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

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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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Electrical & Electronics 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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ELECTRICAL AND ELECTRONICS ENGINEERING

II B.TECH.

S.No.	Course Code	Course Name	Category	Hours per week			Credits
				L	T	P	
1.	20A54302	Complex Variables & Transforms	BS	3	0	0	3
2.	20A02301T	Electrical Circuit Analysis	PC	3	0	0	3
3.	20A02302T	DC Machines & Transformers	PC	3	0	0	3
4.	20A04303T	Digital Logic Design	PC	3	0	0	3
5.	20A52301 20A52302 20A52303	**Humanities Elective – I** Managerial Economics & Financial Analysis Organizational Behavior Business Environment	HS	3	0	0	3
6.	20A02301P	Electrical Circuit Analysis Lab	PC	0	0	3	1.5
7.	20A02302P	DC Machines & Transformers Lab	PC	0	0	3	1.5
8.	20A04303P	Digital Logic Design 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
Total							**21.5**

S.No.	Course Code	Course Name	Category	Hours per week			Credits
				L	T	P	
1.	20A54402	Numerical Methods & Probability Theory	BS	3	0	0	3
2.	20A04404T	Analog Electronic Circuits	ES	3	0	0	3
3.	20A02401T	Power Electronics	PC	3	0	0	3
4.	20A02402T	AC Machines	PC	3	0	0	3
5.	20A02403T	Electromagnetic Field Theory	PC	3	0	0	3
6.	20A04404P	Analog Electronic Circuits Lab	PC	0	0	3	1.5
7.	20A02401P	Power Electronics Lab	PC	0	0	3	1.5
8.	20A02402P	AC Machines Lab	PC	0	0	3	1.5
9.	20A02404	**Skill oriented course – II** Circuits Simulation & Analysis using PSPICE	SC	1	0	2	2
10	20A99401	**Mandatory noncredit course – III** Design Thinking for Innovation	MC	3	0	0	0
Total							**21.5**
Community Service Internship (Mandatory) for 6 weeks duration during summer vacation							

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

S.No.	Course Code	Course Name	L	T	P	Credits
		Semester–V				
1.	20A02501	Power System Architecture	3	0	0	3
2.	20A02502T	Control Systems	3	0	0	3
3.	20A02503T	Measurements & Sensors	3	0	0	3
4.	20A02504a 20A02504b 20A02504c	**Professional Elective Course – I** 1.Switchgear and Protection 2. Power Electronics Drives 3. Power Quality	3	0	0	3
5.		**Open Elective Course – I**	3	0	0	3
6.	20A02502P	Control Systems Lab	0	0	3	1.5
7.	20A02503P	Measurements & Sensors Lab	0	0	3	1.5
8.	20A52401	**Skill oriented course - III** Soft Skills	1	0	2	2
9.	20A02505	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	20A03505	3D Printing Technology	ME
3	20A04505	Digital Electronics	ECE
4	20A05505a	Java Programming	CSE & Allied/IT
5	20A05505b	Introduction to Machine Learning	
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

S.No	Course Code	Course Name	L	T	P	Credits
		Semester–VI				
1.	20A02601T	Power System Analysis	3	0	0	3
2.	20A02602T	Digital Computing Platforms	3	0	0	3
3.	20A04502T	Digital Signal Processing	3	0	0	3
4.	20A02604a 20A02604b 20A02604c	**Professional Elective Course– II** 1. HVDC and FACTS 2. Nonlinear System Analysis 3. Design of Photovoltaic Systems	3	0	0	3
5.		**Open Elective Course – II**	3	0	0	3
6.	20A02601P	Power Systems Analysis Lab	0	0	3	1.5
7.	20A02602T	Digital Computing Platforms Lab	0	0	3	1.5
8.	20A04502P	Digital Signal Processing Lab	0	0	3	1.5
9.	20A02606	**Skill oriented course - IV** Applications of Soft Computing Tools in Electrical Engineering	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	20A03605	Non-Conventional sources of energy	ME
3	20A04704	Signal Processing	ECE
4	20A04701b	Introduction to Internet of Things	ECE/CSE
5	20A05605a	Principles of Operating Systems	CSE & Allied/IT
6	20A05605b	Artificial Intelligence	
7	20A12603	Data Analytics Using R	
8	20A27605	Food Refrigeration and Cold Chain Management	FT
9	20A54701	Wavelet Transforms & its applications	Mathematics
10	20A56701	Physics Of Electronic Materials and Devices	Physics
11	20A51701	Chemistry of Polymers and its Applications	Chemistry
12	20A52702	English Literary Spectrum	HSMC

		Semester-VII				
S.No.	Course Code	Course Name	L	T	P	Credits
1.	20A02701a 20A02701b 20A02701c	**Professional Elective Course– III** 1. Power System Operation & Control 2. Switched Mode Power Converters 3. Electrical & Electronics Instrumentation	3	0	0	3
2.	20A02702a 20A02702b 20A02702c	**Professional Elective Course– IV** 1. Electrical Distribution System & Automation 2. FPGA based Controller Design 3. Intelligent Control Techniques	3	0	0	3
3.	20A02703a 20A02703b 20A02703c	**Professional Elective Course– V** 1. Programmable Logic Controllers 2. Linear & Digital IC Applications 3. Electric Vehicle Technologies	3	0	0	3
4.	20A52701a 20A52701b 20A52701c	**Humanities Elective – II** 1. Entrepreneurship and Incubation 2. Management Science 3. 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.	20A02706	**Skill oriented course – V** Energy Conservation and Audit	1	0	2	2
8.	20A02707	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	20A03704	Introduction to Hybrid and Electric Vehicles	ME
3	20A04705	Electronic Sensors	ECE
4	20A05704a	Web Technologies	CSE & Allied/IT
5	20A05704b	VR & AR for Engineers	CSE & Allied/IT
6	20A05704c	Agile Methodologies	CSE & Allied/IT
7	20A27704	Human Nutrition	FT
8	20A54702	Numerical Methods for Engineers	Mathematics
9	20A56702	Sensors And Actuators for Engineering Applications	Physics
10	20A51702	Chemistry of Nanomaterials and Applications	Chemistry
11	20A52703	Indian Constitution	HSMC

Open Elective Course – IV

S.No	Course Code	Course Name	Offering Branch
1	20A01706	Health, Safety & Environmental management	CE
2	20A03705	Introduction to Composite Materials	ME
3	20A04706	Microcontrollers and Applications	ECE
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.	20A02801	Full Internship & Project work	PR	-	-	-	12
						Total	12

COURSES OFFERED FOR HONOURS DEGREE IN EEE

S.No.	Course Code	Course Name	Contact Hours per week		Credits
			L	T	
1	20A02H01	Electric Vehicle Technology & Mobility	3	1	4
2	20A02H02	Battery Management Systems	3	1	4
3	20A02H03	Special Machines for Electric Vehicles	3	1	4
4	20A02H04	Grid Interface of Electric Vehicles	3	1	4
SUGGESTED MOOCs					
5	20A02H05	Introduction to Hybrid and Electric Vehicles (MOOC-NPTEL)	--	--	2
6	20A02H06	Electric Vehicles and Renewable Energy(MOOC-NPTEL)	--	--	2

LIST OF MINORS OFFERED TO EEE

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