RAYALASEEMA UNIVERSITY COLLEGE OF ENGINEERING, KURNOOL
Course Structure & Syllabus for Four Year Regular B.Tech. Degree Program
(Effective for the batches admitted from 2020-21 onwards)

CIVIL ENGINEERING

B. Tech – V Semester (Theory – 6, Lab – 2)

S. No.	Course Category	Course Code	Course Title	Instruction Hours per week			Credits	Scheme of Examination (Max. Marks)		
				L	T	P		CIE	SEE	Total
THEORY										
1	PC	20APC0109	Design of Reinforced Concrete Structures	3	0	0	3	30	70	100
2	PC	20APC0110T	Geotechnical Engineering	3	0	0	3	30	70	100
3	PC	20APC0111	Building Materials and Construction	3	0	0	3	30	70	100
4	PE	**Professional Elective Course – I**		3	0	0	3	30	70	100
		20APE0101	Structural Analysis – II							
		20APE0102	Open Channel Flow							
		20APE0103	Building Construction Management							
5	OE	**Open Elective Course – I**		3	0	0	3	30	70	100
		20AOE0101	Building Technology							
		20AOE0301	3D Printing Technology							
		20AOE0401	Basic Electronic Systems							
		20AOE0402	Digital Electronics							
		20AOE0501	Java Programming							
		20AOE0502	Computer Networks							
		20AOE5101	Chemistry of Energy Materials							
		20AOE5401	Optimization Techniques							
		20AOE5601	Materials Characterization Techniques							
6	SC	**Skill oriented course -III**		1	0	2	2	30	70	100
		20ASC0101	Building planning and drawing							
7	MC	**Mandatory Course-II**		2	0	0	0	50	-	50
		20AMC9904	Indian Constitution and Society							
PRACTICAL										
7	PC	20APC0112P	Computer Aided Drafting Lab	0	0	3	1.5	30	70	100
8	PC	20APC0110P	Geotechnical Engineering Lab	0	0	3	1.5	30	70	100
9	PR	20APR0101	Evaluation of Community Service Project	0	0	1	1.5	50	-	50
			TOTAL:	16	0	9	21.5	320	560	850

Note:
1. A student is permitted to register for Honours or a Minor in IV semester after the results of III Semester are declared and students may be allowed to take maximum two subjects per semester pertaining to their Minor from V Semester onwards.
2. A student shall not be permitted to take courses as Open Electives/Minor/Honours with content substantially equivalent to the courses pursued in the student's primary major.
3. A student is permitted to select a Minor program only if the institution is already offering a Major degree program in that discipline

B. Tech – VI Semester (Theory – 7, Lab – 3)

S. No.	Course Category	Course Code	Course Title	L	T	P	Credits	CIE	SEE	Total
				Instruction Hours per week				**Scheme of Examination (Max. Marks)**		
THEORY										
1	PC	20APC0113	Design of Steel Structures	3	0	0	3	30	70	100
2	PC	20APC0114T	Highway Engineering	3	0	0	3	30	70	100
3	PC	20APC0115	Hydrology and Irrigation Engineering	3	0	0	3	30	70	100
4	PE	**Professional Elective Course– II**		3	0	0	3	30	70	100
		20APE0104	Remote sensing and GIS							
		20APE0105	**Foundation Engineering**							
		20APE0106	Environmental Impact Assessment							
5	HS	**Humanities Elective -II**		3	0	0	3	30	70	100
		20AHS5205	Entrepreneurship and Incubation							
		20AHS5206	**Management Science**							
		20AHS5207	Enterprise Resource Planning							
6	SC	**Skill oriented course – IV**		1	0	2	2	30	70	100
		20ASC0102	BIM Fundamentals for Civil Engineers							
7	MC	**Mandatory Course - III**		2	0	0	0	50	-	50
		20AMC9905	**Design Thinking and Innovation**							
PRACTICAL										
8	PC	20APC0116P	Design Studio Lab with STAAD Pro.	0	0	3	1.5	30	70	100
9	PC	20APC0114P	Highway Materials Lab	0	0	3	1.5	30	70	100
10	PC	20APC0117P	Geographical information systems lab	0	0	3	1.5	30	70	100
			TOTAL:	**18**	**0**	**11**	**21.5**	**320**	**630**	**950**
Industry Internship (Mandatory) for 6 – 8 weeks during summer vacation										

B. Tech – VII Semester (Theory – 7, Lab – 0)

S. No.	Course Category	Course Code	Course Title	Instruction Hours per week			Credits	Scheme of Examination (Max. Marks)		
				L	T	P		CIE	SEE	Total
THEORY										
1	PE		**Professional Elective Course– III**	3	0	0	3	30	70	100
		20APE0107	Finite Element Analysis							
		20APE0108	Railways, Airport and Harbour Engineering							
		20APE0109	**Ground Improvement Techniques**							
2	PE		**Professional Elective Course– IV**	3	0	0	3	30	70	100
		20APE0110	**Prestressed Concrete**							
		20APE0111	Hydraulic structures and Waterpower Engineering							
		20APE0112	Industrial Waste and Wastewater Management							
3	PE		**Professional Elective Course– V**	3	0	0	3	30	70	100
		20APE0113	**Experimental Stress Analysis**							
		20APE0114	Bridge Engineering							
		20APE0115	Design and Drawing of Irrigation Structures							
4	OE		**Open Elective Course – II**	3	0	0	3	30	70	100
		20AOE0102	Environmental Economics							
		20AOE0302	**Introduction to Robotics**							
		20AOE0403	Signals and Systems							
		20AOE0404	Microcontrollers and Applications							
		20AOE0503	Foundations of Machine Learning							
		20AOE0504	Data Analytics Using							
		20AOE5102	Chemistry of Polymers and its Applications							
		20AOE5402	Wavelet Transforms & its applications							
		20AOE5602	Physics of Electronic Materials and Devices							
5	OE		**Open Elective Course – III**	3	0	0	3	30	70	100
		20AOE0103	Cost Effective Housing Techniques							
		20AOE0303	**Prouct Design and Development**							
		20AOE0405	Basics of Instrumentation							
		20AOE0406	Principles of Communications							
		20AOE0505	Web Technologies							
		20AOE0506	Software Engineering							
		20AOE5103	Chemistry of Nanomaterial's and Applications							
		20AOE5403	Numerical Methods for Engineers							
		20AOE5603	Sensors and Actuators for Engg. Applications							
6	OE		**Open Elective Course – IV**	3	0	0	3	30	70	100
		20AOE0104	Health, Safety & Environmental Management							
		20AOE0304	**Introduction to Composite Materials**							

		20AOE0407	Industrial Electronics							
		20AOE0408	MATLAB							
		20AOE0507	Cyber Security							
		20AOE0508	Game Design & Development							
		20AOE5104	Green Chemistry and Catalysis for Sustainable Environment	3	0	0	3	30	70	100
		20AOE5404	Number Theory & its applications							
		20AOE5604	Smart Materials and Devices							
7	SC	**Skill oriented course – V**		1	0	2	2	30	70	100
		20ASC0103	Estimation, Costing and Valuation							
8	MC	**Mandatory Course - IV**		2	0	0	0	50	-	50
		20AMC9906	**Intellectual Property Rights & Patents**							
9	PR	20APR0102	Evaluation of Industry Internship	0	0	-	3	50	-	50
			TOTAL:	**19**	**0**	**2**	**23**	**260**	**490**	**750**

B. Tech – VIII Semester

S.No.	Course Category	Course Code	Course Title	L	T	P	Credits	Scheme of Examination (Max. Marks)		
								CIE	SEE	Total
1.	PR	20APR0103	Full Internship & Project work	-	-	-	12	60	140	200
						TOTAL	**12**	**60**	**140**	**200**

COMPUTER SCIENCE & ENGINEERING

B. Tech – V Semester (Theory – 6, Lab – 4)

S.No	Course Category	Course Code	Course Title	Instruction Hours per week			Credits	Scheme of Examination (Max. Marks)		
				L	T	P		CIE	SEE	Total
THEORY										
1	PC	20APC0508T	Artificial Intelligence	3	0	0	3	30	70	100
2	PC	20APC0510	Formal Languages and Automata Theory	3	0	0	3	30	70	100
3	PC	20APC0509T	Data Science	3	0	0	3	30	70	100
Professional Elective Course – I										
4	PE	20APE0503	Software Project Management	3	0	0	3	30	70	100
		20APE0502	Digital Image Processing							
		20APE0501	Cryptography & Network Security							
Open Elective Course – I										
5	OE	20AOE0101	Building Technology	3	0	0	3	30	70	100
		20AOE0301	3D Printing Technology							
		20AOE0401	Basic Electronic Systems							
		20AOE0402	Digital Electronics							
		20AOE5101	Chemistry of Energy Materials							
		20AOE5401	Optimization Techniques							
		20AOE5601	Materials Characterization Techniques							
6	MC	20AMC9904	**Mandatory Non-credit Course - IV** Indian Constitution and Society	2	0	0	0	50	-	50
PRACTICAL										
7	PC	20APC0508P	Artificial Intelligence Lab	0	0	3	1.5	30	70	100
8	PC	20APC0509P	Data Science Lab	0	0	3	1.5	30	70	100
9	SC	20ASC0504	**Skill oriented course – III** Internet of Things	1	0	2	2	30	70	100
10	PR	20APR0501	Evaluation of Community Service Project	0	0	0	1.5	-	-	50
			TOTAL:	18	0	8	21.5	290	560	900

B. Tech – VI Semester (Theory – 6, Lab – 4)

S.No	Course Category	Course Code	Course Title	L	T	P	Credits	CIE	SEE	Total
				Instruction Hours per week				Scheme of Examination (Max. Marks)		
THEORY										
1	PC	20APC0511T	Compiler Design	3	0	0	3	30	70	100
2	PC	**20APC0512T**	**Machine Learning**	3	0	0	3	30	70	100
Humanities Elective - I										
3	HS	**20AHS5202**	**Managerial Economics & Financial Analysis**	3	0	0	3	30	70	100
		20AHS5203	Organizational Behavior							
		20AHS5204	Business Environment							
Professional Elective Course– II										
4	PE	**20APE0506**	**Software Testing**	3	0	0	3	30	70	100
		20APE0505	Natural Language Processing							
		20APE0504	Big Data Technologies							
Open Elective Course – II										
5	OE	20AOE0102	Environmental Economics	3	0	0	3	30	70	100
		20AOE0302	**Introduction to Robotics**							
		20AOE0403	Signals and Systems							
		20AOE0404	Microcontrollers and Applications							
		20AOE5102	Chemistry of Polymers and its Applications							
		20AOE5402	Wavelet Transforms & its applications							
		20AOE5602	Physics of Electronic Materials and Devices							
6	MC	20AMC9905	**Mandatory Non-credit Course - V** Design Thinking and Innovation	2	0	0	0	50	0	50
PRACTICAL										
7	PC	20APC0511P	Compiler Design Lab	0	0	3	1.5	30	70	100
8	PC	20APC0512P	Machine Learning Lab	0	0	3	1.5	30	70	100
9	ES	20AES0504P	Amazon Web Services	0	0	3	1.5	30	70	100
10	SC	20ASC9901	**Skill oriented course - IV** Soft Skills	1	0	2	2	30	70	100
			TOTAL:	**18**	**0**	**11**	**21.5**	**300**	**630**	**950**
Industry Internship (Mandatory) for 6 – 8 weeks duration during summer vacation										

B. Tech – VII Semester (Theory – 8, PR – 1)

S.No	Course Category	Course Code	Course Title	Instruction Hours per week			Credits	Scheme of Examination (Max. Marks)		
				L	T	P		CIE	SEE	Total
THEORY										
Professional Elective Course– III										
1	PE	**20APE0509**	**Cloud Computing**	3	0	0	3	30	70	100
		20APE0508	Agile Methodologies							
		20APE0507	Ad hoc & sensor networks							
Professional Elective Course– IV										
2	PE	**20APE0512**	**Fundamentals of AR/VR**	3	0	0	3	30	70	100
		20APE0511	Block chain Technology and Applications							
		20APE0510	Business Intelligence							
Professional Elective Course– V										
3	PE	**20APE0514**	**Full Stack Development**	3	0	0	3	30	70	100
		20APE0515	Game Design							
		20APE0513	Deep Learning							
Humanities Elective – II										
4	HE	20AHS5205	Entrepreneurship and Incubation	3	0	0	3	30	70	100
		20AHS5206	**Management Science**							
		20AHS5207	Enterprise Resource Planning							
Open Elective Course – III										
5	OE	20AOE0103	Cost Effective Housing Techniques	3	0	0	3	30	70	100
		20AOE0303	**Product Design and Development**							
		20AOE0405	Basics of Instrumentation							
		20AOE0406	Principles of Communications							
		20AOE5103	Chemistry of Nanomaterials and Applications							
		20AOE5403	Numerical Methods for Engineers							
		20AOE5603	Sensors and Actuators for Engg. Applications							
Open Elective Course – IV										
6	OE	**20AOE0104**	**Health, Safety & Environmental Management**	3	0	0	3	30	70	100
		20AOE0304	Introduction to Composite Materials							
		20AOE0407	Industrial Electronics							
		20AOE0408	MATLAB							
		20AOE5104	Green Chemistry and Catalysis for Sustainable Environment							
		20AOE5404	Number Theory & its applications							
		20AOE5604	Smart Materials and Devices							
7	MC	**20AMC9906**	**Mandatory Non-credit Course - VI Intellectual Property Rights & Patents**	3	0	0	0	50	0	50
8	SC	20ASC0506	**Skill oriented course – V** Mobile Application Development	1	0	0	2	30	70	100
9	PR	20APR0502	Evaluation of Industry Internship	0	0	0	3	-	-	50
			TOTAL:	**21**	**0**	**0**	**23**	**290**	**560**	**800**

B. Tech – VIII Semester (Theory – 0, PR - 1)

S.No	Course Category	Course Code	Course Title	Instruction Hours per week			Credits	Scheme of Examination (Max. Marks)		
				L	T	P		CIE	SEE	Total
THEORY										
1	PR	20APR0501	Full Internship & Project work	-	-	-	12	60	140	200
			TOTAL	**0**	**0**	**0**	**12**	**60**	**140**	**200**

ELECTRONICS & COMMUNICATION ENGINEERING

S. No	Course Category	Course Code	Course Title	L	T	P	Credits	CIE	SEE	Total
			B. Tech – V SEMESTER (Theory – 5, Lab – 3)							
				Instruction hours per week				**Scheme of Examination (Max. Marks)**		
				L	T	P		CIE	SEE	Total
THEORY										
1	PC	20APC0407	Control Systems Engineering	3	0	0	3	30	70	100
2	PC	20APC0408T	Digital Signal Processing	3	0	0	3	30	70	100
3	PC	20APC0409T	Embedded System Design	3	0	0	3	30	70	100
4	PE	20APE0401	**Professional Elective Course – I** Machine Learning Computer Architecture & Organization Information Theory and Coding	3	0	0	3	30	70	100
5	OE	20AOE0401	**Open Elective Course – I** Basic Electronic Systems Digital Electronics	3	0	0	3	30	70	100
PRACTICAL										
6	PC	20APC0408P	Digital Signal Processing Lab	0	0	3	1.5	30	70	100
7	PC	20APC0409P	Embedded Systems Lab (ARM BASED/MSP430)	0	0	3	1.5	30	70	100
8	SC	20ASC9902	**Skill oriented course – III** PCB Design and Prototype development	1	0	2	2	30	70	100
9	MC	20AMC9906	**Mandatory non-credit course – III** Indian Constitution and Society	2	1	0	0	50		50
10			Evaluation of Community Service Project/ Internship				1.5			
			TOTAL				**21.5**			

S. No	Course Category	Course Code	Course Title	L	T	P	Credits	CIE	SEE	Total
			B. Tech – VI SEMESTER (Theory – 5, Lab – 3)							
				Instruction hours per week			Credits	Scheme of Examination (Max. Marks)		
				L	T	P		CIE	SEE	Total
THEORY										
1	PC	20APC0410T	Antennas & Microwave Engineering	3	0	0	3	30	70	100
2	PC	20APC0411T	VLSI Design	3	0	0	3	30	70	100
3	PC	20APC0412T	Internet of Things	3	0	0	3	30	70	100
4	PE	20APE0402	**Professional Elective Course– II** Electronic Measurements and Instrumentation Optical Communication Neural Networks and Fuzzy Logic	3	0	0	3	30	70	100
5	HS	20AHS5205	**Humanities Elective – II** Entrepreneurship and Incubation Management Science Enterprise Resource Planning	3	0	0	3	30	70	100
PRACTICAL										
6	PC	20APC0410P	Antennas & Microwave Engineering Lab	0	0	3	1.5	30	70	100
7	PC	20APC0411P	VLSI Design Lab	0	0	3	1.5	30	70	100
8	PC	20APC0412P	Internet of Things Lab	0	0	3	1.5	30	70	100
9	SC		**Skill oriented course – IV**	1	0	2	2			
		20ASC9903	RF System Design					30	70	100
10	MC		**Mandatory non-credit course – IV**	2	1	0	0			
		20AMC9907	Intellectual Property Rights & Patents					50	0	50
			TOTAL				**21.5**			
Industry Internship (Mandatory) for 6 - 8 weeks duration during summer vacation										

S. No	Course Category	Course Code	Course Title	Instruction hours per week			Credits	Scheme of Examination (Max. Marks)		
			B. Tech – VII SEMESTER (Theory – 6)							
				L	T	P		CIE	SEE	Total
THEORY										
1	PE	20APE0403	**Professional Elective Course– III** 1. DSP Processors & Architectures 2. Radar Engineering 3. FPGA Design	3	0	0	3	30	70	100
2	PE	20APE0404	**Professional Elective Course– IV** 1. Real Time Operating Systems 2. Digital Image Processing 3. Satellite Communications	3	0	0	3	30	70	100
3	PE	20APE0405	**Professional Elective Course– V** 1. Smart Sensors 2. Nano Electronics 3. Cellular & MobileCommunications	3	0	0	3	30	70	100
4	OE	20AOE0402	**Open Elective Course – II** Signals and Systems Microcontrollers and Applications	3	0	0	3	30	70	100
5	OE	20AOE0403	**Open Elective Course – III** Basics of Instrumentation Principles of Communications	3	0	0	3	30	70	100
6	OE	20AOE0404	**Open Elective Course – IV** Industrial Electronics MATLAB	3	0	0	3	30	70	100
7	SC	20ASC9904	**Skill oriented course – V** Industrial IoT & Automation	1		2	2	30	70	100
8			Evaluation of Industry Internship				3			
			TOTAL				**23**			

S. No	Course Category	Course Code	Course Title	Instruction hours per week			Credits	Scheme of Examination (Max. Marks)		
			B. Tech – VIII SEMESTER							
				L	T	P		CIE	SEE	Total
Project work/Internship										
1	PR		Full Internship & Project work	-	-	-	12			
			TOTAL				**12**			

DEPARTMENT OF MECHANICAL ENGINEERING

B-TECH –V Semester (Theory –6, Lab – 3)

S.No.	Course Category	Course Code	Course Name	L	T	P	Credits	CIE	SEE	Total
THEORY										
1.	PC	20APC0308	CAD/CAM	3	0	0	3	30	70	100
2.	PC	20APC0309	Design of Machine Members	3	0	0	3	30	70	100
3.	PC	20APC0310 T	Metrology and Measurements	3	0	0	3	30	70	100
4.	PE		**Professional Elective - I**	3	0	0	3	30	70	100
		20APE0301	Automation & Robotics							
		20APE0302	Tool Design							
		20APE0303	Power Plant Engineering							
5.	OE	20AOE0301	**Open Elective – I** Optimization Techniques	3	0	0	3	30	70	100
6	MC	20AMC9904	Indian Constitution and Society	3	0	0	0	50	--	50
PRACTICAL										
6.	PC	20APC0310 P	Metrology and Measurements Laboratory	0	0	3	1.5	30	70	100
7.	PC	20APC0306	Computer Aided Modeling Laboratory	0	0	3	1.5	30	70	100
8.	SC	20ASC9902	**Skill oriented course - III** Innovation through IoT	1	0	2	2	30	70	100
9.	PR	20APR0301	Community Service Project				1.5	50		50
Total				**16**	**0**	**8**	**21.5**	**34**	**560**	**900**

B-TECH –VI Semester (Theory –6, Lab – 3)

S.No.	Course Category	Course Category	Course Code	Instruction Hours per week			Credits	Scheme of Examination(Max. Marks)		
				L	T	P		CIE	SEE	Total
THEORY										
1.	PC	20APC0311	Dynamics of Machinery	3	0	0	3	30	70	100
2.	PC	20APC0312	Finite Element Methods (FEM)	3	0	0	3	30	70	100
3.	PC	20APC0313T	Heat Transfer	3	0	0	3	30	70	100
4.	PE		**Professional Elective – II**	3	0	0	3	30	70	100
		20APE0304	Non-Destructive Testing (NDT)							
		20APE0305	**Production and operations management**							
		20APE0306	Total Quality Management (TQM)							
5.	OE	20AOE0302	**Open Elective Course – II** Introduction to Robotics	3	0	0	3	30	70	100
			NBMNVBMNVM							
PRACTICAL										
6.	PC	20APC0307	Computer Aided Design	0	0	3	1.5	30	70	100
7.	PC	20APC0308	Computer Aided Manufacturing Laboratory	0	0	3	1.5	30	70	100
8.	PC	20APC0313P	Heat Transfer Laboratory	0	0	3	1.5	30	70	100
9.	SC	20ASC9903	**Skill oriented course - IV** 3D Printing practice	1	0	2	2	30	70	100
10.	MC	20AMC9906	Mandatory Non-credit Course Design Thinking and Innovation	2	0	0	0	50	-	50
Total				**18**	**0**	**11**	**21.5**	**320**	**630**	**950**
Industry Internship (Mandatory) for 6 - 8 weeks duration during summer vacation										

B-TECH –VII Semester (Theory –6, Lab – 0)

S.No.	Course Category	Course Code	Course Name	Instruction Hours per week			Credits	Scheme of Examination(Max. Marks)		
				L	T	P		CIE	SEE	Total
			THEORY							
1.	PE		**Professional Elective Course– II**	3	0	0	3	30	70	100
		20APE0307	**Modern manufacturing Methods**							
		20APE0308	Design for Manufacturing (DFM)							
		20APE0309	Operations Research							
2.	PE		**Professional Elective Course– IV**	3	0	0	3	30	70	100
		20APE0310	Automobile Engineering							
		20APE0311	Mechanical Vibrations							
		20APE0312	**Refrigeration & Air Conditioning**							
3.	PE		**Professional Elective Course– V**	3	0	0	3	30	70	100
		20APE0313	**Mechatronics & MEMS**							
		20APE0314	Design of Oil Hydraulics and Pneumatics							
		20APE0315	Geometric dimensioning and tolerances							
4.	HE II	**20AHS5206**	**Humanities Elective – II Management Scienc**	3	0	0	3	30	70	100
5.	OE	**20AOE0303**	**Open Elective Course – III Prouct Design and Development**	3	0	0	3	30	70	100
6.	OE	**20AOE0304**	**Open Elective Course – IV Introduction to Composite Materials**	3	0	0	3	30	70	100
7	MC	**20AMC9906**	**Intellectual Property Rights & Patents**	2	0	0	0	50	-	50
8	SE	20ASC0303	**Skill oriented course - V** Industrial Automation	1	0	2	2	30	70	100
9.	PR	20APR0302	Evaluation of Industry Internship				3	50		
Total				**19**	**0**	**2**	**23**	**310**	**490**	**800**

B-TECH –VIII Semester

S.No.	Category	Course Code	Course Name	Instruction Hours per week			Credits	Scheme of Examination (Max. Marks)		
				L	T	P		CIE	CIE	CIE
1.	PR	20APR0303	Full Internship & Project work				12			
TOTAL							**12**			