Jawaharlal Nehru Technological University Anantapur

(Established by Govt. of A.P., Act. No. 30 of 2008)

Ananthapuramu–515 002 (A.P) India

B.Tech - Course Structures and Syllabi under R20 Regulations

Semester-0

Induction Program: 3 weeks
(Common for All Branches of Engineering)

S.No	Course No	Course Name	Category	L-T-P-C
1		Physical Activities -- Sports, Yoga and Meditation, Plantation	MC	0-0-6-0
2		Career Counselling	MC	2-0-2-0
3		Orientation to all branches -- career options, tools, etc.	MC	3-0-0-0
4		Orientation on admitted Branch -- corresponding labs, tools and 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

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Electronics & Communication Engineering

S.No	Course No	Course Name	Category	L-T-P/D	Credits
Semester - 1 (Theory - 5, Lab - 4)						
1.	20A54101	Linear Algebra and Calculus	BS	3-0-0	3
2.	20A56201T	Applied Physics	BS	3-0-0	3
3.	20A52101T	Communicative English	HS	3-0-0	3
4.	20A02101T	Fundamentals of Electrical Circuits	ES	3-0-0	3
5.	20A03101T	Engineering Drawing	ES	1-0-0/2	2
6.	20A03101P	Engineering Graphics Lab	ES	0-0-2	1
7.	20A56201P	Applied Physics Lab	BS	0-0-3	1.5
8.	20A52101P	Communicative English Lab	HS	0-0-3	1.5
9.	20A02101P	Fundamentals of Electrical Circuits Lab	ES	0-0-2	1.5
				Total	**19.5**

S.No	Course No	Course Name	Category	L-T-P	Credits
Semester – 2 (Theory – 5, Lab – 5)						
1.	20A54201	Differential Equations and Vector Calculus	BS	3-0-0	3
2.	20A51101T	Chemistry	BS	3-0-0	3
3.	20A05201T	C-Programming & Data Structures	ES	3-0-0	3
4.	20A04101T	Electronic Devices & Circuits	ES	3-0-0	3
5.	20A03202	Engineering Workshop	LC	0-0-3	1.5
6.	20A05202	IT Workshop	LC	0-0-3	1.5
7.	20A05201P	C-Programming & Data Structures Lab	ES	0-0-3	1.5
8.	20A51101P	Chemistry Lab	BS	0-0-3	1.5
9.	20A04101P	Electronic Devices & Circuits Lab	ES	0-0-3	1.5
10	20A99201	Environmental Science	MC	3-0-0	0.0
				Total	**19.5**

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Electronics & Communication Engineering

II B.TECH.

S.No.	Course Code	Course Name	Category	L	T	P	Credits
		Semester-III					
				Hours per week			
1.	20A54302	Complex Variables and Transforms	BS	3	0	0	3
2.	20A04301T	Signals and Systems	PC	3	0	0	3
3.	20A02303T	Electrical Engineering	ES	3	0	0	3
4.	20A04302T	Analog Circuits	PC	3	0	0	3
5.	20A52301 20A52302 20A52303	**Humanities Elective– I** Managerial Economics & Financial Analysis Organizational Behaviour Business Environment	HS	3	0	0	3
6.	20A04301P	Simulation Lab	PC	0	0	3	1.5
7.	20A02303P	Electrical Engineering Lab	ES	0	0	3	1.5
8.	20A04302P	Analog Circuits Lab	PC	0	0	3	1.5
9.	20A05305	**Skill oriented course – I** Application Development with Python	SC	1	0	2	2
10.	20A52201	**Mandatory noncredit course – II** Universal Human Values	MC	3	0	0	0
11.	20A99301	**NSS/NCC/NSO Activities**	MC	0	0	2	0
						Total	**21.5**

S.No.	Course Code	Course Name	Category	L	T	P	Credits
		Semester-IV					
				Hours per week			
1.	20A54403	Probability Theory & Stochastic Processes	BS	3	0	0	3
2.	20A04303T	Digital Logic Design	PC	3	0	0	3
3.	20A04401	EM Waves and Transmission Lines	PC	3	0	0	3
4.	20A04402T	Communication Systems	PC	3	0	0	3
5.	20A04403T	Linear and Digital IC Applications	PC	3	0	0	3
6.	20A04303P	Digital Logic Design Lab	PC	0	0	3	1.5
7.	20A04402P	Communication Systems Lab	PC	0	0	3	1.5
8.	20A04403P	Linear and Digital IC Applications Lab	PC	0	0	3	1.5
9.	20A52401	**Skill Oriented Course –II** Soft Skills	SC	1	0	2	2
10.	20A99401	**Mandatory noncredit course – III** Design Thinking for Innovation	MC	2	1	0	0
						Total	**21.5**
Community Service Internship (Mandatory) for 6 weeks duration during summer vacation							

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B.TECH. - ELECTRONICS & COMMUNICATION ENGINEERING
Course Structure (R20) – III & IV Year

S.No.	Course Code	Course Name	L	T	P	Credits
		Semester–V				
1.	20A04501	Control Systems Engineering	3	0	0	3
2.	20A04502T	Digital Signal Processing	3	0	0	3
3.	20A04503T	Microprocessors and Microcontrollers	3	0	0	3
4.	20A05602T 20A04504a 20A04504b	**Professional Elective Course – I** Machine Learning Computer Architecture & Organization Information Theory and Coding	3	0	0	3
5.		**Open Elective Course – I**	3	0	0	3
6.	20A04502P	Digital Signal Processing Lab	0	0	3	1.5
7.	20A04503P	Microprocessors and Microcontrollers Lab	0	0	3	1.5
8.	20A04506	**Skill oriented course - III** PCB Design and Prototype development	1	0	2	2
9.	20A04507	Evaluation of Community Service Project/ Internship				1.5
					Total	21.5

Open Elective Course – I

S.No	Course Code	Course Name	Offering Branch
1	20A01505	Building Technology	CE
2	20A02505	Electric Vehicles	EEE
3	20A03505	3D Printing Technology	ME
4	20A05505a	Java Programming	CSE & Allied/IT
6	20A12502	Mobile Application Development using Android	
7	20A27505	Computer Applications in Food Processing	FT
8	20A54501	Optimization Techniques	Mathematics
9	20A56501	Materials Characterization Techniques	Physics
10	20A51501	Chemistry of Energy Materials	Chemistry
11	20A52501	Academic Writing and Public Speaking	HSMC

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

		Semester–VI				
S.No	**Course Code**	**Course Name**	**L**	**T**	**P**	**Credits**
1.	20A04601T	Antennas & Microwave Engineering	3	0	0	3
2.	20A04602T	VLSI Design	3	0	0	3
3.	20A04603T	Communication Networks	3	0	0	3
4.	20A04604a 20A04604b 20A04604c	**Professional Elective Course– II** Electronic Measurements and Instrumentation Embedded System Design Optical Communication	3	0	0	3
5.		**Open Elective – II**	3	0	0	3
6.	20A04601P	Antennas & Microwave Engineering Lab	0	0	3	1.5
7.	20A04602P	VLSI Design Lab	0	0	3	1.5
8.	20A04603P	Communication Networks Lab	0	0	3	1.5
9.	20A04605	**Skill oriented course - IV** RF System Design	1	0	2	2
10.	20A99601	**Mandatory Non-credit Course** Intellectual Property Rights & Patents	2	0	0	0
		Total				**21.5**
		Industry Internship (Mandatory) for 6 - 8 weeks duration during summer vacation				

Open Elective Course – II

S.No	Course Code	Course Name	Offering Branch
1	20A01704	Environmental Economics	CE
2	20A02605	Smart Electric Grid	EEE
3	20A03605	Non-Conventional sources of energy	ME
4	20A05605a	Principles of Operating Systems	CSE & Allied/IT
5	20A05605b	Artificial Intelligence	
6	20A12603	Data Analytics Using R	
7	20A27605	Food Refrigeration and Cold Chain Management	FT
8	20A54701	Wavelet Transforms & its applications	Mathematics
9	20A56701	Physics Of Electronic Materials and Devices	Physics
10	20A51701	Chemistry of Polymers and its Applications	Chemistry
11	20A52702	English Literary Spectrum	HSMC

		Semester-VII				
S.No.	**Course Code**	**Course Name**	**L**	**T**	**P**	**Credits**
1.	20A04701a 20A04701b 20A04701c	**Professional Elective Course– III** 1. DSP Processors & Architectures 2. Introduction to Internet of Things 3. Satellite Communications	3	0	0	3
2.	20A04702a 20A04702b 20A04702c	**Professional Elective Course– IV** 1. Real Time Operating Systems 2. Digital Image Processing 3. Radar Engineering	3	0	0	3
3.	20A04703a 20A05703b 20A04703c	**Professional Elective Course– V** 1. Smart Sensors 2. Nano Electronics 3. Cellular & Mobile Communications	3	0	0	3
4.	20A52701a 20A52701b 20A52701c	**Humanities Elective – II** Entrepreneurship and Incubation Management Science Enterprise Resource Planning	3	0	0	3
5.		**Open Elective Course – III**	3	0	0	3
6.		**Open Elective Course – IV**	3	0	0	3
7.	20A04707	**Skill oriented course – V** Industrial IoT & Automation	1	0	2	2
	20A04708	Evaluation of Industry Internship				3
				Total		23

Open Elective Course – III

S.No	Course Code	Course Name	Offering Branch
1	20A01705	Cost Effective Housing Techniques	CE
2	20A02704	IOT Applications in Electrical Engineering	EEE
3	20A03704	Introduction to Hybrid and Electric Vehicles	ME
4	20A05704a	Web Technologies	CSE & Allied/IT
5	20A05704b	VR & AR for Engineers	
6	20A05704c	Agile Methodologies	
8	20A27704	Human Nutrition	FT
9	20A54702	Numerical Methods for Engineers	Mathematics
10	20A56702	Sensors And Actuators for Engineering Applications	Physics
11	20A51702	Chemistry of Nanomaterials and Applications	Chemistry
12	20A52703	Indian Constitution	HSMC

Open Elective Course – IV

S.No	Course Code	Course Name	Offering Branch
1	20A01706	Health, Safety & Environmental management	CE
2	20A02705	Renewable Energy Systems	EEE
3	20A03705	Introduction to Composite Materials	ME
4	20A05705a	Cyber Security	CSE & Allied/IT
5	20A05705b	Full Stack Development	
6	20A12705	Industrial IoT	
7	20A27705	Waste and Effluent Management	FT
8	20A54703	Number theory & its applications	Mathematics
9	20A56703	Smart Materials and Devices	Physics
10	20A51703	Green Chemistry and Catalysis for Sustainable Environment	Chemistry
11	20A52704	Gender Studies	HSMC

Semester-VIII							
S.No.	Course Code	Course Name	Category	L	T	P	Credits
1.	20A04801	Full Internship & Project work	PR	-	-	-	12
						Total	**12**

COURSES OFFERED FOR HONOURS DEGREE IN ECE

S.No.	Course Code	Course Title	Contact Hours per Week		Credits
			L	T	
1	20A04H01	Adaptive Signal Processing	3	1	4
2	20A04H02	Software Defined Radio	3	1	4
3	20A04H03	MEMS	3	1	4
4	20A04H04	Low power VLSI Design	3	1	4
5	20A04H05	Wireless Communications	3	1	4
6	20A04H06	Speech Processing	3	1	4
Suggested MOOCs					
8.		VLSI Testing			2
9.		Embedded Software and Hardware Architecture			2

LIST OF MINORS OFFERED TO ECE

S.No.	Minor Title	Department offering the Minor
1.	Construction Technology	Civil Engineering
2.	Environmental Geotechnology	Civil Engineering
3.	Energy Systems	EEE
4.	3D Printing	ME
5.	Industrial Engineering	ME
6.	Food Science	Food Technology
7.	Artificial Intelligence & Data Science	CSE & Allied/ IT
8.	Virtual & Augmented Reality	
9.	Blockchain	

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