



**Jawaharlal Nehru Technological  
University Anantapur College of Engineering  
Pulivendula –516 390 (A.P) India**

**B.Tech. in Electrical and Electronics Engineering  
Course Structure and Syllabi  
under R19 Regulations**



**ELECTRICAL & ELECTRONICS ENGINEERING**

<b>Semester –0</b>			
S.No	Course Name	Category	L-T-P-C
1	Physical Activities -- Sports, Yoga and Meditation, Plantation	MC	0-0-6-0
2	Career Counseling	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	MC	2-0-3-0
5	Proficiency Modules & Productivity Tools	MC	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	MC	2-1-2-0
10	Concepts of Programming	MC	2-0-2-0

**B.Tech I Year I Semester**

<b>Semester –1</b>					
S.No	Course No	Course Name	Category	L-T-P	Credits
1	19ABS06	Linear Algebra and Calculus	BS	3-1-0	4
2	19ABS03	Chemistry	BS	3-0-0	3
3	19ACS01	Problem Solving & Programming	ES	3-1-0	4
4	19AHS01	Communicative English - I	HS	2-0-0	2
5	19AEEE01	Electrical & Electronics Engineering Workshop	LC	0-0-2	1
6	19ABS04	Chemistry Lab	BS	0-0-3	1.5
7	19ACS02	Problem Solving & Programming Lab	ES	0-0-3	1.5
8	19AHS02	Communicative English -I Lab	HS	0-0-2	1
				<b>Total</b>	<b>18</b>

**B.Tech I Year II Semester**

<b>Semester – 2</b>					
S.No	Course No	Course Name	Category	L-T-P	Credits
1	19AEE02	Electrical Circuits-I	ES	3- 0-0	3
2	19ABS07	Differential Equations and Vector Calculus	BS	3-1-0	4
3	19ABS09	Applied Physics	BS	3-0-0	3
4	19ACS05	Data Structures	ES	3-0-0	3
5	19AME01	Engineering Graphics	ES	1-0-3	2.5
6	19AME02	Engineering Workshop	LS	0-0-3	1.5
7	19AEE03	Electrical Circuits Lab	ES	0-0-3	1.5
8	19ABS10	Applied Physics Lab	BS	0-0-3	1.5
9	19ACS06	Data Structures Lab	ES	0-0-3	1.5
				<b>Total</b>	<b>21.5</b>



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**B.Tech II Year I Semester**

Semester – 3					
S.No	Course No	Course Name	Category	L-T-P	Credits
1	19ABS12	Complex Variables & Transforms	BS	3-0-0	3
2	19AEC11	Semiconductor Devices and Circuits	PC	3-0-0	3
3	19AEE07	Control Systems	PC	3-0-0	3
4	19AEE09	Performance of DC Machines	PC	3-1-0	4
5	19AEE10	Electromagnetic Field Theory	PC	3-0-0	3
6	19AEE11	Electric Circuits – II	PC	3-0-0	3
7	19AEC12	Semiconductor Devices And Circuits Lab	PC	0-0-2	1
8	19AEE08	Control Systems Lab	PC	0-0-3	1.5
9	19AHS04	Constitution of India	MC	3-0-0	0
<b>Total</b>					<b>21.5</b>

**B.Tech II Year II Semester**

Semester – 4					
S.No	Course No	Course Name	Category	L-T-P	Credits
1	19ABS15	Numerical Methods, Probability and Statistics	BS	3-0-0	3
2	19AEE12	Electrical Power Generation and Distribution	PC	3-0-0	3
3	19ACS28	Introduction to Python Programming	PC	2-1-0	3
4	19AEC13	Analog Electronic Circuits	PC	3-0-0	3
5	19AEE13	Performance of Transformers and Induction Machines	PC	3-1-0	4
6.	19AEE14	Electrical and Electronic Measurements	PC	3-0-0	3
7	19AEE15	Dc Machines Lab	PC	0-0-3	1.5
8	19AEC14	Analog Electronics Lab	PC	0-0-2	1
9	19ABS14	Environmental Science	MC	3-0-0	0
10	19AHS03	Universal Human Values and Professional Ethics	MC	2-0-0	2
<b>Total</b>					<b>23.5</b>



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**B.Tech III Year I Semester**

Semester - 5					
S.No	Course No	Course Name	Category	L-T-P	Credits
1	19AHS12	English Language Skills	HS	2-0-0	2
2	19AEE51	Performance of Synchronous and Special Machines	PC	3-0-0	3
3	19AEE52	Electrical Power Transmission and Utilization	PC	3-0-0	3
4	19AEE53	Power Electronics	PC	3-1-0	4
5	19AEE54	Professional Elective – I	PE	3-0-0	3
	19AEE54a	Electrical Distribution Systems			
	19AEE54b	Advanced Control Systems			
	19AEE54c	AI techniques in Electrical Engineering			
6	19AEE55	Open Elective – I (Interdisciplinary)- ANNEXURE-I	OE	3-0-0	3
7	19AHS13	English Language Skills Lab	HS	0-0-3	1.5
8	19AEE56	AC Machines Lab	PC	0-0-2	1
9	19ACE59	Socially Relevant Projects (30 hours/sem)	PR	-----	1
10	19AHS17	Research Methodology	MC	3-0-0	0
				<b>Total</b>	<b>21.5</b>

**B.Tech III Year II Semester**

Semester - 6					
S.No	Course No	Course Name	Category	L-T-P	Credits
1	19AEE61	Power System Operation and Control	PC*	3-1-0	4
2	19AEE62	Signals and Systems	PC	3-0-0	3
3	19AEE63	Switchgear and Protection	PC	3-0-0	3
4	19AEE64	Professional Elective – II	PE	3-0-0	3
	19AEE64a	Energy Auditing, Conservation & Management			
	19AEE64b	Digital Computer Platforms			
	19AEE64c	Applications of Power Electronics to Renewable Energy Sources			
5	19AEE65	Open Elective –II (Interdisciplinary)- ANNEXURE-II	OE	3-0-0	3
6	19AHS14	Humanities Elective – I	HS	3-0-0	3
	19AHS14a	MEFA			
	19AHS14b	Entrepreneurship & Innovation Management			
7	19AEE66	Power Electronics Lab	PC	0-0-3	1.5
8	19AEE67	Electrical Measurements Lab	PC	0-0-2	1
9	19AHS16	Organizational Behaviors	MC	3-0-0	0
10	Industrial Training/Internship/Research Projects in National Laboratories/Academic Institutions *		PR	4 Weeks Summer Internship	
				<b>Total</b>	<b>21.5</b>



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**B.Tech IV Year I Semester**

<b>Semester - 7</b>					
S.No	Course No	Course Name	Category	L-T-P	Credits
1	19AEE71	Digital Electronics and Logic Design	PC	3-0-0	3
2	19AEE72	Power Semi-Conductor Drives	PC	3-0-0	3
3	19AEE74	Professional Elective – III	PE	3-0-0	3
	19AEE74a	Switched mode Power Converters			
	19AEE74b	Power Quality			
	19AEE74c	Instrumentation			
4	19AEE76	Professional Elective – IV	PE	3-0-0	3
	19AEE76a	HVDC and Flexible AC Transmission systems			
	19AEE76b	Smart Grid Technologies			
	19AEE76c	Hybrid Electric Vehicles			
5	19AEE75	Open Elective – III -ANNEXURE-III	OE	2-0-0	2
6	19AHS15	Humanities Elective – II	HS	3-0-0	3
	19AHS15a	Management Science			
	19AHS15b	Business Environment			
7	19AEE77	Power Systems Lab	PC	0-0-3	1.5
8	19AEE78	Industrial Training/Internship/Research Projects in National Laboratories/Academic Institutions *	PR	-----	2
9	19AEE79	Project Stage – I	PR	-----	2
				<b>Total</b>	<b>22.5</b>

**B.Tech IV Year II Semester**


<b>Semester - 8</b>					
S.No	Course No	Course Name	Category	L-T-P	Credits
1	19AEE81	Professional Elective - V (MOOC)	PE	3-0-0	3
2	19AEE82	Open Elective – IV (MOOC)	OE	3-0-0	3
3	19AEE89	Project Stage – II	PR	-----	6
				<b>Total</b>	<b>12</b>



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## ANNEXURE – I

## Open Elective I (Interdisciplinary)

Branch	Subject Code	Subject
Humanities	19AHS10	Campus Recruitment Training & Soft Skills
Mathematics	19ABS20	Mathematical Modeling
	19ABS21	Fuzzy Set Theory, Arithmetic and Logic
	19ABS22	Number Theory
Physics	19ABS31	Sensors and Actuators for Engineering Applications
	19ABS32	Physics of Electronic Materials
Chemistry	19ABS41	Chemistry of Energy Materials
	19ABS42	Advanced Polymers and Their Applications
	19ABS43	Marine Chemistry
CIVIL	19ACE55a	Air Pollution and Control
	19ACE55b	Green Buildings
	19ACE55c	Basics of Civil Engineering Materials and Construction Practice
ME	19AME55a	Introduction to Hybrid and Electric Vehicles
	19AME55b	Rapid Prototyping
	19AME55c	Design for Manufacturing and Assembly
	19AME55d	Power Plant Operation and Control
	19AME55e	Smart Materials
	19AME55f	Supply Chain Management
ECE	19AEC55a	Fundamentals of Electronics and Communication Engineering
	19AEC55b	Transducers and Sensors
	19AEC55c	Principles of Communications
CSE	19ACS55a	Object Oriented Programming Concepts Through Java
	19ACS55b	Introduction to Internet Of Things
	19ACS55c	Introduction to Operating Systems



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## ANNEXURE – II

## Open Elective II (Interdisciplinary)

Branch	Subject Code	Subject Name
Humanities	19AHS11	Competitive & Spoken English
Mathematics	19ABS23	Integral Transforms And ITS Applications
	19ABS24	Numerical Analysis
	19ABS25	Optimization Techniques
Physics	19ABS33	Functional Nanomaterials For Engineers
	19ABS34	Materials Characterization Techniques
Chemistry	19ABS44	Green Chemistry and Catalysis for Sustainable Environment
	19ABS45	Chemistry of Nanomaterials and Applications
	19ABS46	Environmental Management and Audit
CIVIL	19ACE65a	Remote Sensing and GIS
	19ACE65b	Environmental Impact Assessment
	19ACE65c	Disaster Management and Mitigation
ME	19AME65a	Automobile Electronics, Sensors & Drives
	19AME65b	Programming of Robots and Control
	19AME65c	Sensors in Intelligent Manufacturing
	19AME65d	Non-Conventional Sources of Energy
	19AME65e	NEMS & MEMS
	19AME65f	Optimization Techniques Through MAT lab
ECE	19AEC65a	Introduction to Microcontrollers & Applications
	19AEC65b	Principles of Digital Signal Processing
	19AEC65c	Introduction to Image Processing
CSE	19ACS65a	Introduction to Machine Learning
	19ACS65b	Introduction to Computer Networks
	19ACS65c	Web Design and Management

## ANNEXURE – III - Open Elective III

Branch	Subject Code	Subject Name
CIVIL	19ACE75a	Architecture and town planning
	19ACE75b	Experimental stress analysis
	19ACE75c	Finite element methods
EEE	19AEE75a	Electrical engineering materials
	19AEE75b	Digital signal processors and applications
	19AEE75c	IOT applications in electrical engineering
ME	19AME75a	Special types of vehicles
	19AME75b	Six sigma and lean manufacturing
	19AME75c	Reverse engineering
	19AME75d	Energy auditing
	19AME75e	Introduction to composite materials
	19AME75f	Customer relationship management
ECE	19AEC75a	Embedded systems & IOT
	19AEC75b	Electronic instrumentation
	19AEC75c	Basics of VLSI design
CSE	19ACS75a	Mobile application development
	19ACS75b	Real time operating systems and applications
	19ACS75c	Fundamentals of block chain and applications

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