESTER**

S.NO	SUBJECT NAME	L	T	P	Internal Marks	External Marks	Total Marks	Credits
1	Mechanical Vibrations and Acoustics	3	1	-	40	60	100	4
2	Advanced Mechanics of Solids	3	1	-	40	60	100	4
3	AI&ML for Mechanical Engineering	3	1	-	40	60	100	4
4	<b>Programme Elective -I</b>							
	Advanced Finite Element Methods							
	Product Design & Development	3	0	0	40	60	100	3
	Geometric Modelling							
	Numerical methods for Mechanical Engineering							
5	<b>Programme Elective -II</b>							
	Design for Manufacturing & Assembly							
	Multi Body Dynamics	3	0	0	40	60	100	3
	Vision Systems and Image Processing							
	Engineering Tribology							
6	Machine Dynamics Lab	0	0	4				2
7	Design Practice Lab-I	0	0	4				2
8	Seminar I	0	0	2				1
	<b>TOTAL</b>	<b>15</b>	<b>3</b>	<b>10</b>				<b>23</b>



  
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**M. Tech (MACHINE DESIGN)**

**II- SEMESTER**

S.NO	SUBJECT NAME	L	T	P	Internal Marks	External Marks	Total Marks	Credits
1	Advanced Mechanisms & Robotics	3	1	0	40	60	100	4
2	Advanced Machine Design	3	1	0	40	60	100	4
3	Signal Analysis and Condition Monitoring	3	1	0	40	60	100	4
4	<b>Programme Elective -I</b>	3	0	0	40	60	100	3
	Theory of Plasticity							
	Advanced Optimization Techniques							
	Computational Fluid Dynamics							
	Mechanics of Composite Materials							
5	<b>Programme Elective -II</b>	3	0	0	40	60	100	3
	Experimental stress analysis							
	Fracture Mechanics							
	Mechatronics							
	Introduction to Quantum Technologies							
6	Computational Mathematics Lab	0	0	4				2
7	Design Practice Lab-II	0	0	4				2
8	Seminar II	0	0	2				1
	<b>TOTAL</b>	<b>15</b>	<b>3</b>	<b>10</b>				<b>23</b>

Note: Students are informed to complete Summer Internship (duration 8-10 weeks) at the end of the II Semester



  
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**III- SEMESTER**


S.NO	SUBJECT NAME	L	T	P	Internal Marks	External Marks	Total Marks	Credits
1	Research Methodology and IPR/Swayam 12 Week MOOC Course RM&IPR	3	0	0	40	60	100	3
2	Summer Internship/Industrial Training	-	-	-	-	-	-	3
3	Comprehensive Viva	-	-	-	-	-	-	2
4	Dissertation Part - A			20	-	-	-	10
	<b>TOTAL</b>	3	-	20				<b>16</b>

**M. Tech (MACHINE DESIGN)**

**IV- SEMESTER**

S.NO	SUBJECT NAME	L	T	P	Internal Marks	External Marks	Total Marks	Credits
1	Dissertation Part - B	-	-	32	-	-	-	16
	<b>TOTAL</b>			32	-	-	-	<b>16</b>



  
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