JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA
KAKINADA – 533 003, Andhra Pradesh, India

DEPARTMENT OF ELECTRONICS AND COMMUNICATION TECHNOLOGY

COURSE STRUCTURE

For UG – R20

B. TECH - ELECTRONICS AND COMMUNICATION TECHNOLOGY

(Applicable for batches admitted from 2020-2021)

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COURSE STRUCTURE

I Year – I SEMESTER

S. No	Course Code	Subjects	L	T	P	Credits
1		Communicative English	3	0	0	3
2		Mathematics -I	3	0	0	3
3		Applied Chemistry	3	0	0	3
4		Programming for Problem Solving Using C	3	0	0	3
5		Engineering Graphics	1	0	4	3
6		English Communication Skills Lab	0	0	3	1.5
7		Applied Chemistry Lab	0	0	3	1.5
8		Programming for Problem Solving Using C Lab	0	0	3	1.5
Total Credits						**19.5**

I Year – II SEMESTER

S. No	Course Code	Subjects	L	T	P	Credits
1		Mathematics –II	3	0	0	3
2		Applied Physics	3	0	0	3
3		Object Oriented Programming through Java	2	0	2	3
4		Network Analysis	3	0	0	3
5		Basic Electrical Engineering	3	0	0	3
6		Electronic workshop Lab	0	0	3	1.5
7		Basic Electrical Engineering Lab	0	0	3	1.5
8		Applied Physics Lab	0	0	3	1.5
9		Environmental Science	3	0	0	0.0
Total Credits						**19.5**

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II Year – I Semester

S. No.	Course	Category	L	T	P	Credits
1	Mathematics-III	BS	3	0	0	3
2	Electronic Devices and Circuits	PC	3	0	0	3
3	Signals and Systems	PC	3	0	0	3
4	Random Variables and Stochastic Process	PC	3	0	0	3
5	Switching Theory and Logic Design	PC	3	0	0	3
6	Electronic Devices and Circuits Lab	PC Lab	0	0	3	1.5
7	Switching Theory and Logic Design Lab	PC Lab	0	0	3	1.5
8	Signals and Systems Lab	PC Lab	0	0	3	1.5
9	MATLAB Programming	SOC	1	0	2	2
10	Constitution of India	MC	2	0	0	0
	Total Credits					**21.5**

II Year – II Semester

S. No.	Course	Category	L	T	P	Credits
1	Computer Architecture and Organization	ES	3	0	0	3
2	Electronic Circuit Analysis	PC	3	0	0	3
3	Analog Communications	PC	3	0	0	3
4	Electromagnetic Waves and Transmission Lines	PC	3	0	0	3
5	Managerial Economics and Financial Analysis	HS	3	0	0	3
6	Electronic Circuit Analysis Lab	PC Lab	0	0	3	1.5
7	Analog Communications Lab	PC Lab	0	0	3	1.5
8	Computer Architecture and Organization Lab	ES Lab	0	0	3	1.5
9	PYTHON Programming	SOC	1	0	2	2
10	Industrial/Research Internship (Mandatory) 2 Months… to be evaluated in III year I semester					
	Total Credits					**21.5**
Honors/Minor courses (The hours distribution can be 3-0-2 or 3-1-0 also)						**4**

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III YEAR – I SEMESTER

S. No	Course Title	Category	Course Code	Hours Per Week			Credits
				L	T	P	
1	Antenna and Wave Propagation	PC		3	0	0	3
2	Linear Control Systems	PC		3	0	0	3
3	Digital Communications	PC		3	0	0	3
4	Open Elective Course/Job oriented elective -1	OE-1		2	0	2	3
5	**Professional Elective -1** 1. Electronic Measurements and Instrumentation 2. Linear Integrated Circuits 3. Computer Networks	PE-1		3	0	0	3
6	Digital Communications Lab	PC Lab		0	0	3	1.5
7	Digital System Design using HDL Lab	PC Lab		0	0	3	1.5
8	Communication Skills (Soft Skills Lab)	SOC		1	0	2	2
9	Indian Traditional Knowledge	MC		2	0	0	0
10	Summer Internship 2 Months (Mandatory) after second year (to be evaluated during V semester)						1.5
Total Credits							**21.5**
Honors/Minor courses (The hours distribution can be 3-0-2 or 3-1-0 also)				4	0	0	4

Honor Courses	Minor Courses
1. Transducers & Sensors	i. Speech Processing
2. Semiconductor memories Design and Testing	ii. VLSI Technology & Design
3. Wireless Sensor Networks	iii. Digital Measurement Techniques
4. Digital Control Systems	iv. Fundamentals of Mobile Communication

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III YEAR – II SEMESTER

S. No	Course Title	Category	Course Code	Hours Per Week			Credits
				L	T	P	
1	Microprocessor and Microcontrollers	PC		3	0	0	3
2	VLSI Design	PC		3	0	0	3
3	Digital Signal Processing	PC		3	0	0	3
4	**Professional Elective courses - 2** 1. Mobile & Cellular Communication 2. Microwave Engineering 3. Data Communication & Networks	PE -2		3	0	0	3
5	Open Elective Course/Job oriented elective -2	OE-2		2	0	2	3
6	Microprocessor and Microcontrollers - Lab	PC Lab		0	0	3	1.5
7	VLSI Lab	PC Lab		0	0	3	1.5
8	Digital Signal Processing Lab	PC Lab		0	0	3	1.5
9	Simulation Lab using SCI Lab	SOC		1	0	2	2
10	Research Methodology	MC		2	0	0	0
11	Industrial/Research Internship (Mandatory) 2 Months… to be evaluated in IV year I semester						
Total Credits							**21.5**
Honors/Minor courses (The hours distribution can be 3-0-2 or 3-1-0 also)				4	0	0	4

Honor Courses	Minor Courses
1. Data Acquisition systems	i. DSP Processors & Applications
2. CMOS Analog IC Design	ii. Testing& Testability
3. Cognitive Radio	iii. Principles of Nano Sensors
4. Speech Processing	iv. Software Defined Radio

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IV YEAR – I SEMESTER

S. No	Course Title	Category	Course Code	Hours Per Week			Credits
				L	T	P	
1	Professional Elective courses -3 1. Optical Communication 2. Digital Image Processing 3. Low Power VLSI Design	PE -3		3	0	0	3
2	**Professional Elective courses -4** 1.Satellite Communications 2. ANN & Fuzzy Logic 3. Digital IC Design using CMOS	PE -4		3	0	0	3
3	**Professional Elective courses -5** 1. Radar Systems 2. Pattern recognition & Machine Learning 3. Embedded Systems	PE -5		3	0	0	3
4	Open Elective Courses/ Job oriented elective -3	OE -3		2	0	2	3
5	Open Elective Courses/ Job oriented elective -4	OE -4		2	0	2	3
6	Universal Human Values 2: Understanding Harmony	HSE		3	0	0	3
7	Interfacing with Arduino	SOC		1	0	2	2
Industrial/Research Internship 2 Months (Mandatory) after third year (to be evaluated during VII semester)							3
Total Credits							**23**
Honors/Minor courses (The hours distribution can be 3-0-2 or 3-1-0 also)				4	0	0	4

Honor Courses	Minor Courses
1. Video Signal Processing	i. Adaptive Signal Processing
2. PLDs and ASIC	iii. System On Chip
3. 5G Communications	iii. Data acquisition & Transmission
4. Biomedical Instrumentation	iv. Wireless Communications

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IV YEAR – II SEMESTER

S. No	Course Title	Category	Course Code	Hours Per Week			Credits
				L	T	P	
1	Major Project	PROJ		0	0	0	12
INTERNSHIP (6 MONTHS)							
Total Credits							12

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MINORS FOR SPECIALIZED TRACKS

General Minor Track

S. NO	SUBJECT	L-T-P	CREDITS
1	Basics of Electronics	3-1-0	4
2	Electronic Instrumentation	3-1-0	4
3	Principles of Communication Engineering	3-1-0	4
4	Principles of Signal Processing	3-1-0	4
5	Digital Electronics	3-1-0	4
6	Fundamentals of Embedded Systems	3-1-0	4
Compulsory MOOC/NPTEL Courses for 04 credits (02 courses @ 2 credits each)			

Signal Processing

S. NO	SUBJECT	L-T-P	CREDITS
1	ML for Signal Processing	3-1-0	4
2	Adaptive Signal Processing	3-1-0	4
3	Speech Processing	3-1-0	4
4	Digital Signal Processors & Applications	3-1-0	4
Compulsory MOOC/NPTEL Courses for 04 credits (02 courses @ 2 credits each)			

Micro Electronics

S. NO	SUBJECT	L-T-P	CREDITS
1	CAD for VLSI Design	3-1-0	4
2	VSLI Technology and Design	3-1-0	4
3	System on Chip	3-1-0	4
4	Testing and Testability	3-1-0	4
Compulsory MOOC/NPTEL Courses for 04 credits (02 courses @ 2 credits each)			

Instrumentation

SNO	SUBJECT	L-T-P	CREDITS
1	Principles of Nano Sensors	3-1-0	4
2	Digital Measurement Techniques	3-1-0	4
3	Data Acquisition and Transmission	3-1-0	4
4	Analytical Instrumentation	3-1-0	4
Compulsory MOOC/NPTEL Courses for 04 credits (02 courses @ 2 credits each)			

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Communication Technologies

SNO	SUBJECT	L-T-P	CREDITS
1	Wireless Communications	3-1-0	4
2	Fundamentals of Mobile Communication	3-1-0	4
3	Software Defined Radio	3-1-0	4
4	Optical Communication Technologies	3-1-0	4
Compulsory MOOC/NPTEL Courses for 04 credits (02 courses @ 2 credits each)			

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HONORS FOR SPECIALIZED TRACKS

POOL-1: Instrumentation and Control Systems (any four of the following subjects which are not chosen as professional electives are to be considered for Honors Degree)

S. NO	SUBJECT	L-T-P	CREDITS
1	Data Acquisition systems	3-1-0	4
2	Bio-Medical Instrumentation	3-1-0	4
3	Digital Control Systems	3-1-0	4
4	Transducers & sensors	3-1-0	4
In addition to any of the four subjects Compulsory MOOC/NPTEL Courses for 04 credits (02 courses @ 2 credits each)			

POOL-2: VLSI (any four of the following subjects which are not chosen as professional electives are to be considered for Honors Degree)

S. NO	SUBJECT	L-T-P	CREDITS
1	CMOS Analog IC Design	3-1-0	4
2	CMOS Digital IC design	3-1-0	4
3	Semi Conductor Memories design and Testing	3-1-0	4
4	Programmable Logic Devices and ASIC	3-1-0	4
In addition to any of the four subjects Compulsory MOOC/NPTEL Courses for 04 credits (02 courses @ 2 credits each)			

POOL-3: Communication Technology (any four of the following subjects which are not chosen as professional electives are to be considered for Honors Degree)

S. NO	SUBJECT	L-T-P	CREDITS
1	Wireless Sensor Networks	3-1-0	4
2	Data Communications & Networks	3-1-0	4
3	Cognitive radio	3-1-0	4
4	5G Communications	3-1-0	4
In addition to any of the four subjects Compulsory MOOC/NPTEL Courses for 04 credits (02 courses @ 2 credits each)			

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POOL-4: Digital Signal processing (any four of the following subjects which are not chosen as professional electives are to be considered for Honors Degree)

S. NO	SUBJECT	L-T-P	CREDITS
1	Audio and Speech Signal Processing	3-1-0	4
2	Video Signal Processing	3-1-0	4
3	Multi rate Signal Processing	3-1-0	4
4	Bio-Medical Signal Processing	3-1-0	4
In addition to any of the four subjects Compulsory MOOC/NPTEL Courses for 04 credits (02 courses @ 2 credits each)			

List of the Open Electives offered by ECT Department to other Branches:

1. Introduction to Signals and systems
2. Instrumentation & Measurements
3. Fundamentals of Signal Processing
4. Introduction to Microprocessor and Microcontrollers
5. Principles of communication Engineering
6. Fundamentals of Digital Electronics