K.S.R.M COLLEGE OF ENGINEERING

(AUTONOMOUS)

INDEX

NEW COURSES OFFERED

A.Y 2022-23

S.NO	PROGRAMME NAME
1	Department of Civil Engineering
2	Department of Electrical & Electronics Engineering
3	Department of Mechanical Engineering
4	Department of Electronics and Communication Engineering
5	Department of Computer Science Engineering
6	Department of AI&ML
7	Department of Humanities and Sciences

K.S.R.M. COLLEGE OF ENGINEERING

(UGC-AUTONOMOUS)

Kadapa, Andhra Pradesh, India– 516 003

Approved by AICTE, New Delhi & Affiliated to JNTUA, Ananthapuramu.

An ISO 14001:2004 & 9001: 2015 Certified Institution

Department of Civil Engineering

New courses offered under R20UG regulations, AY 2022-2023

Fifth Semester

Course Code	Course Title
2001501	Hydrology & Irrigation
2001507	Concrete Technology Lab
2001508	Structural Analysis and Design Lab (Staad Pro)
20015S3	SketchUp-3D modelling
2001504	Optimization Techniques in Civil Engineering
20OE102	Basics of Civil Engineering
20OE103	Building Materials

Sixth Semester

Course Code	Course Title
2001601	Environmental Engineering
2001602	Water Resources Engineering
2001603	Design of Reinforced Concrete Structures
2001608	Computer Aided Design and Drafting Lab
2001609	Advanced Concrete Technology Lab
2001606	Traffic Engineering
20OE104	Solid Waste Management
20OE105	Estimation and Costing
20OE106	Water Management

HoD

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Department of Civil Engineering
K.S.R.M. College of Engineering
(Autonomous)
KADAPA - 516 003. (A.P.)

Dean

(Academics)

Regulations for UG Program in Engineering (R20UG)

(Effective from 2020-21 for regular students and from 2021-22 for lateral entry students)

Civil Engineering

Kandula Srinivasa Reddy Memorial College of Engineering (Autonomous)

Kadapa-516003. AP
(Approved by AICTE, Affiliated to JNTUA, Ananthapuramu, Accredited by NAAC)
(An ISO 9001-2008 Certified Institution)

Department of Civil Engineering
R20UG - Curriculum

B. Tech. - I Semester

Course code	Category	Course Title	Hours / Week			IM	EM	CR
			L	T	P			
2021101	BSC	Linear Algebra and Calculus	3	0	0	40	60	3
20EP102	BSC	Engineering Physics	3	0	0	40	60	3
2024103	HSMC	Communicative English	3	0	0	40	60	3
2014104	ESC	Basic Electrical & Electronics Engineering	3	0	0	40	60	3
2003105	ESC	Engineering Drawing	1	0	2	40	60	2
2003106	ESC	Engineering Drawing Lab	0	0	2	40	60	1
20EP107	BSC	Engineering Physics Lab	0	0	3	40	60	1.5
2024108	HSMC	Communicative English Lab	0	0	3	40	60	1.5
2014109	ESC	Basic Electrical & Electronics Engineering Lab	0	0	3	40	60	1.5
Total			**13**	**0**	**13**	**360**	**540**	**19.5**

L - Lecture, T - Tutorial, P – Practical

B. Tech. - II Semester

Course code	Category	Course Title	Hours / Week			IM	EM	CR
			L	T	P			
2021201	BSC	Differential Equations and Vector Calculus	3	0	0	40	60	3
20EC202	BSC	Engineering Chemistry	3	0	0	40	60	3
2005203	ESC	C-Programming & Data Structures	3	0	0	40	60	3
2001204	ESC	Strength of Materials	3	0	0	40	60	3
20EW205	LC	Engineering Workshop	0	0	3	40	60	1.5
2005206	LC	IT Workshop	0	0	3	40	60	1.5
20EC207	BSC	Engineering Chemistry Lab	0	0	3	40	60	1.5
2005208	ESC	C-Programming & Data Structures Lab	0	0	3	40	60	1.5
2001209	ESC	Strength of Materials Lab	0	0	3	40	60	1.5
20MC210	MC	Environmental Science	3	0	0	40	0	0.0
Total			**15**	**0**	**15**	**400**	**540**	**19.5**

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B. Tech. - III Semester

Course Code	Category	Course Title	Hours / Week			IM	EM	CR
			L	T	P			
2021302	BSC	Probability, Statistics & Numerical Methods	3	0	0	40	60	3
2001302	ESC	Geology and Building materials	3	0	1	40	60	3.5
2001303	PCC	Advanced Strength of materials	3	1	0	40	60	4
2001304	PCC	Fluid Mechanics	3	0	0	40	60	3
2001305	PCC	Geomatics	3	0	0	40	60	3
2001306	PCC (LAB)	Fluid Mechanics Laboratory	0	0	3	40	60	1.5
2001307	PCC (LAB)	Geomatics Lab	0	0	3	40	60	1.5
20013S1	SOC	Civil Engineering Workshop (Skill oriented)	1	0	2	40	60	2
Total Credits			**16**	**1**	**9**	**320**	**480**	**21.5**

B. Tech. - IV Semester

Course Code	Category	Course Title	Hours/Week			IM	EM	CR
			L	T	P			
2025401	HSS	Business Economics and Accounting for Engineers	3	0	0	40	60	3
2001402	PCC	Hydraulics & Hydraulic Machinery	3	0	0	40	60	3
2001403	PCC	Soil Mechanics	3	0	0	40	60	3
2001404	PCC	Structural Analysis	3	0	0	40	60	3
2001405	PCC	Transportation Engineering	3	0	0	40	60	3
2001406	BSC (LAB)	Building Planning and Drawing (AutoCAD)	0	0	3	40	60	1.5
2001407	PCC (LAB)	Soil Mechanics Laboratory	0	0	3	40	60	1.5
2001408	PCC (LAB)	Transportation Engineering Laboratory	0	0	3	40	60	1.5
20014S2	SOC	Advanced Civil Engineering Workshop (Skilloriented-2)	1	0	2	40	60	2
2024410	HSMC	Universal Human Values	3	0	0	40	60	3
Total			**19**	**0**	**11**	**400**	**600**	**24.5**

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B. Tech. - V Semester

Course Code	Category	Course Title	Hours / Week			IM	EM	CR
			L	T	P			
2001501	PCC	Hydrology & Irrigation	3	0	0	40	60	3
2001502	PCC	Foundation Engineering	3	0	0	40	60	3
2001503	PCC	Concrete Technology	3	0	0	40	60	3
2001504	PEC-I	Optimization Techniques in Civil Engineering	3	0	0	40	60	3
2001505		Advanced Structural Analysis						
2001506		Remote Sensing & GIS						
	OEC-I		3	0	0	40	60	3
20995M2	MC	Organizational behaviour	2	0	0	40	00	0
2001507	PCC	Concrete Technology Lab	0	0	3	40	60	1.5
2001508	PCC	Structural Analysis and Design Lab (Staad Pro)	0	0	3	40	60	1.5
20015S3	SC	SketchUp-3D modelling	1	0	2	40	60	2
2001509	PROJ	Community Service Project	0	0	3	100	-	1.5
Total			**18**	**00**	**11**	**460**	**480**	**21.5**

B. Tech. - VI Semester

Course Code	Category	Course Title	Hours / Week			IM	EM	CR
			L	T	P			
2001601	PCC	Environmental Engineering	3	0	0	40	60	3
2001602	PCC	Water Resources Engineering	3	0	0	40	60	3
2001603	PCC	Design of Reinforced Concrete Structures	3	0	0	40	60	3
2001604	PEC-II	Pre-stressed Concrete	3	0	0	40	60	3
2001605		Bridge Engineering						
2001606		Traffic Engineering						
2006601	HSSE	Human Resource Development	3	0	0	40	60	3
2006602		Digital Marketing						
2006603		Project Management						
20993M3	MC	Constitution of India	2	0	0	40	00	0
2001607	PCC	Environmental Engineering Lab	0	0	3	40	60	1.5
2001608	PCC	Computer Aided Design and Drafting Lab	0	0	3	40	60	1.5
2001609	PCC	Advanced Concrete Technology Lab	0	0	3	40	60	1.5
20016S4	SC	Advanced English Communication skills lab	1	0	2	40	60	2
Total			**18**	**00**	**11**	**400**	**540**	**21.5**

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B. Tech. - VII Semester

Course Code	Category	Course Title	Hours / Week			IM	EM	CR
			L	T	P			
2001701	PEC-III	Ground Improvement Techniques	3	0	0	40	60	3
2001702		Quantity Estimation of structures						
2001703		Finite Element Methods						
2001704	PEC-IV	Design of Steel Structures	3	0	0	40	60	3
2001705		Water Supply Engineering						
2001706		Advanced Concrete Structures						
2001707	PEC-V	Design and Drawing of Irrigation Structures	3	0	0	40	60	3
2001708		Construction Practice and Management						
2001709		Urban Transportation Planning						
	OEC-II		3	0	0	40	60	3
	OEC-III		3	0	0	40	60	3
	OEC-IV		3	0	0	40	60	3
20015S5	SOC-V	Practices in Geo-Technical Engineering	1	0	2	40	60	2
2001710	PR	Industrial/Research Internship	0	0	6	100	-	3
Total			**19**	**00**	**08**	**380**	**420**	**23**

B. Tech. - VIII Semester

Course Code	Category	Course Title	Hours / Week			IM	EM	CR
			L	T	P			
2001801	PROJ	Project Work/Internship	-	-	30	50	50	12
Total			**-**	**-**	**30**	**50**	**50**	**12**

Open Electives Courses Offered by Department of Civil Engineering:

20OE101	Disaster Management
20OE102	Basics of Civil Engineering
20OE103	Building Materials
20OE104	Solid Waste Management
20OE105	Estimation and Costing
20OE106	Water Management
20OE107	Repair & Rehabilitation of Structures
20OE108	Geo-Environmental Engineering
20OE109	Environmental Impact Assessment
20OE110	Industrial Safety Engineering
20OE111	Surveying
20OE112	Traffic Engineering

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Department of Civil Engineering

New courses offered under R22PG regulations, AY 2022-2023

First Semester

Sl. No.	Course Code	Course Title
1	2212102	Advanced Foundation Engineering
2	2212103	Soil Structure Interaction (PEC1)
3	2212104	Ground Improvement Techniques (PEC1)
4	2212110	Soil Mechanics - 2 Lab

Second Semester

Sl. No.	Course Code	Course Title
1	2212202	Earth Retaining Structures
2	2212203	Dynamics of Soil and Foundations (PEC3)
3	2212204	Foundations on Expansive Soils (PEC3)
4	2212207	Design with Geosynthetics (PEC4)
5	2212208	Geotechnical Earthquake Engineering (PEC4)
6	2212209	Subsoil Exploration Lab
7	2212210	Geotechnical Engineering Modeling Lab
8	2212211	Technical Seminar

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Dean

(Academics)

Regulations for PG Program in Engineering (R22PG)

(Effective from 2022-23)

M. Tech (R22PG) Syllabus

Geotechnical Engineering

Kandula Srinivasa Reddy Memorial College of Engineering (Autonomous)

Kadapa-516005. AP
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Annexure – 1 Curriculum

Geotechnical Engineering (Civil Engineering)

1st Semester

S. No.	Course Codes	Course Name	Category	L	T	P	IM	EM	Credits
1	2212101	Advanced Soil Mechanics	PCC	3	0	0	40	60	3
2	2212102	Advanced Foundation Engineering	PCC	3	0	0	40	60	3
3		**Program Elective Course – I**	PEC	3	0	0	40	60	3
	2212103	Soil Structure Interaction							
	2212104	Ground Improvement Techniques							
	2212105	Geoenvironmental Engineering							
4		**Program Elective Course – II**	PEC	3	0	0	40	60	3
	2212106	Critical Soil Mechanics							
	2212107	FEM in Geotechnical Engineering							
	2212108	Pavement Analysis and Design							
5	2212109	Soil Mechanics – 1 Lab	PCC	0	0	4	50	50	2
6	2212110	Soil Mechanics – 2 Lab	PCC	0	0	4	50	50	2
7	2212111	Research Methodology & IPR	-	2	0	0	40	60	2
8		**Audit Course – I**	Audit	2	0	0	40	0	0
				16	**0**	**8**	**340**	**400**	**18**

2nd Semester

S. No.	Course Codes	Course Name	Category	L	T	P	IM	EM	Credits
1	2212201	Experimental Geomechanics	PCC	3	0	0	40	60	3
2	2212202	Earth Retaining Structures	PCC	3	0	0	40	60	3
3		**Program Elective Course – III**	PEC	3	0	0	40	60	3
	2212203	Dynamics of Soil and Foundations							
	2212204	Foundations on Expansive Soils							
	2212205	Offshore Geotechnical Engineering							
4		**Program Elective Course – IV**	PEC	3	0	0	40	60	3
	2212206	Design of Under Ground Excavations							
	2212207	Design with Geosynthetics							
	2212208	Geotechnical Earthquake Engineering							
5	2212209	Subsoil Exploration Lab	PCC	0	0	4	50	50	2
6	2212210	Geotechnical Engineering Modeling Lab	PCC	0	0	4	50	50	2
7	2212211	Technical Seminar	-	0	0	4	100	0	2
8		**Audit Course – II**	Audit	2	0	0	40	0	0
				14	**0**	**12**	**400**	**340**	**18**

3rd Semester

S. No.	Course Codes	Course Name	Category	L	T	P	IM	EM	Credits
1		**Program Elective Course – V**	PEC	3	0	0	40	60	3
	2212301	Stability Analysis of Slopes							

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	2212302	Foundations on Weak Rocks							
	2212303	Computational Geomechanics							
2	**Open Elective**		OEC	3	0	0	40	60	3
3	2212307	Dissertation Phase – 1 (to be continued nest semester)	Project	0	0	20	100	0	10
4	2212308	Co-Curricular Activities		0	0	0	0	0	2
				6	**0**	**20**	**180**	**120**	**18**

4th Semester

S. No.	Course Codes	Course Name	Category	L	T	P	IM	EM	Credits
1	2212401	Dissertation Phase – 2	Project	0	0	32	50	50	16
				0	**0**	**32**	**50**	**50**	**16**

List of Audit Courses offered:

Course Codes	Course Name
2270A01	English for Research Paper Writing
2270A02	Disaster Management
2270A03	Sanskrit for Technical Knowledge
2270A04	Value Education
2270A05	Constitution of India
2270A06	Pedagogy Studies
2270A07	Stress Management by Yoga
2270A08	Personality Development through Life Enlightenment Skills

List of Open Elective Courses offered to other branch students:

Course Codes	Course Name
22OE121	Solid Waste Management
22OE122	Waste to Energy
22OE123	Sub soil exploration techniques

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Department of Electrical & Electronics Engineering

New Courses Offered under R20UG

Academic Year 2022-2023

V Semester

S.NO	Subject Code	Name of the subject
1.	2025509	Advanced English Communication Skills (Soft Skill Oriented Course)
2.	2002510	Community Service Project
3.	2002504	Internet of Things
4.	20OE201	Modern Control Theory(OE-I)
5.	20OE202	Programming Fundamentals for Numerical Computations(OE-I)

VI Semester

	Subject Code	Name of the subject
1.	2002610	MATLAB-SIMULINK (Skill Advanced Course)
2.	20OE203	Energy Conversion Systems (OE-II)
3.	20OE204	Smart Grid (OE-II)

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Dean Academics

Regulations, Curriculum and Syllabus for

UG Programs in Engineering (R20UG)

(Effective from 2020-21 for Regular students and from 2021-22 for Lateral Entry students)

ELECTRICAL AND ELECTRONICS ENGINEERING

Kandula Srinivasa Reddy Memorial College of Engineering
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Kadapa 516005, AP
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I Semester

S.No	Subject Code	SUBJECT	SC	L	T	P	IM	EM	CR
1	2021101	Linear Algebra and Calculus	BSC	3	0	0	40	60	3
2	20AP102	Applied Physics	BSC	3	0	0	40	60	3
3	2024103	Communicative English	HSMC	3	0	0	40	60	3
4	2005103	C-Programming & Data Structures	ESC	3	0	0	40	60	3
5	2003105	Engineering Drawing	ESC	1	0	2	40	60	2
6	2003106	Engineering Drawing Lab	ESC	0	0	2	40	60	1
7	20AP107	Applied Physics Lab	BSC	0	0	3	40	60	1.5
8	2024108	Communicative English Lab	HSMC	0	0	3	40	60	1.5
9	2005108	C-Programming & Data Structures Lab	ESC	0	0	3	40	60	1.5
Total				**13**	**00**	**13**	**310**	**590**	**19.5**

L - Lecture, T - Tutorial, P – Practical

II Semester

S.No	Subject Code	SUBJECT	SC	L	T	P	IM	EM	CR
1	2021201	Differential Equations & Vector Calculus	BSC	3	0	0	40	60	3
2	2023202	Chemistry	BSC	3	0	0	40	60	3
3	2002203	Electrical Circuits Analysis-I	ESC	3	0	0	40	60	3
4	2004204	Electronic Devices & Circuits	ESC	3	0	0	40	60	3
5	20EW205	Engineering Workshop	ESC	0	0	3	40	60	1.5
6	2005206	IT Workshop	ESC	0	0	3	40	60	1.5
7	2023207	Chemistry Lab	BSC	0	0	3	40	60	1.5
8	2002208	Electrical Circuits Analysis-I Lab	ESC	0	0	3	40	60	1.5
9	2004209	Electronic Devices & Circuits Lab	ESC	0	0	3	40	60	1.5
10	20MC210	Environmental Science	MC	2	0	0	40	00	0.0
Total				**15**	**00**	**10**	**350**	**580**	**19.5**

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III Semester

S.No	Subject Code	SUBJECT	SC	L	T	P	IM	EM	CR
1	2002301	Switching Theory & Logic Design	PCC	3	0	0	40	60	3
2	2002302	Electromagnetic Field Theory	PCC	3	0	0	40	60	3
3	2002303	Electrical Circuit Analysis - II	PCC	3	0	0	40	60	3
4	2002304	Electrical Measurements & Measuring Instruments	PCC	3	0	0	40	60	3
5	2002305	DC Machines & Transformers	PCC	3	0	0	40	60	3
6	2002306	Electrical Circuit Analysis - II Lab	PCC	0	0	3	40	60	1.5
7	2002307	Electrical Measurements & Measuring Instruments Lab	PCC	0	0	3	40	60	1.5
8	2002308	DC Machines & Transformers Lab	PCC	0	0	3	40	60	1.5
9	2002309	Skill Oriented Course	SC	1	0	2	40	60	2.0
10	20MC310	Human Values & Professional Ethics	MC	2	0	0	40	00	0.0
Total				**18**	**00**	**11**	**400**	**540**	**21.5**

IV Semester

S.No	Subject Code	SUBJECT	SC	L	T	P	IM	EM	CR
1	2021401	Special Functions & Complex Analysis	BSC	3	0	0	40	60	3
2	2025402	Fundamentals of Management for Engineers	HSMC	3	0	0	40	60	3
3	2002403	Induction Motors & Synchronous Machines	PCC	3	0	0	40	60	3
4	2002404	Linear Control Systems	PCC	3	0	0	40	60	3
5	2002405	Power Systems - I	PCC	3	0	0	40	60	3
6	2002406	Induction Motors & Synchronous Machines Lab	PCC	0	0	3	40	60	1.5
7	2002407	Control Systems Lab	PCC	0	0	3	40	60	1.5
8	2005408	Python Programming Lab	ESC	0	0	3	40	60	1.5
9	2002409	**Skill Oriented Course**	SC	1	0	2	40	60	2.0
Total				**16**	**00**	**11**	**360**	**540**	**21.5**

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V Semester

S.No	Subject Code	SUBJECT	SC	L	T	P	IM	EM	CR
1	2002501	Linear Digital IC Applications	PCC	3	0	0	40	60	3
2	2002502	Power System - II	PCC	3	0	0	40	60	3
3	2002503	Power Electronics	PCC	3	0	0	40	60	3
		PEC-I							
4	2002504	Internet of Things	PEC-I	3	0	0	40	60	3
	2002505	Modern Control Theory							
	2002506	Energy Conversion Systems							
5	20OEXX	**OEC-I**	OEC-I	3	0	0	40	60	3
6	2002507	Power Systems - I Lab	PCC	0	0	3	40	60	1.5
7	2002508	Internet of Things Lab	PCC	0	0	3	40	60	1.5
8	2025509	**Soft Skill Oriented Course**	SC	1	0	2	40	60	2.0
9	2002510	Community Service Project	PROJ	0	0	0	100	00	1.5
10	20MC512	Constitution of India	MC	2	0	0	40	00	00
		Total		**18**	**00**	**08**	**60**	**480**	**21.5**

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VI Semester

S.No	Subject Code	SUBJECT	SC	L	T	P	IM	EM	CR
1	2002601	Microprocessor & Microcontrollers	PCC	3	0	0	40	60	3
2	2002602	Fundamentals of Electric Drives	PCC	3	0	0	40	60	3
3	2002603	Switchgear & Protection	PCC	3	0	0	40	60	3
		PEC-II							
4	2002604	Power System Operation & Control	PEC-II	3	0	0	40	60	3
	2002605	HVDC Transmission							
	2002606	Signals & Systems							
5	20OEXX	**OEC-II**	OEC-II	3	0	0	40	60	3
6	2002607	Power Electronics Lab	PCC	0	0	3	40	60	1.5
7	2002608	Power System- II Lab	PCC	0	0	3	40	60	1.5
8	2004609	Advanced Programming Lab	ESC	0	0	3	40	60	1.5
9	2002610	Skill Advanced Course	SC	1	0	2	40	60	2.0
10	20MC612	Management Organizational Behavior	MC	2	0	0	40	00	00
		Total		**18**	**00**	**08**	**60**	**480**	**21.5**

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VII Semester

S.No	Subject Code	SUBJECT	SC	L	T	P	IM	EM	CR
		PEC-III							
1	2002701	Power Quality	PEC-III	3	0	0	40	60	3
	2002702	Electric and Hybrid Vehicles							
	2002703	Power System Reliability							
		PEC-IV							
2	2002704	Power Electronics For Renewable Energy Systems	PEC-IV	3	0	0	40	60	3
	2002705	Electrical Distribution Systems							
	2002706	Smart Grid							
		PEC-V							
3	2002707	Flexible AC Transmission Systems	PEC-V	3	0	0	40	60	3
	2002708	Industrial Automation & Control							
	2002709	Distributed Generation & Micro Grid							
4	20OEXX	**OEC-III**	OEC-III	3	0	0	40	60	3
5	20OEXX	**OEC-IV**	OEC-IV	3	0	0	40	60	3
6	200670X	Humanities & Social Sciences Elective	HSS	3	0	0	40	60	03
7	2002710	Internship	PROJ	0	0	0	100	---	03
8	2002711	Skill Advanced Course	SC	1	0	2	40	60	02
		Total		**19**	**00**	**02**	**380**	**420**	**23**

VIII Semester

S.No	Subject Code	SUBJECT	SC	L	T	P	IM	EM	CR
1	2002801	Project Work	PROJ	-	-	-	40	60	12
		Internship in Industry							
		Total		**-**	**-**	**-**	**40**	**60**	**12**

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Cuddapah - 516 003

Department of Electrical & Electronics Engineering

List of Open Electives Offering to Other Branches (R20UG)

S. No.	Subject Code	SUBJECT	SC	L	T	P	IM	EM	CR
		Open Elective Course - I (OEC-I)							
1	20OE201	Modern Control Theory	OEC	3	0	0	40	60	3
2	20OE202	Programming Fundamentals for Numerical Computations	OEC	3	0	0	40	60	3
		Open Elective Course – II (OEC-II)							
3	20OE203	Energy Conversion Systems	OEC	3	0	0	40	60	3
4	20OE204	Smart Grid	OEC	3	0	0	40	60	3
		Open Elective Course - III (OEC-III)							
5	20OE205	Intelligent Control Techniques	OEC	3	0	0	40	60	3
6	20OE206	Electrical System Estimation & Costing	OEC	3	0	0	40	60	3
		Open Elective Course - IV (OEC-IV)							
7	20OE207	Basics of Power Electronics	OEC	3	0	0	40	60	3
8	20OE208	System Reliability Concepts	OEC	3	0	0	40	60	3

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Department of Electrical & Electronics Engineering

New Courses Offered under R22PG

Academic Year 2022-2023

II Semester **Specialization: Power Systems**

S.NO	Course Code	Course Name
1	2252201	Power System Security and State Estimation
2	2252208	Power System Reliability
3	2252209	Technical Seminar

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ACADEMIC REGULATIONS

Course Structure & Detailed Syllabus
of
POWER SYSTEMS
for
M.Tech. Regular Two Year Degree Program
(For the batches admitted from 2022-2023)

KSRM College of Engineering (Autonomous):: Kadapa

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M. Tech. Power Systems (PS)

Course Structure and Syllabus for the 2022-23 Batch

I-Semester

S. No.	Subject Code	SUBJECT	SC	L	T	P	IM	EM	CR
1	2252101	Advanced Power System Protection	PCC	3	0	0	40	60	3
2	2252102	Power System Dynamics - I	PCC	3	0	0	40	60	3
		Professional Elective Course – I (PEC - I)							
3	2252103	Energy Conversion Systems	PEC	3	0	0	40	60	3
	2252104	Smart grid Technologies	PEC	3	0	0	40	60	3
	2252105	Wind and Solar Energy Systems	PEC	3	0	0	40	60	3
		Professional Elective Course – II (PEC - II)							
4	2252106	Electrical Power Distribution System	PEC	3	0	0	40	60	3
	2252107	Mathematical Methods in Power Engineering	PEC	3	0	0	40	60	3
	2252108	Electric and Hybrid Vehicles	PEC	3	0	0	40	60	3
5	2252109	Research Methodology and IPR	--	2	0	0	40	60	2
6	2252110	Power System Lab - I	PCC	0	0	4	50	50	2
7	2252111	Power System Simulation Lab-I	PCC	0	0	4	50	50	2
8	---	Audit Course I	AC	2	0	0	40	00	00
Total				16	00	08	340	400	18

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Electronics Engineering
K. S. R. M. College of Engineering

II Semester

S. No.	Subject Code	SUBJECT	SC	L	T	P	IM	EM	CR
1	2252201	Power System Security and State Estimation	PCC	3	0	0	40	60	3
2	2252202	Power System Dynamics - II	PCC	3	0	0	40	60	3
		Professional Elective Course – III (PEC- III)							
3	2252203	Restructured Power Systems	PEC	3	0	0	40	60	3
	2252204	Energy Auditing and Management	PEC	3	0	0	40	60	3
	2252205	Electrical Machine Design	PEC	3	0	0	40	60	3
		Professional Elective Course – IV (PEC- IV)							
4	2252206	SCADA System and Applications	PEC	3	0	0	40	60	3
	2252207	Electrical Power Quality	PEC	3	0	0	40	60	3
	2252208	Power System Reliability	PEC	3	0	0	40	60	3
5	2252209	Technical Seminar	PCC	0	0	4	100	00	2
6	2252210	Power System Lab – II	PCC	0	0	4	50	50	2
7	2252211	Power System Simulation Lab-II	PCC	0	0	4	50	50	2
8	---	Audit Course II	AC	2	0	0	40	00	00
Total				14	00	12	340	340	18

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III - Semester

S. No.	Subject Code	SUBJECT	SC	L	T	P	IM	EM	CR
		Professional Elective Course – V (PEC- V)							
1	2252301	Power System Transients	PEC	3	0	0	40	60	3
	2252302	Industrial Load Modeling and Control	PEC	3	0	0	40	60	3
	2252303	Modern Control Theory	PEC	3	0	0	40	60	3
2		Open Elective (OEC)	OEC	3	0	0	40	60	3
3	2252307	Dissertation Phase - I	PR	0	0	20	100	00	10
4	2252308	Co-curricular Activity	R	0	0	0	--	--	2
Total				6	0	20	180	120	18

IV Semester

S. No.	Subject Code	SUBJECT	SC	L	T	P	IM	EM	CR
1	2252401	Dissertation Phase - II	PR	0	0	32	50	50	16
		Total		0	0	32	50	50	16

List Audit course

S. No.	Course Code	Course Name
		Audit course-I
1	2270A01	English for Research Paper Writing
2	2270A02	Disaster Management
3	2270A03	Sanskrit for Technical Knowledge
4	2270A04	Value Education
		Audit course-II
5	2270A05	Constitution of India
6	2270A06	Pedagogy Studies
7	2270A07	Stress Management by Yoga
8	2270A08	Personality Development through Life Enlightenment Skills

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List of Open Elective Courses offered to other branch students:

Course Codes	Course Name
22OE521	Internet of Things
22OE522	Programmable Logic Controller (PLC) & its Applications
22OE523	Power Electronics For Renewable Energy Systems

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DEPARTMENT OF MECHANICAL ENGINEERING

New Courses Offered Under R20UG Regulations, A.Y 2022-2023

FIFTH SEMESTER

Course Code	Course Title
2003502	Design of Machine Members
2003503	Metrology and Measurements
2003516	ANSYS (Skill oriented course– III)

PROFESSIONAL ELECTIVES

Course Code	Course Title
2003504	Alternative Fuels and Emission Control in Auto motives
2003505	Automation & Robotics
2003506	Tool Design
2003507	Power Plant Engineering
2003508	Non Destructive Testing (NDT)

OPEN ELECTIVES

Course Code	Course Title
20OE301	Introduction to Hybrid and Electric Vehicles
20OE302	Rapid Prototyping
20OE303	Design for Manufacturing and Assembly
20OE304	Energy systems engineering
20OE305	Smart Materials

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SIXTH SEMESTER

Course Code	Course Title
2003602	Finite Element Methods (FEM)
2003603	Introduction to CADCAM
2003609	Computer Aided Machining Laboratory
2003610	Computer Aided Drafting Laboratory
2003611	SOLID WORKS
20246S4	Soft skills lab (Skill Oriented Course)
20MC612	Management Organization Behavior

PROFESSIONAL ELECTIVES

Course Code	Course Title
2003604	Dynamics of machinery
2003605	Solar and Wind Energy Systems
2003606	Computational Fluid Dynamics (CFD)
2003607	Six Sigma and Lean manufacturing
2003608	Energy Auditing

OPEN ELECTIVES

Course Code	Course Title
20OE306	Automotive Electronics, Sensors & Drives
20OE307	Robotics and Applications in Manufacturing
20OE308	Sensors in Intelligent Manufacturing
20OE309	Non-Conventional sources of energy
20OE310	Supply Chain Management

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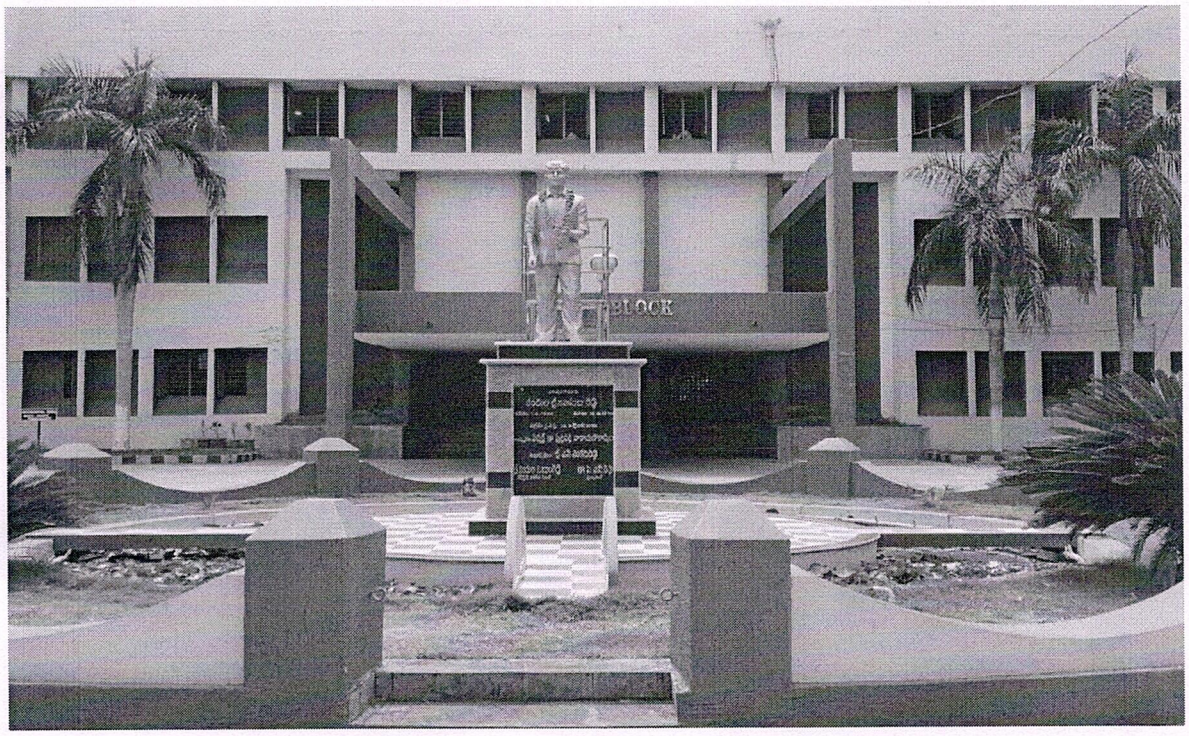
Regulations, Curriculum and Syllabus for

UG Programs in Engineering (R20UG)

(Effective from 2020-21 for Regular students and from 2021-22 for Lateral Entry students)

MECHANICAL ENGINEERING



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MECHANICAL ENGINEERING

Course Structure

I Semester

S.No	Subject Code	SUBJECT	SC	L	T	P	IM	EM	CR
1	2021101	Linear Algebra and Calculus	BS	3	0	0	40	60	3
2	2023102	Chemistry	BS	3	0	0	40	60	3
3	2005103	C-Programming & Data Structures	ES	3	0	0	40	60	3
4	2014104	Basic Electrical & Electronics Engineering	ES	3	0	0	40	60	3
5	20EW105	Engineering Workshop	ES	0	0	3	40	60	1.5
6	2005106	IT Workshop	ES	0	0	3	40	60	1.5
7	2023107	Chemistry Lab	BS	0	0	3	40	60	1.5
8	2005108	C-Programming & Data Structures Lab	ES	0	0	3	40	60	1.5
9	2014109	Basic Electrical & Electronics Engineering Lab	ES	0	0	3	40	60	1.5
Total				**12**	**0**	**15**	**360**	**540**	**19.5**

L - Lecture, T - Tutorial, P – Practical

II Semester

S.No	Subject Code	SUBJECT	SC	L	T	P	IM	EM	CR
1	2021201	Differential Equations and Vector Calculus	BS	3	0	0	40	60	3
2	20AP202	Applied Physics	BS	3	0	0	40	60	3
3	2024203	Communicative English	HS	3	0	0	40	60	3
4	2005204	Material Science	ES	3	0	0	40	60	3
5	2003205	Engineering Drawing	ES	1	0	2	40	60	2
6	2003206	Engineering Drawing Lab	ES	0	0	2	40	60	1
7	20AP207	Applied Physics Lab	BS	0	0	3	40	60	1.5
8	2024208	Communicative English Lab	HS	0	0	3	40	60	1.5
9	2005209	Material Science Lab	ES	0	0	3	40	60	1.5
10	20MC211	Universal Human Values	MC	3	0	0	30	00	0.0
Total				**16**	**0**	**13**	**390**	**540**	**19.5**

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III Semester

S.No	Subject Code	SUBJECT	SC	L	T	P	IM	EM	CR
1	2003301	Fundamentals of Statistics and Dynamics.	ES	3	0	0	40	60	3
2	2003302	Fluid Mechanics &Hydraulic Machinery	ES	3	0	0	40	60	3
3	2003303	Manufacturing processes	PC	3	0	0	40	60	3
4	2003304	Engineering Thermodynamics	PC	3	0	0	40	60	3
5	2003305	Mechanics of Materials	ES	3	0	0	40	60	3
6	2003306	Fluid Mechanics &Hydraulic Machinery Lab	ES	0	0	3	40	60	1.5
7	2003307	Manufacturing Technology Lab	PC	0	0	3	40	60	1.5
8	2003308	Mechanics of Materials Lab	ES	0	0	3	40	60	1.5
9	2003309	**Skill Oriented Course – I** CATIA	SC	1	0	2	40	60	2
10	20993M1	Environmental Science	MC	3	0	0	40	60	0
Total				**19**	**0**	**11**	**400**	**600**	**21.5**

IV Semester

S.No	Subject Code	SUBJECT	SC	L	T	P	IM	EM	CR
1	2021401	Numerical Methods &Probability	BS	3	0	0	40	60	3
2	2003402	Applied Thermodynamics	PC	3	0	0	40	60	3
3	2003403	Kinematics of Machines	PC	3	0	0	40	60	3
4	2003404	Machine tools	PC	3	0	0	40	60	3
5	2025405	**Humanities Elective- I** (Business Economics and Accounting for Engineers)	HS	3	0	0	40	60	3
6	2003406	Applied Thermodynamics lab	PC	0	0	3	40	60	1.5
7	2003407	Manufacturing Technology Lab-II	PC	0	0	3	40	60	1.5
8	2003408	Computer Aided Machine Drawing.	PC	0	0	3	40	60	1.5
9	2003409	**Skill Oriented Course – II** CNC Programming and simulation.	SC	1	0	2	40	60	2
Total				**16**	**0**	**11**	**360**	**540**	**21.5**

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V Semester

S.No	Subject Code	SUBJECT	SC	L	T	P	IM	EM	CR
1	2003501	Heat Transfer	PCC	3	0	0	40	60	3
2	2003502	Design of Machine Members	PCC	3	0	0	40	60	3
3	2003503	Metrology and Measurements	PCC	3	0	0	40	60	3
	Professional Elective Course -I								
4	2003504	Alternative Fuels and Emission Control in Auto motives	PEC-I	3	0	0	40	60	3
	2003505	Automation & Robotics							
	2003506	Tool Design							
	2003507	Power Plant Engineering							
	2003508	Non Destructive Testing (NDT)							
	Open Elective Course -I								
5	20OE301	Introduction to Hybrid and Electric Vehicles	OEC-I	3	0	0	40	60	3
	20OE302	Rapid Prototyping							
	20OE303	Design for Manufacturing and Assembly							
	20OE304	Energy Systems Engineering							
	20OE305	Smart Materials							
6	2003514	Metrology and Measurements Laboratory	PCC	0	0	3	40	60	1.5
7	2003515	Heat Transfer Laboratory	PCC	0	0	3	40	60	1.5
8	2003516	**(Skill oriented course– III)** ANSYS	SC	1	0	2	40	60	2
9	20MC509	Constitution of India	MC	2	0	0	40		
10	2003517	Socially Relevant Project	PROJ	0	0	0	100	00	1.5
		Total		**18**	**00**	**08**	**460**	**480**	**21.5**

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VI Semester

S.No	Subject Code	SUBJECT	SC	L	T	P	IM	EM	CR
1	2003601	Operations Research	PCC	3	0	0	40	60	3
2	2003602	Finite Element Methods (FEM)	PCC	3	0	0	40	60	3
3	2003603	Introduction to CADCAM	PCC	3	0	0	40	60	3
	Professional Elective Course –II (MOOCs)								
4	2003604	Dynamics of Machinery	PEC-II	3	0	0	40	60	3
	2003605	Solar and Wind Energy Systems							
	2003606	Computational Fluid Dynamics (CFD)							
	2003607	Six Sigma and Lean Manufacturing							
	2003608	Energy Auditing							
	Open Elective Course -II								
5	20OE306	Automotive Electronics, Sensors & Drives	OEC-II	3	0	0	40	60	3
	20OE307	Robotics and Applications in Manufacturing							
	20OE308	Sensors in Intelligent Manufacturing							
	20OE309	Non-Conventional Sources of Energy							
	20OE310	Supply Chain Management							
6	2003609	Computer Aided Machining Laboratory	PCC	3	0	0	40	00	1.5
7	2003610	Computer Aided Drafting Laboratory	PCC	0	0	3	40	60	1.5
8	2003611	Solid Works	PCC	0	0	3	40	60	1.5
9	20246S4	Soft skills lab **(Skill Oriented Course)**	SC	1	0	2	40	60	2
10	20MC612	Management Organization Behavior	MC	2	0	0	40		
		Total		**18**	**00**	**11**	**400**	**540**	**21.5**

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VII Semester

S.No	Subject Code	SUBJECT	SC	L	T	P	IM	EM	CR
Professional Elective Course -III									
1	2003701	Modern Manufacturing Methods	PEC-III	3	0	0	40	60	3
	2003702	Design for Manufacturing							
	2003703	Solar and Wind Energy Systems							
	2003704	Mechanical Behavior of Material's							
	2003705	Total Quality Management							
Professional Elective Course -IV									
2	2003706	Automobile Engineering	PEC-IV	3	0	0	40	60	3
	2003707	Additive Manufacturing							
	2003708	Mechanical Vibrations							
	2003709	Material Characterization							
	2003710	Production and Operations Management							
Professional Elective Course-V									
3	2003711	Vehicle Diagnosis and Control	PEC-V	3	0	0	40	60	3
	2003712	Mechatronics & MEMS							
	2003713	Design of Oil Hydraulics and Pneumatics							
	2003714	Refrigeration & Air conditioning							
	2003715	Geometric Dimension and Tolerances							
Open Elective Course -III									
4	20OE311	Entrepreneurship	OEC-III	3	0	0	40	60	3
	20OE312	Solar Energy Systems							
	20OE313	Internal Combustion Engine							
Open Elective Course -IV									
5	20OE314	Energy Auditing	OEC-IV	3	0	0	40	60	3
	20OE315	Sustainable Engineering							
	20OE316	Industrial Engineering & Management							
Humanities Elective course									
6	2006701	Human Resources and Development	HSS	3	0	0	40	60	3
	2006702	Digital Marketing							
	2006703	Project Management							
7	2003716	Internship	PROJ	0	0	0	100	--	3
8	20246SC	**Skill course –V** Advanced English Communication Skills	SC	1	0	2	40	60	2
		Total		**19**	**0**	**2**	**380**	**420**	**23**

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VIII Semester

S.No	Subject Code	SUBJECT	SC	L	T	P	IM	EM	CR
1	2003801	Full internship/project work	PROJ	0	0	0	40	60	12
		Total		**-**	**-**	**-**	**40**	**60**	**12**

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K.S.R.M. COLLEGE OF ENGINEERING

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Department of Mechanical Engineering

New courses Offered under R22PG

(AY 2022-2023)

Program: M. Tech. **Specialization: Renewable Energy**

First Semester

S. No.	Course code	Course Title
1	2299101	Advanced Thermodynamics and Fluid Mechanics
2	2299102	Introduction to Renewable Energy Systems
3	2299103	Hydrogen and Fuel Cell Technologies
4	2299104	Wind Energy Technology
5	2299105	Process Modeling and Simulation in Renewable Energy Systems
6	2299106	Energy Storage Technology
7	2299107	Energy Conversation by Waste Heat Recovery
8	2299108	Developing Energy Efficiency and Renewable Energy Projects
9	2299109	Fuels Lab
10	2299110	Solar Lab
11	2299111	Research Methodology & IPR

Second Semester

S. No.	Course code	Course Title
1	2299202	Computational Fluid Dynamics
2	2299203	Energy Storage Technology
3	2299204	Energy Conservation by Waste Heat Recovery
4	2299205	Developing Energy Efficiency and Renewable Energy Projects
5	2299207	Solar Energy Technology
6	2299209	Wind Energy Lab
7	2299210	Control Systems and Simulation Lab
8	2299211	Technical Seminar

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Dean Academics

ACADEMIC REGULATIONS (R22)

COURSE STRUCTURE AND DETAILED SYLLABUS

Department of Mechanical Engineering

MASTER OF TECHNOLOGY
IN
RENEWABLE ENERGY

For

M.Tech.- Regular Two Year Post Graduate Degree Programe

(Applicable for the batches admitted from 2022-23)

KANDULA SRINIVASA REDDY MEMORIAL COLLEGE OF ENGINEERING

(UGC-Autonomous)

Kadapa 516003, A.P

(Approved by AICTE, Affiliated to JNTUA, Ananthapuramu, Accredited by NAAC)

(An ISO 14001:2004 & 9001: 2015 Certified Institution)

E-mail: principal@ksrmce.ac.in **Website:** www.ksrmce.ac.in

M.Tech. (Renewable Energy)-R22 Course Structure

Annexure – 1 Curriculum
Renewable Energy (Mechanical Engineering)

M.Tech I Semester

S. No.	Course Codes	Course Name	Category	L	T	P	IM	EM	Credits
1	2299101	Advanced Thermodynamics and Fluid Mechanics	PCC	3	0	0	40	60	3
2	2299102	Introduction to Renewable Energy systems	PCC	3	0	0	40	60	3
3		**Program Elective Course – I**	PEC	3	0	0	40	60	3
	2299103	Hydrogen and Fuel Cell Technologies							
	2299104	Wind Energy Technology							
	2299105	Process Modeling and Simulation in Renewable Energy Systems							
4		**Program Elective Course – II**	PEC	3	0	0	40	60	3
	2299106	Energy Storage Technology							
	2299107	Energy Conservation by Waste Heat Recovery							
	2299108	Developing Energy Efficiency and Renewable Energy Projects							
5	2299109	Fuels lab	PCC	0	0	4	50	50	2
6	2299110	Solar lab	PCC	0	0	4	50	50	2
7	2299111	Research Methodology & IPR	-	2	0	0	40	60	2
8		**Audit Course – I**	Audit	2	0	0	40	0	0
				16	**0**	**8**	**340**	**400**	**18**

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M.Tech II Semester

S. No.	Course Codes	Course Name	Category	L	T	P	IM	EM	Credits
1	2299201	Energy Audit and Management	PCC	3	0	0	40	60	3
2	2299202	Computational Fluid Dynamics	PCC	3	0	0	40	60	3
3	**Program Elective Course – III**		PEC	3	0	0	40	60	3
	2299203	Energy Storage Technology							
	2299204	Energy Conservation by Waste Heat Recovery							
	2299205	Developing Energy Efficiency and Renewable Energy Projects							
4	**Program Elective Course – IV**		PEC	3	0	0	40	60	3
	2299206	Hydrogen and Fuel Cell Technologies							
	2299207	Solar Energy Technology							
	2299208	Process Modeling and Simulation in Renewable Energy Systems							
5	2299209	Wind energy lab	PCC	0	0	4	50	50	2
6	2299210	Control systems and simulation lab	PCC	0	0	4	50	50	2
7	2299211	Technical Seminar	-	0	0	4	100	0	2
8	**Audit Course – II**		Audit	2	0	0	40		0
				14	**0**	**12**	**400**	**340**	**18**

M.Tech III Semester

S. No.	Course Codes	Course Name	Category	L	T	P	IM	EM	Credits
1	**Program Elective Course – V**		PEC	3	0	0	40	60	3
	2299301	Economics and Financing of Renewable Energy Systems							
	2299302	Environmental Engineering and Pollution Control							
	2299303	Fuels and Combustion Technology							
2	**Open Elective**		OEC	3	0	0	40	60	3
3	2299307	Dissertation Phase – 1	Project	0	0	20	100	0	10
4	2299308	Co-Curricular Activities		0	0	0	0	0	2
				6	**0**	**20**	**180**	**120**	**18**

M.Tech IV Semester

S. No.	Course Codes	Course Name	Category	L	T	P	IM	EM	Credits
1	2212401	Dissertation Phase – 2	Project	0	0	32	50	50	16
				0	**0**	**32**	**50**	**50**	**16**

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Audit Courses

S.No	Course Codes	Course Name
1	2270A01	English for Research Paper Writing
2	2270A02	Disaster Management
3	2270A03	Sanskrit for Technical Knowledge
4	2270A04	Value Education
5	2270A05	Constitution of India
6	2270A06	Pedagogy Studies
7	2270A07	Stress Management by Yoga
8	2270A08	Personality Development through Life Enlightenment Skills

Open Elective Courses

S.No	Course Codes	Course Name
1	22OE991	Electric Vehicle Technology
2	22OE992	Operations Research
3	22OE993	Composite Materials

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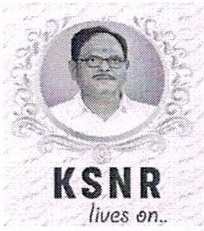

New courses Offered under R18PG

(AY 2022-2023)

Program: M. Tech. **Specialization: Renewable Energy**

Third Semester

Sl. No.	Course code	Course Title
1	1899301	Fuels and Combustion Technology
2	1899302	Environmental Engineering and Pollution Control
3	1899303	Economics and Financing of Renewable Energy Systems
4	1871304	Business Analytics
5	1871305	Industrial Safety
6	1871306	Operations Research
7	1871307	Cost Management of Engineering Projects
8	1871308	Composite Materials
9	1871309	Waste to Energy
10	1899309	Dissertation Phase-I

Fourth Semester

Sl. No.	Course code	Course Title
1	1899401	Major Project

HoD

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ACADEMIC REGULATIONS (R18)
COURSE STRUCTURE AND DETAILED SYLLABUS
Department of Mechanical Engineering

MASTER OF TECHNOLOGY
IN
RENEWABLE ENERGY

For

M.Tech.- Regular Two Year Post Graduate Degree Programe
(Applicable for the batches admitted from 2021-22)

KANDULA SRINIVASA REDDY MEMORIAL COLLEGE OF ENGINEERING
(UGC-Autonomous)
Kadapa 516003, A.P

(Approved by AICTE, Affiliated to JNTUA, Ananthapuramu, Accredited by NAAC)

(An ISO 14001:2004 & 9001: 2015 Certified Institution)

E-mail: principal@ksrmce.ac.in **Website: www.ksrmce.ac.in**

M.Tech. (Renewable Energy)-R18 Course Structure

M.Tech SEMESTER-I

Course Code	Core/Elective	Course Title	L	T	P	IM	EM	CR
1825101	Core	Advanced Mathematics	3	0	0	40	60	2
1899102	Core	Advanced Thermodynamics and Fluid Mechanics	3	0	0	40	60	3
1899103	Core	Introduction to Renewable Energy systems	3	0	0	40	60	3
1899104	PEC-1	1.Measurement and Control For Energy Systems	3	0	0	40	60	3
1899105		2.Solar Energy Technologies						
1899106		3.Power Generation, Distribution and Transmission						
1899107	PEC- 2	1.Bio-Energy and Biofuels	3	0	0	40	60	3
1899108		2.Advanced Power Plant Engineering						
1899109		3.Solar Refrigeration and Air Conditioning						
1899110	Core	Research Methodology & IPR	2	0	0	40	60	2
1899111	Core	Seminar/Industrial Visit	0	0	4	40	60	2
		Audit course- I	2	0	0	40		0
		Total	**17**	**0**	**20**	**340**	**400**	**18**

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M.Tech SEMESTER-II

Course Code	Core/Elective	Course Title	L	T	P	IM	EM	CR
1899201	Core	Energy Audit and Management	3	0	0	40	60	3
1899202	Core	Computational Fluid Dynamics	3	0	0	40	60	3
1899203	PEC- 3	1.Hydrogen and Fuel Cell Technologies	3	0	0	40	60	3
1899204		2.Wind Energy Technology						
1899205		3.Process Modeling and Simulation in Renewable Energy Systems						
1899206	PEC- 4	1.Energy Storage Technology	3	0	0	40	60	3
1899207		2.Energy Conservation by Waste Heat Recovery						
1899208		3.Developing Energy Efficiency and Renewable Energy Projects						
1899209	Core	Mini-project	0	0	20	100	50	3
1899210	Core	Energy Laboratory	0	0	4	50	50	3
		Audit Course-II						
		Total	**12**	**0**	**24**	**360**	**340**	**18**

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M.Tech SEMESTER-III

Course Code	Core/Elective	Course Title	L	T	P	IM	EM	CR
1899301	PEC- 5	1.Fuels and Combustion Technology	3	0	0	40	60	3
1899302		2.Environmental Engineering and Pollution Control						
1899303		3.Economics and Financing of Renewable Energy Systems						
Open Elective			3	0	0	40	60	3
1899309	Core	Dissertation Phase-I	0	0	20	100		10
		Total	**6**	**0**	**20**	**180**	**120**	**16**

M.Tech SEMESTER-IV

Course Code	Core/Elective	Course Title	L	T	P	IM	EM	CR
1899401	Major Project	Dissertation Phase-II	0	0	32	50	50	16
		Total	**0**	**0**	**32**	**50**	**50**	**16**

AUDIT COURSES

S.No	Course Code	Course Title
1	1870A01	English for Research Paper Writing
2	1870A02	Disaster Management
3	1870A03	Sanskrit for Technical Knowledge
4	1870A04	Value Education
5	1870A05	Constitution of India
6	1870A06	Pedagogy Studies
7	1870A07	Stress Management by Yoga
8	1870A08	Personality Development through Life Enlightenment Skills

OPEN ELECTIVES

S.No	Course Code	Course Title
1	1871304	Business Analytics
2	1871305	Industrial Safety
3	1871306	Operations Research
4	1871307	Cost Management of Engineering Projects
5	1871308	Composite Materials
6	1871309	Waste to Energy

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Department of Electronics & Communication Engineering

New Course Offered under R20UG Regulations

AY 2022-2023

R20UG- V Semester

S.NO	Subject Code	Name of the subject
1	2004501	Embedded systems and IoT
2	2004502	Communication Systems
3	2004505	Computer Architecture and Organization
4	2004511	Embedded systems and IoT lab
5	20SC508	Introduction to Machine learning using Python

R20UG- VI Semester

S.NO	Subject Code	Name of the subject
1	2004604	CMOS VLSI Design
2	2004606	Sensors and Actuators
3	2004609	VLSI Design Laboratory

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Dean Academics

Regulations for UG Program in Engineering (R20UG)

(Effective from 2020-21 for regular students and lateral entry students)

B. Tech. (R20) Syllabus
Electronics & communication Engineering

Kandula Srinivasa Reddy Memorial College of Engineering

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COURSE STRUCTURE – R20 REGULATIONS

Department of ECE

Induction Program – 3 weeks

			Semester-I						
S.No	**Code**	**Course Name**	**Category**	**L**	**T**	**P**	**IM**	**E**	**Credit**
1.	2021101	Linear Algebra and Calculus	BSC	3	0	0	40	60	3
2.	20AP102	Applied Physics	BSC	3	0	0	40	60	3
3.	2024103	Communicative English	HSC	3	0	0	40	60	3
4.	2002104	Fundamentals of ElectricalEngineering	ESC	3	0	0	40	60	3
5.	2003105	Engineering Drawing	ESC	1	0	2	40	60	2
6.	2003106	Engineering Drawing Lab	ESC	0	0	2	40	60	1
7.	20AP107	Applied Physics Lab	BSC	0	0	3	40	60	1.5
8.	2024108	Communicative English Lab	HSC	0	0	3	40	60	1.5
9.	2002109	Fundamentals of ElectricalEngineering Lab	ESC	0	0	3	40	60	1.5
Total									**19.5**

			Semester-II						
S.No.	**Code**	**Course Name**	**Categor**	**L**	**T**	**P**	**IM**	**E**	**Credit**
1.	2021201	Differential Equations and Vector Calculus	BSC	3	0	0	40	60	3
2.	2023202	Chemistry	BSC	3	0	0	40	60	3
3.	2005203	C-Programming & DataStructures	ESC	3	0	0	40	60	3
4.	2004204	Electronic Devices & Circuits	ESC	3	0	0	40	60	3

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5.	20EW205	Engineering Workshop	LC	0	0	3	40	60	1.5
6.	2005206	IT Workshop	LC	0	0	3	40	60	1.5
7.	2023207	Chemistry Lab	BSC	0	0	3	40	60	1.5
8.	2005208	C-Programming & DataStructures Lab	ESC	0	0	3	40	60	1.5
9.	2004209	Electronic Devices & CircuitsLab	ESC	0	0	3	40	60	1.5
10	20MC210	Environmental Science	MC	3	0	0	40	0	0
Total									**19.5**

Proposed Course Structure (R20) – II Year

Semester-III									
S.No	**Code**	**Course Name**	**Category**	**L**	T	**P**	**IM**	**EM**	**Credit**
1.	2021301	Special Functions and Complex Analysis	BSC	3	0	0	40	60	3
2.	2004301	Signals and Systems	PC	3	0	0	40	60	3
3.	2004302	Digital System Design	PC	3	0	0	40	60	3
4.	2004303	Analog Circuits	PC	3	0	0	40	60	3
5.	2004304	Network Theory	PC	3	0	0	40	60	3
6.	2004305	Simulation Lab	PC	0	0	3	40	60	1.5
7.	2004306	Digital System Design Lab	PC	0	0	3	40	60	1.5
8.	2004307	Analog Circuits Lab	PC	0	0	3	40	60	1.5
9.	20SC308	Python Programming (Skilled Course - I)	SC	1	0	2	40	60	2
10.	20MC309	Universal Human Values	MC	3	0	0	40	60	3
Total									**24.5**

Semester-IV									
S.No	**Code**	**Course Name**	**Category**	**L**	T	**P**	**IM**	**EM**	**Credits**
1.	2025401	Business Economics and Accounting for	HSC	3	0	0	40	60	3
2.	2021403	Probability Theory & Stochastic Processes	PC	3	0	0	40	60	3

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3.	2004403	Microprocessors and Microcontrollers	PC	3	0	0	40	60	3
4.	2004404	EM Waves and Transmission Lines	PC	3	0	0	40	60	3
5.	2004405	Linear and Digital IC Applications	PC	3	0	0	40	60	3
6.	2004406	Linear and Digital IC Applications Lab	PC	0	0	3	40	60	1.5
7.	2004407	Microprocessors and Microcontrollers Lab	PC	0	0	3	40	60	1.5
8.	2004408	LabView Programming Lab	PC	0	0	3	40	60	1.5
9.	20SC409	PCB Design (Skilled Course –II)	SC	1	0	2	40	60	2
Total									**21.5**
		Community Service Project(Mandatory) for 6 weeks duration during summer vacation							

Proposed Course Structure (R20) – V Year

Semester-V									
S.No.	**Code**	**Course Name**	**Category**	**L**	**T**	**P**	**IM**	**EM**	**Credits**
1.	2004501	Embedded systems and IoT	ES	3	0	0	40	60	3
2.	2004502	Communication Systems	PC	3	0	0	40	60	3
3.	2004503	Antennas and Wave Propagation	PC	3	0	0	40	60	3
4.	2004504	**Professional Elective-I** Electronic Measurements and Instrumentation	PE	3	0	0	40	60	3
	2004505	Computer Architecture and Organization	PE	3	0	0	40	60	3
	2004506	Optical Communication	PE	3	0	0	40	60	3
5.	2004507	**Job oriented elective – I** Real Time Operating Systems	OE	2	0	2	40	60	3
	2004508	Data base management	OE	2	0	2	40	60	3
	2004509	Big data Analytics	OE	2	0	2	40	60	3
6.	2004510	Communication Systems Lab	PC	0	0	3	40	60	1.5
7.	2004511	Embedded systems and IoT lab	ES	0	0	3	40	60	1.5

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9.	20SC508	Introduction to Machine learning using Python (Skill oriented course – III)	SC	1	0	2	40	60	2
10.	20MC509	Management Organizational behavior	MC	3	0	0	40		0
11.	2004510	Evaluation of Community Service Project	PR				100		1.5
Total									**21.5**

							Semester-VI		
S.No	**Code**	**Course Name**	**Category**	**L**	**T**	**P**	**IM**	**EM**	**Credits**
1.	2004601	Digital Signal Processing(DSP)	PC	3	0	0	40	60	3
2.	2004602	Microwave Engineering	PC	3	0	0	40	60	3
3.	2004603	Control Systems	PC	3	0	0	40	60	3
4.	2004604	**Professional Elective Course - II** CMOS VLSI Design	PE	3	0	0	40	60	3
	2004605	Information Theory & Coding	PE	3	0	0	40	60	3
	2004606	Sensors and Actuators	PE	3	0	0	40	60	3
5.	2006601	**Humanities Elective** Human Resource Development	HS	3	0	0	40	60	3
	2006602	Digital Marketing	HS	3	0	0	40	60	3
	2006603	Project Management	HS	3	0	0	40	60	3
6.	2004607	DSP Lab	PC	0	0	3	40	60	1.5
7.	2004608	Microwave & Fiber Optic* Communication Lab	PC	0	0	3	40	60	1.5
8.	2004609	VLSI Design Laboratory	PC	0	0	3	40	60	1.5

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9.	20SC610	Advanced English Communications **(Skill Oriented Course – IV)**	SC	1	0	2	40	60	2
10.	20MC611	Constitution of India	MC	2	0	0	40		0
Total									**21.5**
		Industry Internship (Mandatory) for 6 - 8 weeks duration during summer							

Proposed Course Structure (R20) – IV Year

			Semester-VII						
S.No.	**Code**	**Course Name**	**Category**	**L**	**T**	**P**	**IM**	**EM**	**Credits**
1.	2004701	**Professional Elective Course – III** Nano Electronics	PE	3	0	0	40	60	3
	2004702	Digital Image and Video Processing							
	2004703	MEMS							
2.	2004704	**Professional Elective Course – IV** Wireless Communication	PE	3	0	0	40	60	3
	2004705	DSP Processors and Architectures							
	2004706	RF System Design							
3.	2004707	**Professional Elective Course – V** Low Power VLSI	PE	3	0	0	40	60	3
	2004708	Biomedical Instrumentation							
	2004709	RADAR and Satellite Communication							
4.		**Open Elective-I**	OE	3	0	0	40	60	3
5.		**Open elective – II**	OE	3	0	0	40	60	3
6.	2004710	**Job oriented elective – II** Pattern Recognition	OE	3	0	0	40	60	3
	2004711	Advanced Computer Networks							
	2004712	Robotic Process Automation							

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7.	20MC713	Mobile Application Development (**Skill oriented course – V**)	SC	1	0	2	40	60	2
8.	2004714	Evaluation of Industry Internship	PR				100		3
Total									**23**

			Semester-VIII				
S.No	**Code**	**Course Name**	**Category**	**L-T-P**	**IM**	**EM**	**Credits**
1.	2004801	Full Internship / Project work	PR	-	40	60	12
Total							**12**

Distribution of Credits

Course Category	**Credits as per AICTE**	**Credits planned by JNTUA as per APSCHE guidelines**
Humanities and Social Sciences including Management courses (HS)	12	13.5
Basic Science courses (BS)	25	21
Engineering Science courses including workshop, drawing, basics of electrical / mechanical /computer etc (ES)	24	24
Professional Core Courses (PC)	48	51
Professional Elective courses relevant to chosen specialization /branch (PE)	18	15
Open Elective Courses - Subjects from other technical and /or emerging subjects (OE)	18	12
Skill Courses (SC)	-	10
Project Work & Internship (Full Internship & Summer Internships (Community Service/Industry) (PR)	15	16.5
Mandatory Courses (MC)	Non-credit	Non-credit
TOTAL	**160**	**163**

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Department of Electronics & Communication Engineering

(M. Tech Embedded Systems and VLSI Course Structure)

New Course Offered under R22PG -Regulations

AY 2022-2023

R22PG -I Semester

S.NO	Subject Code	Name of the subject
1	2284105	Digital Signal and Image Processing
2	2284110	CAD of Digital System
3	2284111	CPLD, FPGA Architectures and Applications.

R22PG- II Semester

S.NO	Subject Code	Name of the subject
1	2284203	Memory Architectures
2	2284204	Advanced Computer Architecture
3	2284207	Communication Buses and Interfaces
4	2284209	Physical design automation

HoD ECE

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Dean Academics

Regulations for UG Program in Engineering (R20UG)

(Effective from 2020-21 for regular students and lateral entry students)

B. Tech. (R20) Syllabus
Electronics & communication Engineering

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Department of ECE
M.Tech Embedded Systems and VLSI Course Structure

Semester-I									
S.No	Course Code	Course Name	Category	L	T	P	IM	EM	Credits
1.	2284101	RTL Simulation and Synthesis With PLDs	PCC	3	0	0	40	60	3
2.	2284102	Microcontrollers and Programmable Digital Signal Processors	PCC	3	0	0	40	60	3
3.	2284103	Research methodology and IPR	-	2	0	0	40	60	2
	Professional Elective Course-I								
4.	2284104 2284105 2284106 2284107	Parallel Processing Digital Signal and Image Processing VLSI Signal Processing Design for testability	PEC	3	0	0	40	60	3
	Professional Elective Course-II								
5.	2284108 2284109 2284110 2284111	Programming Languages for Embedded Systems Micro-Electro Mechanical systems. CAD of Digital System CPLD, FPGA Architectures and Applications.	PEC	3	0	0	40	60	3
6.	2284112	RTL Simulation and Synthesis with PLDs Lab	PCC	0	0	4	50	50	2
7.	2284113	Microcontrollers and Programmable Digital Signal Processors Lab	PCC	0	0	4	50	50	2
8.	2270Axx	Audit Course – I	AC	2	0	0	40	0	0
									18

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Semester-II									
S.No.	Course Code	Course Name	Category	L	T	P	IM	EM	Credits
1.	2284201	Analog and Digital CMOSVLSI Design	PCC	3	0	0	40	60	3
2.	2284202	Embedded and Real Time Operating Systems	PCC	3	0	0	40	60	3
	Professional Elective Course-III								
3.	2284203 2284204 2284205 2284206	Memory Architectures Advanced Computer Architecture SoC Design Low Power VLSI Design	PEC	3	0	0	40	60	3
	Professional Elective Course-IV								
4.	2284207 2284208 2284209 2284210	Communication Buses and Interfaces Network Security andCryptography Physical design automation Nano Electronics	PEC	3	0	0	40	60	3
5.	2284211	Analog and Digital CMOSVLSI Design Lab	PCC	0	0	4	50	50	2
6.	2284212	Real Time Operating Systems Lab	PCC	0	0	4	50	50	2
7.	2284213	Technical Seminar	PCC	0	0	4	100	0	2
8.	2270Axx	Audit Course – II	AC	2	0	0	40	0	0
									18

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Semester-III									
S.No.	Course Code	Course Name	Category	L	T	P	IM	EM	Credits
		Professional Elective Course-V							
1.	2284301 2284302 2284303 2284304	IOT and its Applications Hardware Software co-design Artificial Intelligence RFIC Design	PEC	3	0	0	40	60	3
2		Open Elective Course	OEC	3	0	0	40	60	3
3	2284311	Dissertation Phase-I	Project	0	0	20	100	0	10
4	2254312	Co-Curricular activities		0	0	0	0	0	2
									18

Semester-IV									
S.No.	Course Code	Course Name	Category	L	T	P	IM	EM	Credits
1.	2284401	Dissertation Phase II	Project	0	0	32	50	50	16
									16

List of Audit Courses offered:

Course Codes	Course Name
2270A01	English for Research Paper Writing
2270A02	Disaster Management
2270A03	Sanskrit for Technical Knowledge
2270A04	Value Education
2270A05	Constitution of India
2270A06	Pedagogy Studies
1870A07	Stress Management by Yoga
1870A08	Personality Development through Life Enlightenment Skills

List of Open Elective Courses offered to other branch students:

Course Codes	Course Name
22OE841	Nano Electronics
22OE842	Introduction to VLSI
22OE843	Introduction to IoT

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Department of Electronics & Communication Engineering

(M. Tech Embedded Systems and VLSI Course Structure)

New Course Offered under R18PG Regulations

A.Y 2022-2023

R18PG- III Semester

S.NO	Subject code	Name of the subject
1	1884301	IOT and its Applications
2	1884302	Hardware Software co-design
3	1884303	Artificial Intelligence
4	1884304	RFIC Design
5	1871305	Business Analytics(OE)
6	1871306	Industrial Safety(OE)
7	1871307	Operations research(OE)
8	1871308	Composite materials(OE)
9	1871309	Cost Management of Engineering Projects(OE)
10	1871310	Waste to Energy(OE)
11	1884311	Dissertation Phase -I

R18PG- IV Semester

S.NO	Subject code	Name of the subject
1	1884401	Dissertation Phase II

HoD

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K.S.R.M. COLLEGE OF ENGINEERING
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Department of ECE
M. Tech Embedded Systems and VLSI Course Structure

Semester-I									
S.No	**Course Code**	**Course Name**	**Category**	**L**	**T**	**P**	**IM**	**EM**	**Credits**
1.	1884101	RTL Simulation and Synthesis with PLDs	PC	3	0	0	40	60	3
2.	1884102	Microcontrollers and Programmable Digital Signal Processors	PC	3	0	0	40	60	3
3.	1884103	Research methodology and IPR	PC	2	0	0	40	60	2
4.	1884104 1884105 1884106 1884107	1. Parallel Processing 2. Digital Signal and Image Processing 3. VLSI signal processing 4. Design for testability	PE	3	0	0	40	60	3
5.	1884108 1884109 1884110 1884111	1. Programming Languages for Embedded Systems. 2. Micro-Electro Mechanical systems. 3. CAD of Digital System 4. CPLD, FPGA architectures and applications.	PE	3	0	0	40	60	3
6.	1884112	RTL Simulation and Synthesis with PLDs Lab	PC	0	0	4	50	50	2
7.	1884113	Microcontrollers and Programmable Digital Signal Processors Lab	PC	0	0	4	50	50	2
8.	1870A02	Disaster Management	AC				40		0
									18

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Semester-II									
S.No.	**Course Code**	**Course Name**	**Category**	**L**	**T**	**P**	**IM**	**EM**	**Credits**
1.	1884201	Analog and Digital CMOS VLSI Design	PC	3	0	0	40	60	3
2.	1884202	Real Time Operating Systems	PC	3	0	0	40	60	3
3.	1884203 1884204 1884205 1884206	1. Memory Architectures 2. Advanced Computer Architecture 3. SoC Design 4. Low power VLSI Design	PE	3	0	0	40	60	3
4.	1884207 1884208 1884209 1884210	1. Communication Buses and Interfaces 2. Network Security and Cryptography 3. Physical design automation 4. Nanoelectronics	PE	3	0	0	40	60	3
5.	1884211	Analog and Digital CMOS VLSI Design Lab	PC	0	0	4	50	50	2
6.	1884212	Real Time Operating Systems Lab	PC	0	0	4	50	50	2
7.	1884213	Mini Project	PC	0	0	4	100	0	2
8.	1870A01	English for Research paper writing	AC				40		0
									18

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Semester-III									
S.No.	Course Code	Course Name	Category	L	T	P	IM	EM	Credits
1.	1884301 1884302 1884303 1884304	1.IOT and its Applications 2. Hardware Software co-design 3.Artificial Intelligence 4. RFIC Design	PE	3	0	0	40	60	3
2.		OPEN ELECTIVE							
3.	1884311	Dissertation Phase -I	Major Project	0	0	20	100	0	10
									16

Semester-IV									
S.No.	Course Code	Course Name	Category	L	T	P	IM	EM	Credits
1.	1884401	Dissertation Phase II	Major Project	0	0	32	50	50	Dissertation Phase II
									16

Open Elective

S.No.	Course Code	Course Name	Category	L	T	P	IM	EM	Credits
1	1871305	Business Analytics	OE	3	0	0	40	60	3
2	1871306	Industrial Safety							
3	1871307	Operations research							
4	1871308	Composite materials							
5	1871309	Cost Management of Engineering Projects							
6	1871310	Waste to Energy							

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Department of Computer Science & Engineering
New Courses Offered under R20UG Regulations, AY 2022-23

R20UG – V Semester

S.no	Course Code	Course Title
1	20OE501	Data Structures (OEC-I)
2	20OE502	Database Management Systems (OEC-I)
3	2005504	Web Technologies (PEC-I)
4	2005507	DAA Lab
5	2005508	Professional Elective Course -I Lab
6	2005510	Community Service Project

R20UG – VI Semester

S.no	Course Code	Course Title
1	2005603	Cryptography & Network Security
2	20OE503	Java Programming (OEC-II)
3	20OE504	Web Designing (OEC-II)
4	2005606	Adhoc & Sensor Networks (PEC-II)
5	2005608	Data Mining Lab
6	2005609	Network Security Lab
7	2005610	Mobile Application Development (Skill Oriented Course)

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UG Programs in Engineering (R20UG)
Curriculum and Syllabus for

I - VIII Sem B.Tech

Department of Computer Science and Engineering

Kandula Srinivasa Reddy Memorial College of Engineering (Autonomous)
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Semester-0(Theory-8, Lab-7) Induction Program

S.No.	Course Name	Category	L	T	P	C
1	Physical Activities-Sports, Yoga & Meditation, plantation	MC	0	0	6	0
2	Career Counseling	MC	2	0	2	0
3	Orientation to all branches-career options, tools etc.	ESC	3	0	0	0
4	Orientation on admitted branch-corresponding labs, tools & platforms	EC	2	0	3	0
5	Proficiency Modules & Productivity Tools	ES	2	1	2	0
6	Assessment on basic aptitude and mathematical skills	MC	2	0	3	0
7	Remedial Training in foundation courses	MC	2	1	2	0
8	Human values & Professional ethics	MC	3	0	0	0
9	Communication skills-focus on listening, speaking, reading, writing skills	BS	2	1	2	0
10	Concepts of programming	ES	2	0	2	0

L-Lecture, T-Tutorial, P-Practical

I Semester (Theory– 5, Labs–04)

S.No.	Subject Code	SUBJECT	SC	L	T	P	IM	EM	CR
1	2021101	Linear Algebra and Calculus	BSC	3	0	0	40	60	3
2	2023102	Chemistry	BSC	3	0	0	40	60	3
3	2005103	C-Programming & Data Structure	ESC	3	0	0	40	60	3
4	2014104	Basic Electrical & Electronics Engineering	ESC	3	0	0	40	60	3
5	20EW105	Engineering Workshop	ESC	0	0	3	40	60	1.5
6	2005106	IT Workshop	ESC	0	0	3	40	60	1.5
7	2023107	Chemistry Lab	BSC	0	0	3	40	60	1.5
8	2005108	C-Programming & Data Structures Lab	ESC	0	0	3	40	60	1.5
9	2014109	Basic Electrical & Electronics Engineering Lab	ESC	0	0	3	40	60	1.5
Total				**12**	**00**	**15**	**360**	**540**	**19.5**

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II Semester (Theory–05, Lab–04)

S.No.	Subject Code	SUBJECT	SC	L	T	P	IM	EM	CR
1	2021201	Differential Equations & Vector Calculus	BSC	3	0	0	40	60	3
2	20AP202	Applied Physics	BSC	3	0	0	40	60	3
3	2024203	Communicative English	HS MC	3	0	0	40	60	3
4	2005204	Python Programming	ESC	3	0	0	40	60	3
5	2003205	Engineering Drawing	ESC	1	0	2	40	60	2
6	2003206	Engineering Drawing Lab	ESC	0	0	2	40	60	1
7	20AP207	Applied Physics Lab	BSC	0	0	3	40	60	1.5
8	2024208	Communicative English Lab	HS MC	0	0	3	40	60	1.5
9	2005209	Python Programming Lab	ESC	0	0	3	40	60	1.5
10	20MC210	Environmental Science	MC	3	0	0	40	00	0.0
Total				**16**	**00**	**13**	**390**	**540**	**19.5**

III Semester (Theory-05, Lab-03)

S.No.	Subject Code	SUBJECT	SC	L	T	P	IM	E M	CR
1	2024301	Business Economics and Accounting for Engineers	HSM C	3	0	0	40	60	3
2	2005302	Advanced Data Structures	PCC	3	0	0	40	60	3
3	2005303	Formal Languages & Automata Theory	PCC	3	0	0	40	60	3
4	2005304	Object Oriented Programming through JAVA	PCC	3	0	0	40	60	3
5	2005305	Data Base Management Systems	PCC	3	0	0	40	60	3
6	2005306	Advanced Data Structures Lab	PCC	0	0	3	40	60	1.5
7	2005307	JAVA Lab	PCC	0	0	3	40	60	1.5
8	2005308	Data Base Management Systems Lab	PCC	0	0	3	40	60	1.5
9	2005309	Skill Oriented Course Exploring Data Analysis with R/ NASSCOM Courses	SC	0	0	4	40	60	2.0
Total				**15**	**00**	**13**	**400**	**540**	**21.5**

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IV Semester (Theory-05, Lab-03)

S.No.	Subject Code	SUBJECT	SC	L	T	P	IM	EM	CR
1	2005401	Principles of Operating Systems	PCC	3	0	0	40	60	3
2	2005402	Computer Organization	PCC	3	0	0	40	60	3
3	2004403	Microprocessors & Microcontrollers	ESC	3	0	0	40	60	3
4	2005404	Digital Logic Circuits & Design	PCC	3	0	0	40	60	3
5	2021405	Probability Theory & Statistical Methods	BSC	3	0	0	40	60	3
6	2014406	Microprocessors & Microcontrollers Lab	ESC	0	0	3	40	60	1.5
7	2005407	Principles of Operating Systems Lab	PCC	0	0	3	40	60	1.5
8	2005408	Digital Logic Design Lab	PCC	0	0	3	40	60	1.5
9	2005409	Skill Oriented Course Advanced Python Programming/ NASSCOM Courses	SC	0	0	4	40	60	2.0
10	2024410	Universal Human Values	HSMC	3	0	0	40	60	3.0
Total				**18**	**00**	**13**	**400**	**600**	**24.5**

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V Semester (Theory-05, Lab-02)

S.No.	Subject Code	SUBJECT	SC	L	T	P	IM	EM	CR
1	2005501	Software Engineering	PCC	3	0	0	40	60	3
2	2005502	Design and Analysis of Algorithms	PCC	3	0	0	40	60	3
3	2005503	Computer Networks	PCC	3	0	0	40	60	3
		Open Elective Course-I(OEC-I)							
4	20OE501	Data Structures	OEC	3	0	0	40	60	3
	20OE502	Database Management Systems	OEC	3	0	0	40	60	3
		Professional Elective Course –I (PEC-I)							
5	2005504	Web Technologies	PEC	3	0	0	40	60	3
	2005505	Multimedia Systems	PEC	3	0	0	40	60	3
	2005506	Distributed Systems	PEC	3	0	0	40	60	3
6	2005507	DAA Lab	PCC	0	0	3	40	60	1.5
7	2005508	Professional Elective Course -I Lab	PCC	0	0	3	40	60	1.5
8	20245SC	Soft Skill Oriented Course Advanced English & Communication Lab/Professional Communication Lab	SC	0	0	4	40	60	2.0
9	2005510	Community Service Project	PROJ	0	0	0	100		1.5
10	20MC509	Constitution of India	MC	2	0	0	40	00	00
Total				**17**	**00**	**10**	**420**	**480**	**21.5**

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VI Semester (Theory-05, Lab-03)

S.No.	Subject Code	SUBJECT	SC	L	T	P	IM	E M	CR
1	2005601	Internet of Things	PCC	3	0	0	40	60	3
2	2005602	Data Mining	PCC	3	0	0	40	60	3
3	2005603	Cryptography & Network Security	PCC	3	0	0	40	60	3
		Open Elective Course -II(OEC-II)							
4	20OE503	Java Programming	OEC	3	0	0	40	60	3
	20OE504	Web Designing	OEC	3	0	0	40	60	3
		Professional Elective Course – II (PEC-II)							
5	2005604	Artificial Intelligence	PEC	3	0	0	40	60	3
	2005605	Software Testing	PEC	3	0	0	40	60	3
	2005606	Adhoc & Sensor Networks	PEC	3	0	0	40	60	3
6	2005607	IOT Lab	PCC	0	0	3	40	60	1.5
7	2005608	Data Mining Lab	PCC	0	0	3	40	60	1.5
8	2005609	Network Security Lab	PCC	0	0	3	40	60	1.5
9	2005610	Skill Oriented Course Mobile Application Development/ NASSCOM Courses	SC	0	0	4	40	60	2.0
10	20MC612	Management Organizational Behavior	MC	2	0	0	40	00	00
Total				**17**	**00**	**13**	**440**	**540**	**21.5**

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VII Semester (Theory-06)

S.No.	Subject Code	SUBJECT	SC	L	T	P	IM	EM	CR
		Professional Elective Course-III (PEC-III)							
1	2005701	Compiler Design	PEC	3	0	0	40	60	3
	2005702	Computer Graphics	PEC	3	0	0	40	60	3
	2005703	Cyber Security	PEC	3	0	0	40	60	3
		Professional Elective Course-IV (PEC-IV)							
2	2005704	Machine Learning	PEC	3	0	0	40	60	3
	2005705	Object Oriented Analysis & Design	PEC	3	0	0	40	60	3
	2005706	Natural Language Processing	PEC	3	0	0	40	60	3
		Professional Elective Course-V (PEC-V)							
3	2005707	Cloud Computing	PEC	3	0	0	40	60	3
	2005708	Deep Learning	PEC	3	0	0	40	60	3
	2005709	Computer Vision	PEC	3	0	0	40	60	3
		Open Elective Course-III(OEC-III)							
4	20OE505	Operating System	OEC	3	0	0	40	60	3
	20OE506	R Programming	OEC	3	0	0	40	60	3
		Open Elective Course-IV(OEC-IV)							
5	20OE508	Python Programming	OEC	3	0	0	40	60	3
	20OE509	Cloud Computing	OEC	3	0	0	40	60	3
		Humanities & Social Science Elective							
6	2006701	Human Resource Development	HSMC	3	0	0	40	60	3
	2006702	Digital Marketing	HSMC	3	0	0	40	60	3
	2006703	Project Management	HSMC	3	0	0	40	60	3
7	2005710	Skill Oriented Course Big Data Technologies/ NASSCOM Courses	SC	0	0	4	40	60	2
8	2005711	Internship	INT	0	0	0	100	0	3
Total				**18**	**00**	**4**	**380**	**420**	**23**

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VIII Semester

S.No.	Subject Code	SUBJECT	SC	L	T	P	IM	EM	CR
1	2005801	Major Project/ Internship (6Months)	PROJ	0	0	24	40	60	12
Total									**12**

Structure of the Undergraduate Engineering Program:

S.No.	Category	Code	Credits	APSCHE Suggested Credits
1	Humanities &Social Sciences including Management Sciences	HSMC	10.5	10
2	Basic Science Courses	BSC	18	21
3	Engineering Science Courses	ESC	24	24
4	Professional Core Courses	PCC	54	51
5	Open Elective Courses	OEC	12	12
6	Professional Elective Courses	PEC	15	15
7	Internship & Project Work	PROJ	16.5	17
8	Mandatory Courses	MC	03	Non-Credit
9	Skill Oriented Courses	SC	10	10
	Total Credits		163	160

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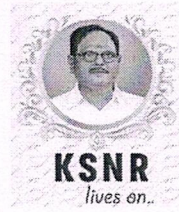

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
(M. Tech - Artificial Intelligence & Data Science)
New Courses Offered under R22PG Regulations, A.Y 2022-2023

I Semester

S.No	Course Code	Course Name
1	2298105	Natural Language Processing (PEC-I)
2	2298107	Distributed Systems (PEC-II)
3	2298108	Medical Image Processing (PEC-II)
4	2298110	Advanced Python Programming Lab

II Semester

S.No	Course Code	Course Name
1	2298203	Block Chain Technology (PEC-III)
2	2298205	Video Analytics (PEC-III)
3	2298206	Text Mining & Time Series Data Analysis (PEC-IV)
4	2298207	Social Media Analysis (PEC-IV)
5	2298211	Technical seminar

HoD CSE

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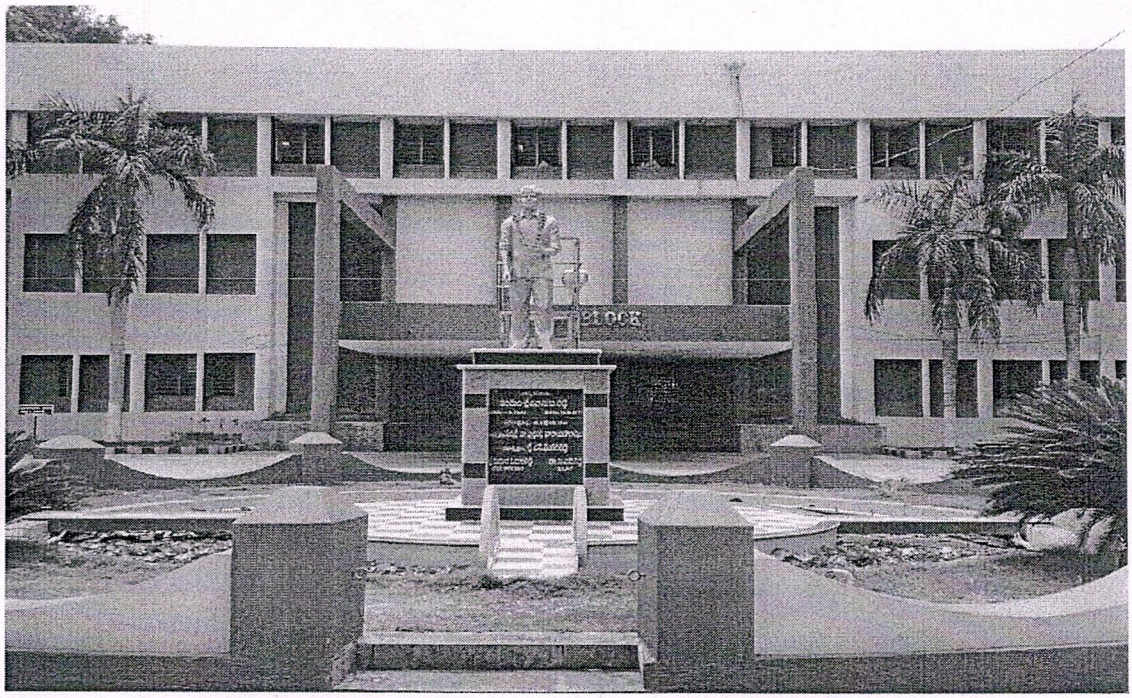
Dean Academics

PG Programs in Engineering (R22PG)

(Effective from 2022-23)



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M.Tech - Artificial Intelligence & Data Science (Computer Science & Engineering)

Semester - I

S. No.	Course codes	Course Name	Category	Hours per week			IM	EM	Credits
				L	T	P			
1.	2298101	Machine Learning	PCC	3	0	0	40	60	3
2.	2298102	Artificial Intelligence	PCC	3	0	0	40	60	3
3.	2298103 2298104 2298105	**Program Elective Course – I** 1. Big Data Analytics 2. Information retrieval 3. Natural Language Processing	PEC	3	0	0	40	60	3
4.	2298106 2298107 2298108	**Program Elective Course - II** 1. Data Visualization Techniques 2. Distributed Systems 3. Medical Image Processing	PEC	3	0	0	40	60	3
5.	2298109	AI & ML Lab	PCC	0	0	4	50	50	2
6.	2298110	Advanced Python Programming Lab	PCC	0	0	4	50	50	2
7.	2284103	Research Methodology & IPR	MC	2	0	0	40	60	2
8.	2270AXX	**Audit Course – I**	AC	2	0	0	40	0	0
		Total					**340**	**400**	**18**

Semester - II

S. No.	Course codes	Course Name	Category	Hours per			IM	EM	Credits
				L	T	P			
1.	2298201	Data Science	PCC	3	0	0	40	60	3
2.	2298202	Deep Learning	PCC	3	0	0	40	60	3
3.	2298203 2298204 2298205	**Program Elective Course - III** 1. Block Chain Technology 2. Exploratory Data Analysis using R 3. Video Analytics	PEC	3	0	0	40	60	3
4.	2298206 2298207 2298208	**Program Elective Course – IV** 1. Text Mining & Time Series Data Analysis 2. Social Media Analysis 3. Artificial Intelligence in Cyber Security	PEC	3	0	0	40	60	3
5.	2298209	Deep Learning Lab	PCC	0	0	4	50	50	2
6.	2298210	Program Elective Course Lab	PEC	0	0	4	50	50	2
7.	2298211	Technical seminar	PROJ	0	0	4	100	0	2
8.	2270AXX	**Audit Course – II**	AC	2	0	0	40	0	0
		Total					**400**	**420**	**18**

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Semester - III

S. No.	Course codes	Course Name	Category	Hours per			IM	EM	Credits
				L	T	P			
1.	2298301 2298302 2298303	**Program Elective Course – V** 1. Reinforcement Learning 2. Federated Machine Learning 3. Intrusion Detection Systems	PEC	3	0	0	40	60	3
2.	22OE98X	**Open Elective**	OEC	3	0	0	40	60	3
3.	2298307	Dissertation Phase – I	PROJ	0	0	20	100	0	10
4.	2298308	Co-curricular Activities							2
		Total					**180**	**120**	**18**

Semester - IV

S. No.	Course codes	Course Name	Category	Hours per			IM	EM	Credits
				L	T	P			
1.	2298401	Dissertation Phase – II	PROJ	0	0	32	50	50	16
Total									**16**

AUDIT COURSES

S.No	Subject Code	Subject
		AUDIT COURSE - I
1	2270A01	English for Research Paper Writing
2	2270A02	Disaster Management
3	2270A03	Sanskrit for Technical Knowledge
4	2270A04	Values for Professional Ethics
5	2270A05	Constitution of India
6	2270A06	Pedagogy Studies
7	2270A07	Stress Management by Yoga
8	2270A08	Personality Development through Life Management Skills

OPEN ELECTIVES

S.No	Subject Code	Subject
1	22OE981	Knowledge Engineering and Data Science
2	22OE982	Cloud Data Management
3	22OE983	Soft Computing

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
(M. Tech - Artificial Intelligence & Data Science)
New Courses Offered under R18PG Regulations, A.Y 2022-2023

III Semester

S.No	Course Code	Course Name
1	1898301	Genetic Algorithms (PE-5)
2	1898302	Machine Learning Models and Storage Management (PE-5)
3	1898303	Scalable Systems for Data Science (PE-5)

HoD CSE

Dean Academics

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ACADEMIC REGULATIONS (R18)
COURSE STRUCTURE AND DETAILED SYLLABUS

MASTER OF TECHNOLOGY
IN
ARTIFICIAL INTELLIGENCE & DATA SCIENCE

For

M.Tech.- Regular Two Year Post Graduate Degree Programe
(Applicable for the batches admitted from 2022-23)

KANDULA SRINIVASA REDDY MEMORIAL COLLEGE OF ENGINEERING
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Kadapa 516005, A.P

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M.Tech. (Artificial Intelligence & Data Science)-R18 Course Structure

(Applicable from the batch admitted during 2021-22 and onwards)

SEMESTER-I

S.No	Subject Code	Subject	L	T	P	IM	EM	Credits
1	1898101	*Professional Core-1* Machine Learning	3	0	0	40	60	3
2	1898102	*Professional Core-2* Artificial Intelligence	3	0	0	40	60	3
3	1898103 1898104 1898105	*Professional Elective-1* 1. Big data Analytics 2. Information Retrieval 3. Privacy Preserving Data Publishing	3	0	0	40	60	3
4	1898106 1898107 1898108	*Professional Elective-2* 1. Data Visualization Techniques 2. Advanced Data Mining 3. Cloud Data Management	3	0	0	40	60	3
5	1800109	Research Methodology & IPR	3	0	0	40	60	2
6	1870AXX	Audit Course-I	2	0	0	40	--	0
7	1898111	AI & Machine Learning Lab	0	0	4	50	50	2
8	1898112	Software Lab-1 (for electives)	0	0	4	50	50	2
		Total:	**17**	**0**	**08**	**340**	**400**	**18**

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SEMESTER-II

S.No	Subject Code	Subject	L	T	P	IM	EM	Credits
1	1898201	*Professional Core-3* Data Science	3	0	0	40	60	3
2	1898202	*Professional Core-4* Deep Learning	3	0	0	40	60	3
3	1898203 1898204 1898205	*Professional Elective-3* 1. Natural Language Processing 2. Exploratory Data Analysis using R 3. Knowledge Engineering and Data Science	3	0	0	40	60	3
4	1898206 1898207 1898208	*Professional Elective-4* 1. Text Mining 2. Social network Analysis 3. Artificial Intelligence in Cyber Security	3	0	0	40	60	3
5	1870AXX	Audit Course-II	2	0	0	40	--	0
6	1898210	Deep Learning Lab	0	0	4	50	50	2
7	1898211	Software Lab-2 (for Electives)	0	0	4	50	50	2
8	1898212	Mini Project with Seminar	2	0	0	100	--	2
		Total	**16**	**0**	**08**	**400**	**340**	**18**

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SEMETER-III

S.No	Subject Code	Subject	L	T	P	IM	EM	Credits
1	1898301 1898302 1898303	*Professional Elective-5* 1. Genetic Algorithms 2. Machine Learning Models and Storage management 3. Scalable Systems for Data Science	3	0	0	40	60	3
2	18713XX	Open Elective	3	0	0	40	60	3
3	1898310	Dissertion-1	0	0	20	100	--	10
		Total:	**6**	**0**	**20**	**180**	**120**	**16**

SEMESTER-IV

S.No	Subject Code	Subject	L	T	P	IM	EM	Credits
1	1898401	Dissertion-2	0	0	32	40	60	16
		Total:	**0**	**0**	**32**	**40**	**60**	**16**

AUDIT COURSES

S.No	Subject Code	Subject
1	1870A01	English for Research Paper Writing
2	1870A02	Disaster Management
3	1870A03	Sanskrit for Technical Knowledge
4	1870A04	Value Education
5	1870A05	Constitution of India
6	1870A06	Pedagogy Studies
7	1870A07	Stress Management by Yoga
8	1870A08	Personality Development through Life Enlightenment Skills

OPEN ELECTIVES

S.No	Subject Code	Subject
1	1871304	Business Analytics
2	1871305	Industrial Safety
3	1871306	Operations Research
4	1871307	Cost Management of Engineering Projects
5	1871308	Composite Materials
6	1871309	Waste to Energy

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Department of AI&ML

New Courses Offered Under R20UG Regulations

Academic Year-2022-23

B.Tech. III Sem (R20UG)

S.No.	Subject Code	Name of the Subject
1	2021303	Probability and Optimization
2	2039302	Discrete Mathematics & Graph Theory
3	2039303	Digital Systems and Computer Organization
4	2039304	Introduction to Artificial Intelligence
5	2039305	RDBMS (IBM)
6	2039306	MAT Lab Programming (**Skill Course – I**)
7	2024310	Universal Human Values
8	2039307	Digital Systems and Computer Organization Lab
9	2039308	RDBMS Lab
10	2039309	Exploratory Data Analysis with R

B.Tech. IV Sem (R20UG)

S.No.	Subject Code	Name of the Subject
1	2025401	Business Economics and Accounting for Engineers
2	2039402	Design and Analysis of Algorithms
3	2039403	Operating Systems
4	2039404	Data Science
5	2039405	Business Intelligence Analyst (IBM)
6	2039406	Operating Systems Lab
7	2039407	Data Science Lab
8	2039408	Business Intelligence Analyst Lab
9	2039409	Advanced Python Programming (**Skill Course – II**)
10	20MC409	Constitution of India (**Mandatory Course**)

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DEAN ACADEMICS

DEPARTMENT OF AI&ML
CURRICULUM

B.Tech. III Sem (R20UG)

S.No.	Course Code	Course Name	Category	Hours per Week			IM	EM	Credits
				L	T	P	40	60	
1	2021303	Probability and Optimization	BSC	3	0	0	40	60	3
2	2039302	Discrete Mathematics & Graph Theory	PCC	3	0	0	40	60	3
3	2039303	Digital Systems and Computer Organization	PCC	3	0	0	40	60	3
4	2039304	Introduction to Artificial Intelligence	PCC	3	0	0	40	60	3
5	2039305	RDBMS	PCC	3	0	0	40	60	3
6	2039306	**Skill Course – I** (MAT Lab Programming)	SC-I	1	0	2	40	60	2
7	2024310	Universal Human Values	HSMC	3	0	0	40	60	3
8	2039307	Digital Systems and Computer Organization Lab	PCC LAB	0	0	3	40	60	1.5
9	2039308	RDBMS Lab	PCC LAB	0	0	3	40	60	1.5
10	2039309	Exploratory Data Analysis with R	PCC LAB	0	0	3	40	60	1.5
		Total					**400**	**600**	**24.5**

B.Tech. IV Sem (R20UG)

S.No.	Course Code	Course Name	Category	Hours per Week			IM	EM	Credits
				L	T	P	40	60	
1	2025401	Business Economics and Accounting for Engineers	HSMC	3	0	0	40	60	3
2	2039402	Design and Analysis of Algorithms	PCC	3	0	0	40	60	3
3	2039403	Operating Systems	PCC	3	0	0	40	60	3
4	2039404	Data Science	PCC	3	0	0	40	60	3
5	2039405	Business Intelligence Analyst	PCC	3	0	0	40	60	3
6	2039406	Operating Systems Lab	PCC LAB	0	0	3	40	60	1.5
7	2039407	Data Science Lab	PCC LAB	0	0	3	40	60	1.5
8	2039408	Business Intelligence Analyst Lab	PCC LAB	0	0	3	40	60	1.5
9	2039409	**Skill Course – II** (Advanced Python Programming)	SC	1	0	2	40	60	2
10	20MC409	**Mandatory Course** (Constitution of India)	MC	2	1	0	40	---	0
		Total					**400**	**540**	**21.5**

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Department of Humanities & Sciences

New courses offered under R20UG Regulationsin AY.2022-23

Semester-III

S.No	Name of the subject	Subject Code	Programme
1	Probability and Optimization	2021303	AI&ML
2	Universal Human Values	2024310	AI&ML

Semester-IV

S.No	Name of the subject	Subject Code	Programme
1	Business Economics and Accounting for Engineers	2025401	AI&ML
2	Constitution of India	20MC409	AI&ML

Semester-V

S.No	Name of the subject	Subject Code	Programme
1	Management Organizational Behaviour	20MC510	CE,ECE
2	Constitution of India	20MC509	EEE,ME ,CSE
3	Employability Skills	20OE601	OE
4	Advanced Numerical Methods	20OE602	OE
5	Engineering Materials	20OE607	OE
6	Basics of Nanotechnology	20OE604	OE
7	Write it Right	20OE605	OE
8	Human Capital Management	20OE606	OE

Semester-VI

S.No	Name of the subject	Subject Code	Programme
1	Constitution of India	20993M3/20MC609	CE/ECE
2	Management Organizational Behaviour	20MC612	EEE,ME,CSE

3	Human Resource Development	2006601	CE,ECE(OE)
4	Digital Marketing	2006602	CE,ECE(OE)
5	Project Management	2006603	CE,ECE(OE)
6	Mathematical Statistics for Data Science and Data Analytics	20OE603	OE
7	Basics of Electrical, Magnetic and Optoelectronic materials	20OE608	OE
8	Corrosion & Control	20OE609	OE
9	Professional Communication	20OE610	OE
10	Basics Financial Management for Engineers	20OE611	OE

HOD

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Dean Academics

Artificial Intelligence & Machine Learning Curriculum (R20UG)

B.Tech. III Sem (R20UG)

S.No.	Course Code	Course Name	Category	Hours per Week			IM	EM	Credits
				L	T	P	40	60	
1	2021303	Probability and Optimization	BSC	3	0	0	40	60	3
2	2039302	Discrete Mathematics & Graph Theory	PCC	3	0	0	40	60	3
3	2039303	Digital Systems and Computer Organization	PCC	3	0	0	40	60	3
4	2039304	Introduction to Artificial Intelligence	PCC	3	0	0	40	60	3
5	2039305	RDBMS	PCC	3	0	0	40	60	3
6	2039306	**Skill Course – I** (MAT Lab Programming)	SC-I	1	0	2	40	60	2
7	2024310	Universal Human Values	HSMC	3	0	0	40	60	3
8	2039307	Digital Systems and Computer Organization Lab	PCC LAB	0	0	3	40	60	1.5
9	2039308	RDBMS Lab	PCC LAB	0	0	3	40	60	1.5
10	2039309	Exploratory Data Analysis with R	PCC LAB	0	0	3	40	60	1.5
		Total					**400**	**600**	**24.5**

B.Tech. IV Sem (R20UG)

S.No.	Course Code	Course Name	Category	Hours per Week			IM	EM	Credits
				L	T	P	40	60	
1	2021401	Business Economics and Accounting for Engineers	HSMC	3	0	0	40	60	3
2	2039402	Design and Analysis of Algorithms	PCC	3	0	0	40	60	3
3	2039403	Operating Systems	PCC	3	0	0	40	60	3
4	2039404	Data Science	PCC	3	0	0	40	60	3
5	2039405	Business Intelligence Analyst	PCC	3	0	0	40	60	3
6	2039406	Operating Systems Lab	PCC LAB	0	0	3	40	60	1.5
7	2039407	Data Science Lab	PCC LAB	0	0	3	40	60	1.5
8	2039408	Business Intelligence Analyst Lab	PCC LAB	0	0	3	40	60	1.5
9	2039409	**Skill Course – II** (Advanced Python Programming)	SC	1	0	2	40	60	2
10	20MC409	**Mandatory Course: Constitution of India**	MC	2	1	0	40	---	0
		Total					**400**	**540**	**21.5**

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Department of Civil Engineering
R20UG - Curriculum
B. Tech. - V Semester

Course Code	Category	Course Title	Hours / Week			IM	EM	CR
			L	T	P			
2001501	PCC	Hydrology & Irrigation	3	0	0	40	60	3
2001502	PCC	Foundation Engineering	3	0	0	40	60	3
2001503	PCC	Concrete Technology	3	0	0	40	60	3
2001504	PEC-I	Optimization Techniques in Civil Engineering	3	0	0	40	60	3
2001505		Advanced Structural Analysis						
2001506		Remote Sensing & GIS						
	OEC-I		3	0	0	40	60	3
2099510	MC	Management Organizational behaviour	2	0	0	40	00	0
2001507	PCC	Concrete Technology Lab	0	0	3	40	60	1.5
2001508	PCC	Structural Analysis and Design Lab (Staad Pro)	0	0	3	40	60	1.5
20015S3	SC	SketchUp-3D modelling	1	0	2	40	60	2
2001509	PROJ	Community Service Project	0	0	0	100	00	1.5
Total			**18**	**00**	**08**	**460**	**480**	**21.5**

B. Tech. - VI Semester

Course Code	Category	Course Title	Hours / Week			IM	EM	CR
			L	T	P			
2001601	PCC	Environmental Engineering	3	0	0	40	60	3
2001602	PCC	Water Resources Engineering	3	0	0	40	60	3
2001603	PCC	Design of Reinforced Concrete Structures	3	0	0	40	60	3
2001604	PEC-II	Pre-stressed Concrete	3	0	0	40	60	3
2001605		Bridge Engineering						
2001606		Traffic Engineering						
2006601	HSSE	Human Resource Development	3	0	0	40	60	3
2006602		Digital Marketing						
2006603		Project Management						
20993M3	MC	Constitution of India	2	0	0	40	00	0
2001607	PCC	Environmental Engineering Lab	0	0	3	40	60	1.5
2001608	PCC	Computer Aided Design and Drafting Lab	0	0	3	40	60	1.5
2001609	PCC	Advanced Concrete Technology Lab	0	0	3	40	60	1.5
20016S4	SC	Advanced English Communication skills lab	1	0	2	40	60	2
Total			**18**	**00**	**11**	**400**	**540**	**21.5**

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8	2005408	Python Programming Lab	ESC	0	0	3	40	60	1.5
9	2002409	Skill Oriented Course	SC	1	0	2	40	60	2.0
Total				16	00	11	360	540	21.5

Department of Electrical & Electronics Engineering

R20UG Course Structure

V Semester (Theory - 05, Lab - 02)

S. No.	Subject Code	SUBJECT	SC	L	T	P	IM	EM	CR
1	2002501	Linear Digital IC Applications	PCC	3	0	0	40	60	3
2	2002502	Power System - II	PCC	3	0	0	40	60	3
3	2002503	Power Electronics - I	PCC	3	0	0	40	60	3
		Open Elective - I (OE - I)							
4	20OE201	Data Structures	OEC	3	0	0	40	60	3
	20OE202	OOPS through JAVA	OEC	3	0	0	40	60	3

		Professional Elective - I (PE-I)							
5	2002504	Internet of Things	PEC	3	0	0	40	60	3
	2002505	Modern Control Theory	PEC	3	0	0	40	60	3
	2002506	Energy Conversion Systems	PEC	3	0	0	40	60	3
6	2002507	Power Systems - I Lab	PCC	0	0	3	40	60	1.5
7	2002508	Internet of Things Lab	PCC	0	0	3	40	60	1.5
8	2025509	Soft Skill Oriented Course	SC	1	0	2	40	60	2.0
9	2002510	Community Service Project	INT	0	0	0	100	00	1.5
10	20MC509	Constitution of India	MC	2	0	0	40	00	00
Total				18	00	08	460	480	21.5

VI Semester (Theory - 05, Lab - 02)

S. No.	Subject Code	SUBJECT	SC	L	T	P	IM	EM	CR
1	2002601	Microprocessor & Microcontrollers	PCC	3	0	0	40	60	3
2	2002602	Power Semiconductor Drives	PCC	3	0	0	40	60	3
3	2002603	Linear Digital IC Applications	PCC	3	0	0	40	60	3
		Professional Elective - II (PE-II)							
4	2002604	Professional Elective Course	PEC	0	0	3	40	60	3
5	--	Open Elective/ Job Oriented Elective	PCC	3	0	0	40	60	3

6	2002609	Power Electronics & Drives Lab	PCC	0	0	3	40	60	1.5
7	2002610	Power System- II Lab	PCC	0	0	3	40	60	1.5
8	2002610	LabVIEW Programming	PCC	0	0	3	40	60	1.5
9	2002611	Skill Advanced Course	PCC	1	0	2	40	60	2.0
10	20MC612	Management Organizational behaviour	MC	2	0	0	40	00	00
Total				15	00	11	420	480	21.5

S. No.	Subject Code	SUBJECT	SC	L	T	P	IM	EM	CR
1	2002601	Microprocessor & Microcontrollers	PCC	3	0	0	40	60	3
2	2002602	Power Semiconductor Drives	PCC	3	0	0	40	60	3
3	2002603	Switchgear & Protection	PCC	3	0	0	40	60	3
		Open Elective - II (OE - II)							
4	20OE203	Introduction to Machine Learning	OEC	3	0	0	40	60	3
	20OE204	Database Management Systems	OEC	3	0	0	40	60	3
		Professional Elective - II (PE-II)							
5	2002604	Power System Operation & Control	PEC	3	0	0	40	60	3
	2002605	HVDC Transmission	PEC	3	0	0	40	60	3
	2002606	Signals & Systems	PEC	3	0	0	40	60	3
6	2002607	Power Electronics & Drives Lab	PCC	0	0	3	40	60	1.5
7	2002608	Power Systems-II Lab	PCC	0	0	3	40	60	1.5
8	2004609	Labview Programming	ESC	0	0	3	40	60	1.5
9	2002610	Skill Advanced Course	SC	1	0	2	40	60	2.0
10	20MC612	Disaster Management	MC	2	0	0	40	00	00
Total				18	00	11	440	540	21.5

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UG Programs in Mechanical Engineering (R20 UG) Curriculum

B. Tech. - V Semester

Course Code	Category	Course title	Hours / Week			IM	EM	CR
			L	T	P			
2003501	PCC	Heat Transfer	3	0	0	40	60	3
2003502	PCC	Design of Machine Members	3	0	0	40	60	3
2003503	PCC	Metrology and Measurements	3	0	0	40	60	3
		Professional Elective - I						
2003504	PEC-I	Alternative Fuels and Emission Control in Auto motives	3	0	0	40	60	3
2003505		Automation & Robotics	3	0	0	40	60	
2003506		Tool Design	3	0	0	40	60	
2003507		Power Plant Engineering	3	0	0	40	60	
2003508		Non Destructive Testing (NDT)	3	0	0	40	60	
		Open Elective – I						
20OE301	OEC-I	Introduction to Hybrid and Electric Vehicles	3	0	0	40	60	3
20OE302		Rapid Prototyping	3	0	0	40	60	
20OE303		Design for Manufacturing and Assembly	3	0	0	40	60	
20OE304		Energy systems engineering	3	0	0	40	60	
20OE305		Smart Materials	3	0	0	40	60	
2003514	PCC	Metrology and Measurements Laboratory	0	0	3	40	60	1.5
2003515	PCC	Heat Transfer Laboratory	0	0	3	40	60	1.5
2003516	SC	ANSYS (Skill oriented course– III)	1	0	2	40	60	2
20MC509	MC	CONSTITUTION OF INDIA	2	0	0	40		
2003517	PROJ	Socially Relevant Project	0	0	0	100	00	1.5
Total			**18**	**00**	**08**	**460**	**480**	**21.5**

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B. Tech. - VI Semester

Course Code	Category	Course title	Hours / Week			IM	EM	CR
			L	T	P			
2003601	PCC	Operations Research	3	0	0	40	60	3
2003602	PCC	Finite Element Methods (FEM)	3	0	0	40	60	3
2003603	PCC	Introduction to CADCAM	3	0	0	40	60	3
	PEC-II	**Professional Elective – II (MOOCs)**						
2003604		Dynamics of machinery	3	0	0	40	60	3
2003605		Solar and Wind Energy Systems	3	0	0	40	60	
2003606		Computational Fluid Dynamics (CFD)	3	0	0	40	60	
2003607		Six Sigma and Lean manufacturing	3	0	0	40	60	
2003608		Energy Auditing	3	0	0	40	60	
	OEC-II	**Open Elective – II**						
20OE301		Automotive Electronics, Sensors & Drives	3	0	0	40	60	3
20OE302		Robotics and Applications in Manufacturing	3	0	0	40	60	
20OE303		Sensors in Intelligent Manufacturing	3	0	0	40	60	
20OE304		Non-Conventional sources of energy	3	0	0	40	60	
20OE305		Supply Chain Management	3	0	0	40	60	
2003609	PCC	Computer Aided Machining Laboratory	3	0	0	40	00	1.5
2003610	PCC	Computer Aided Drafting Laboratory	0	0	3	40	60	1.5
2003611	PCC	SOLID WORKS	0	0	3	40	60	1.5
20246S4	SC	Soft skills lab (Skill Oriented Course)	1	0	2	40	60	2
20MC612	MC	Management Organization Behavior	2	0	0	40		
Total			**18**	**00**	**11**	**400**	**540**	**21.5**

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Department of ECE

COURSE STRUCTURE – R20UG REGULATIONS

Proposed Course Structure (R20) – V Year

Semester-V									
S.No.	**Code**	**Course Name**	**Category**	**L**	**T**	**P**	**IM**	**EM**	**Credits**
1.	2004501	Embedded systems and IoT	ES	3	0	0	40	60	3
2.	2004502	Communication Systems	PC	3	0	0	40	60	3
3.	2004503	Antennas and Wave Propagation	PC	3	0	0	40	60	3
4.	2004504	**Professional Elective-I** Electronic Measurements and Instrumentation	PE	3	0	0	40	60	3
	2004505	Computer Architecture and Organization	PE	3	0	0	40	60	3
	2004506	Optical Communication	PE	3	0	0	40	60	3
5.	2004507	**Job oriented elective – I** Real Time Operating Systems	OE	2	0	2	40	60	3
	2004508	Data base management	OE	2	0	2	40	60	3
	2004509	Big data Analytics	OE	2	0	2	40	60	3
6.	2004510	Communication Systems Lab	PC	0	0	3	40	60	1.5
7.	2004511	Embedded systems and IoT lab	ES	0	0	3	40	60	1.5
9.	20SC508	Introduction to Machine learning using Python (Skill oriented course – III)	SC	1	0	2	40	60	2
10.	20MC510	Management Organizational behavior	MC	3	0	0	40		0
11.	2004510	Evaluation of Community Service Project	PR				100		1.5
Total									**21.5**

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		Semester-VI							
S.No	**Code**	**Course Name**	**Category**	**L**	**T**	**P**	**IM**	**EM**	**Credits**
1.	2004601	Digital Signal Processing(DSP)	PC	3	0	0	40	60	3
2.	2004602	Microwave Engineering	PC	3	0	0	40	60	3
3.	2004603	Control Systems	PC	3	0	0	40	60	3
4.	2004604	**Professional Elective Course - II** CMOS VLSI Design	PE	3	0	0	40	60	3
	2004605	Information Theory & Coding	PE	3	0	0	40	60	3
	2004606	Sensors and Actuators	PE	3	0	0	40	60	3

5.	2006601	**Humanities Open Elective** Human Resource Development	HSSE	3	0	0	40	60	3
	2006602	Digital Marketing	HSSE	3	0	0	40	60	3
	2006603	Project Management	HSSE	3	0	0	40	60	3
6.	2004607	DSP Lab	PC	0	0	3	40	60	1.5
7.	2004608	Microwave & Fiber Optic* Communication Lab	PC	0	0	3	40	60	1.5
8.	2004609	VLSI Design Laboratory	PC	0	0	3	40	60	1.5
9.	20SC610	Advanced English Communication Skills Lab (**Skill Oriented Course – IV**)	SC	1	0	2	40	60	2
10.	20MC609	Constitution of India	MC	2	0	0	40		0
Total									**21.5**
		Industry Internship (Mandatory) for 6 - 8 weeks duration during summer vacation							

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R20UG Course Structure

V Semester(Theory-05,Lab-02)

S.No.	Subject Code	SUBJECT	SC	L	T	P	IM	EM	CR
1	2005501	Software Engineering	PCC	3	0	0	40	60	3
2	2005502	Design and Analysis of Algorithms	PCC	3	0	0	40	60	3
3	2005503	Computer Networks	PCC	3	0	0	40	60	3
		Open Elective-I(OE-I)							
4	20OE501	Data Structures	OEC	3	0	0	40	60	3
	20OE502	Database Management Systems	OEC	3	0	0	40	60	3
		Professional Elective-I(PE-I)							
5	2005504	Web Technologies	PEC	3	0	0	40	60	3
	2005505	Multimedia Systems	PEC	3	0	0	40	60	3
	2005506	Distributed Systems	PEC	3	0	0	40	60	3
6	2005507	DAA Lab	PCC	0	0	3	40	60	1.5
7	2005508	Software Lab-1	PCC	0	0	3	40	60	1.5
8	2025509	Soft Skill Oriented Course Advanced English & CommunicationLab/Professional Communication Lab	SC	0	0	4	40	60	2.0
9	2005510	Internship/Socially Relevant Project	INT	0	0	0	100		1.5
10	20MC509	Constitution of India	MC	2	0	0	40	00	00
Total				17	00	10	420	480	21.5

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VI Semester(Theory-05,Lab-02)

S. No.	Subject Code	SUBJECT	SC	L	T	P	IM	EM	CR
1	2005601	Internet of Things	PCC	3	0	0	40	60	3
2	2005602	Data Mining	PCC	3	0	0	40	60	3
3	2005603	Cryptography & Network Security	PCC	3	0	0	40	60	3
		Open Elective-II(OE-II)							
4	20OE503	Java Programming	OEC	3	0	0	40	60	3
	20OE504	Web Designing	OEC	3	0	0	40	60	3
		Professional Elective-II(PE-II)							
5	2005604	Artificial Intelligence	PEC	3	0	0	40	60	3
	2005605	Object Oriented Analysis and Design	PEC	3	0	0	40	60	3
	2005606	Mobile Adhoc Networks	PEC	3	0	0	40	60	3
6	2005607	IOT Lab	PCC	0	0	3	40	60	1.5
7	2005608	Data Mining Lab	PCC	0	0	3	40	60	1.5
8	2005609	Network Security Lab	PCC	0	0	3	40	60	1.5
9	2005610	Skill Advanced Course Mobile Application Development	SC	0	0	4	40	60	2.0
10	20MC612	Management Organizational Behaviour	MC	2	0	0	40	00	00
Total				17	00	13	440	540	21.5

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