RAMIREDDY SUBBARAMI REDDY
ENGINEERING COLLEGE
(Promoted by RAMIREDDY SUBBARAMI REDDY EDUCATIONAL TRUST)
Approved by AICTE & Affiliated to JNTUA
An ISO 9001:2015 Certified Institution

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

CO'S AND PO'S MAPPING

JNTUA-R15 REGULATION

INDEX

List of all courses offered by the institution for the regulation R15, JNTUA

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2	15A54101	Mathematics – I	
3	15A05101	Computer Programming	
4	15A51101	Engineering Chemistry	
5	15A01101	Environmental Studies	
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7	15A51102	Engineering Chemistry Lab	
8	15A05102	Computer Programming Lab	
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I B.Tech, I Sem ECE Cos and pos mapping (R15-JNTUA)

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DEPARTMENT OF HUMANITIES AND SCIENCES

COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

SEM: I-I	Reg: R15	AY: 2017-2018

Course Code:	Course Name: FUNCTIONAL ENGLISH	L	T	P	C
15A52101	Prerequisite:NONE	3	1	-	3

COURSE OUTCOMES (COs)

CO No.	COURSE OUTCOME
2101.1	Acquire good listening skills to participate effectively in group discussions, debates, and interviews and writing skills for effective technical report writing. (BTL2)
2101.2	Develop oral communication skills in English to speak fluently in various academic and social situations. (BTL3)
2101.3	Identify deviant use of English both in spoken and written forms, and improve awareness of its in science and technology. (BTL2)
2101.4	Understand the importance of reading for life, and career and thereby develop an interest for it. (BTL2)
2101.5	Demonstrate fundamental skills required for critical thinking. (BTL2)

Mapping of Course Outcomes (COs) with Program Outcomes (POs) & Program Specific Outcomes (PSOs)

COs	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
2101.1	-	-	-	-	-	-	-	-	3	3	2	3	-	-
2101.2	-	-	-	-	-	-	-	-	2	3	2	3	-	-
2101.3	-	-	-	-	-	-	-	-	3	3	2	3	-	-
2101.4	-	-	-	-	-	-	-	-	3	2	2	2	-	-
2101.5	-	-	-	-	-	-	-	-	3	3	2	3	-	-
AVG	0	0	0	0	0	0	0	0	3	3	3	3	-	-

3/2/1 Indicates Strength of Correlation. 3-High, 2-Medium and 1-Low

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DEPARTMENT OF HUMANITIES AND SCIENCES

COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

SEM: I-I	Reg: R15	AY: 2017-2018

Course Code:	Course Name: Mathematics – I	L	T	P	C
15A4101	Prerequisite: None	3	1	-	3

COURSE OUTCOMES (COs)

CO No.	COURSE OUTCOME
4101.1	Solve the First, Second and Higher order D.Es and Applications of First Order D.E (BTL3)
4101.2	Attain the knowledge of Applications of L.D.Es like Mechanical & Electrical Oscillatory circuits and deflection of beams (BTLL2)
4101.3	Familiarize with functions of several variables which is useful in Optimizations. (BTLL6)
4101.4	Determine important tools of calculus in Higher Dimensions (Multiple Integrals) (BTLL5)
4101.5	Become familiar with the applications of vector calculus to Engineering Problems. (BTL6)

Mapping of Course Outcomes (COs) with Program Outcomes (POs) & Program Specific Outcomes (PSOs)

COs	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
4101.1	3	2	2	2	-	-	-	-	-	-	-	2	2	2
4101.2	3	2	2	2	-	-	-	-	-	-	-	2	2	2
4101.3	2	3	3	2	-	-	-	-	-	-	-	2	2	3
4101.4	2	3	2	2	-	-	-	-	-	-	-	1	2	2
4101.5	3	3	2	2	-	-	-	-	-	-	-	2	2	2
AVG	2.6	2.6	2.2	2	-	-	-	-	-	-	-	2	2	2.2

3/2/1 Indicates Strength of Correlation. 3-High, 2-Medium and 1-Low

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

SEM: I – I	Reg: R15	AY: 2017-2018

Course Code:	Course Name: Computer Programming	L	T	P	C
15A05101	Prerequisite:Nil	3	1	-	3

COURSE OUTCOMES (COs)

CO No.	COURSE OUTCOME
5101.1	Analyze overview of computer programming (BTL4)
5101.2	Understand various statements in C and discuss the arrays, stings, functions (BTL2)
5101.3	Illustrate pointers and understanding the scope of functions. (BTL2)
5101.4	Develop the command line arguments and structures (BTL 3)
5101.5	Understand the file handling functions and pre-processor directives. (BTL2)

Mapping of Course Outcomes (COs) with Program Outcomes (POs) & Program Specific Outcomes (PSOs)

COs	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
5101.1	3	2	2	2	-	-	-	-	-	-	-	2	2	3
5101.2	3	3	3	3	-	-	-	-	-	-	-	2	2	3
5101.3	3	3	2	3	-	-	-	-	-	-	-	3	2	2
5101.4	2	3	3	2	-	-	-	-	-	-	-	3	3	2
5101.5	2	3	3	2	-	-	-	-	-	-	-	3	2	2
AVG	3	3	3	2	-	-	-	-	-	-	-	3	2	2

3/2/1 Indicates Strength of Correlation. 3-High, 3-Medium and 1-Low

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DEPARTMENT OF HUMANITIES AND SCIENCES

COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

SEM: I-I	Reg: R15	AY: 2017-2018

Course Code:	Course Name: Engineering Chemistry	L	T	P	C
15A51101	Prerequisite: None	3	1	-	3

COURSE OUTCOMES (COs)

CO No.	COURSE OUTCOME
1101.1	Differentiate between hard and soft water.(L3)
1101.2	Discuss BUNA-S and BUNA-N Elastromers (L2)
1101.3	Understand the electrochemical sources of energy. (L3)
1101.4	Discuss about solid, liquid, gaseous fuels (L2)
1101.5	Understand the principles of lubricants and CNTs (L2)

Mapping of Course Outcomes (COs) with Program Outcomes (POs) & Program Specific Outcomes (PSOs)

Cos	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
1101.1	3	3	3	2	2	2	-	-	2	-	-	2	3	-
1101.2	2	2	3	3	-	1	1	-	-	-	-	2	-	2
1101.3	3	2	3	2	-	-	3	-	1	-	-	-	3	-
1101.4	2	2	2	2	-	-	-	-	-	-	-	-	2	2
1101.5	2	1	1	2	-	1	-	-	-	-	-	-	2	-
AVG	2.4	2	2.4	2.2	2	1.33	2	-	1.5	-	-	2	2.5	2

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DEPARTMENT OF HUMANITIES AND SCIENCES

COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

SEM: I-I	Reg: R15	AY: 2017-2018

Course Code:	Course Name: Environmental Studies	L	T	P	C
15A01101	Prerequisite: None	3	1	-	3

COURSE OUTCOMES (COs)

CO No.	COURSE OUTCOME
1101.1	Understand the various natural resources (L2)
1101.2	Discribe about the Biodiversity and Ecosystem (L2)
1101.3	Discuss about the pollution aspects (L3)
1101.4	To know about the social issues related to environment and thir protection acts (L1)
1101.5	Discribe about the population explosion and welfare programme (L2)

Mapping of Course Outcomes (COs) with Program Outcomes (POs) & Program Specific Outcomes (PSOs)

Cos	PO												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
1101.1	3	2	3	2	3	-	2	-	2	-	-	-	2	2	-
1101.2	2	2	3	2	-	2	3	-	-	-	-	-	3	-	2
1101.3	3	2	3	2	-	-	2	-	-	-	-	3	3	2	-
1101.4	2	2	3	2	-	-	2	2	-	-	-	-	-	3	-
1101.5	2	2	3	2	3	2	3	2	-	-	-	3	-	3	-
AVG	2.4	2	3	2	3	2	2.4	2	2	####	####	3	2.67	2.5	2

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DEPARTMENT OF HUMANITIES AND SCIENCE

COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

SEM: I-I	Reg: R15	AY: 2017-2018

Course Code:	Course Name: English Language Communication Skills	L	T	P	C
15A52102	Prerequisite: None	-	-	4	2

COURSE OUTCOMES (COs)

CO No.	COURSE OUTCOME
2102.1	Distinguish the speech sounds and acquire better pronunciation
2102.2	Develop oral fluency and neutralize mother tongue influence.
2102.3	Take part actively in the learning process and become expertise in Presentation Skills like Oral, Poster, Power Point and other necessary speaking skills
2102.4	Apply language skills appropriately and effectively in interviews, group discussions and public speaking activities
2102.5	Take part in group activites with more confidence thereby enhancing the employability skills

Mapping of Course Outcomes (COs) with Program Outcomes (POs) & Program Specific Outcomes (PSOs)

COs	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
2102.1	-	-	-	-	-	-	-	1	3	3	3	2	-	-
2102.2	-	-	-	-	-	-	-	1	3	3	2	1	-	-
2102.3	-	-	-	-	-	-	-	1	3	3	3	2	-	-
2102.4	-	-	-	-	-	-	-	1	3	3	2	1	-	-
2102.5	-	-	-	-	-	-	-	1	3	3	3	2	-	-
AVG	-	-	-	-	-	-	-	1	3	3	3	2	-	-

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DEPARTMENT OF HUMANITIES AND SCIENCE

COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

SEM: I-I	Reg: R15	AY: 2017-2018

Course Code:	Course Name: Engineering Chemistry Lab	L	T	P	C
15A51102	Prerequisite: None	-	-	4	2

COURSE OUTCOMES (COs)

CO No.	COURSE OUTCOME
1102.1	Develop skills in determining the effects of hard water in water
1102.2	Distinguish different types of titrations in the volumetric analysis
1102.3	Apply Conductometry instrumental method in volumetric analysis to determine the concentration of a given HCL solution by titration against a Standard NaOH solution
1102.4	Correlate the purity of water samples by doing D.O, Acidity and alkalinity estimations
1102.5	Analyze the effect of temperature on viscosity by using Redwood viscometer

COs	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
1102.1	3	3	-	-	-	-	3	1	1	1	-	-	-	-
1102.2	3	3	-	-	-	-	2	1	1	1	-	-	-	-
1102.3	3	3	1	-	-	-	1	1	1	1	-	-	-	-
1102.4	3	3	2	-	-	-	3	1	1	1	-	-	-	-
1102.5	3	3	2	-	-	-	1	1	1	1	-	-	-	-
AVG	3	3	2	-	-	-	2	1	1	1	-	-	-	-

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

SEM: I – I	Reg: R15	AY: 2017-2018

Course Code:	Course Name: Computer Programming Lab	L	T	P	C
15A05201	Prerequisite: Programming in C	-	-	4	2

COURSE OUTCOMES (COs)

CO No.	COURSE OUTCOME
5201.1	Understand and trace the execution of programs written in C language and Write the C code for a given algorithm. (BTL2)
5201.2	Construct programs that perform conditional, selection statements. (BTL3)
5201.3	Design Programs with arrays and functions, strings (BTL6)
5201.4	Design the programs with pointers, structures. (BTL6)
5201.5	Apply file operations to create several programs. (BTL3)

Mapping of Course Outcomes (COs) with Program Outcomes (POs) & Program Specific Outcomes (PSOs)

COs	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
5201.1	3	2	2	2	-	-	-	-	2	-	-	2	3	2
5201.2	3	3	3	3	-	-	-	-	3	-	-	2	2	3
5201.3	3	3	2	3	-	-	-	-	3	-	-	3	2	2
5201.4	2	3	3	2	-	-	-	-	2	-	-	3	3	2
5201.5	2	3	3	2	-	-	-	-	2	-	-	2	2	2
AVG	3	3	3	2	-	-	-	-	2	-	-	2	2	2

3/2/1 Indicates Strength of Correlation. 3-High, 3-Medium and 1-Low

I B.Tech, 1I Sem ECE Cos and pos mapping (R15-JNTUA)

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DEPARTMENT OF HUMANITIES AND SCIENCES

COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

SEM: I-II	Reg: R15	AY: 2017-2018

Course Code:	Course Name: Mathematics – II	L	T	P	C
15A54201	Prerequisite: None	3	1	-	3

COURSE OUTCOMES (COs)

CO No.	COURSE OUTCOME
4201.1	Understand the usage of Laplace Transforms. (BTL2)
4201.2	Evaluate the Fourier Series expansion of periodic functions. (BTL5)
4201.3	Understand the usage of Fourier Transforms. (BTL2)
4201.4	Formulate/Solve/Classify the solutions of P.D. Equations and also find the solutions of 1-Dimensional Wave equations and Heat equations. (BTL6)
4201.5	Understand the usage of Z-Transforms. (BTL2)

Mapping of Course Outcomes (COs) with Program Outcomes (POs) & Program Specific Outcomes (PSOs)

COs	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
4201.1	3	2	2	2	-	-	-	-	-	-	-	1	2	3
4201.2	2	3	2	2	-	-	-	-	-	-	-	1	2	2
4201.3	3	2	2	2	-	-	-	-	-	-	-	1	2	2
4201.4	3	2	2	2	-	-	-	-	-	-	-		3	2
4201.5	3	2	2	2	-	-	-	-	-	-	-	1	2	2
AVG	2.8	2.2	2	2	-	-	-	-	-	-	-	1	2.2	2.2

3/2/1 Indicates Strength of Correlation. 3-High, 2-Medium and 1-Low

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DEPARTMENT OF HUMANITIES AND SCIENCES

COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

SEM: I-II	Reg: R15	AY: 2017-2018

Course Code:	Course Name: ENGLISH FOR PROFESSIONAL COMMUNICATION	L	T	P	C
15A52201	Prerequisite:NONE	3	1	-	3

COURSE OUTCOMES (COs)

CO No.	COURSE OUTCOME
2201.1	Participate effectively in debates on modern corporatism and listen, and speak well in English in group discussions. (BTL3)
2201.2	Recall the alternative sources of energy by listening, summarizing and rewriting reports. (BTL1)
2201.3	Develop report writing skills. (BTL3)
2201.4	Interpret charts and tables. (BTL2)
2201.5	Communicate effectively in interviews by developing required competence thereby enhancing improving job prospects. (BTL2)

Mapping of Course Outcomes (COs) with Program Outcomes (POs) & Program Specific Outcomes (PSOs)

COs	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
2201.1	-	-	-	-	-	-	-	-	3	3	2	2	-	-
2201.2	-	-	-	-	-	-	-	-	2	3	-	2	-	-
2201.3	-	-	-	-	-	-	-	-	3	3	2	3	-	-
2201.4	-	-	-	-	-	-	-	-	3	3	3	3	-	-
2201.5	-	-	-	-	-	-	-	-	3	3	1	3	-	-
AVG	-	-	-	-	-	-	-	-	3	3	3	3	-	-

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DEPARTMENT OF HUMANITIES AND SCIENCE

COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

SEM: I-II	Reg: R15	AY: 2017-2018

Course Code:	Course Name: NETWORK ANALYSIS	L	T	P	C
15A04201	Prerequisite: None	3	1	-	3

COURSE OUTCOMES (COs)

CO No.	COURSE OUTCOME
4201.1	Determine the equivalent impedance of given network by using network reduction techniques and determine the current, voltage and power in any element(BTL3)
4201.2	Compare behaviour of circuit elements during switching, Analyze transient response of RL RC RLC circuits for DC excitation(BTL2)
4201.3	To understand voltage, current and power relationships in 1-ϕ AC circuits with basic elements R,L,C and determine the real power, reactive power, power factor etc,. For a Given a circuit and the excitation (BTL3)
4201.4	interprete Resonance phenominon in Electrical circuits, Determine Self, Mutual Inductances and Coefficient of Coupling of magnetic coil(BTL2)
4201.5	Determine two port network parameters, understand the concept of transferfunction and pole zeros of network function, Study the Filters concept (BTL3)

Mapping of Course Outcomes (COs) with Program Outcomes (POs) & Program Specific Outcomes (PSOs)

COs	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
4201.1	2	3	2	1	-	-	-	-	-	-	-	2	2	2
4201.2	2	3	3	2	-	-	-	-	-	-	-	2	2	2
4201.3	3	3	2	2	-	-	-	-	-	-	-	2	2	2
4201.4	3	2	2	2	-	-	-	-	-	-	-	1	2	2
4201.5	3	3	2	2	-	-	-	-	-	-	-	2	2	2
AVG	**3**	**3**	**3**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	2	2

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DEPARTMENT OF HUMANITIES AND SCIENCES

COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

SEM: I-II	Reg: R15	AY: 2017-2018

Course Code:	Course Name: Engineering Physics	L	T	P	C
15A56101	Prerequisite:NONE	3	1	-	3

COURSE OUTCOMES (COs)

CO No.	COURSE OUTCOME
6101.1	**Articulate** interference, diffraction (BTL3), **Analyze** (BTL4). Device laser (BTL4), Develop optic fiber (BTL6)
6101.2	**Interpret** crystallography (BTL2), **Use** ultrasonics (BTL3).
6101.3	**Illustrate** quantum mechanics (BTL1) and **solve** electron theory(BTL3).
6101.4	**Categorize** semiconductors and magnetic materials (BTL4).
6101.5	**Explain** superconductivity (BTL1) and **Connect** nanomaterials (BTL4)

Mapping of Course Outcomes (COs) with Program Outcomes (POs) & Program Specific Outcomes (PSOs)

COs	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
6101.1	2	3	2	2	3	1	–	–	–	–	–	1	2	3
6101.2	3	2	3	2	2	3	–	–	–	–	–	1	3	3
6101.3	2	3	2	1	2	2	–	–	–	–	–	2	3	3
6101.4	3	3	3	1	3	1	–	–	–	–	–	1	2	2
6101.5	3	2	2	2	2	2	–	–	–	–	–	3	2	2
AVG	3	3	3	2	3	3	–	–	–	–	–	2	3	3

3/2/1 Indicates Strength of Correlation. 3-High, 2-Medium and 1-Low

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DEPARTMENT OF H&S

COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

SEM: I-II	Reg: R15	AY: 2017-2018

Course Code:	Course Name: ENGINEERING DRAWING	L	T	P	C
15A03101	Prerequisite: None	0	-	-	3

COURSE OUTCOMES (COs)

CO No.	COURSE OUTCOME
3101T.1	Draw various curves applied in engineering.
3101T.2	Show projections of points, lines, planes and solids graphically.
3101T.3	Draw the development of surfaces of solids.
3101T.4	Use computers as a drafting tool.
3101T.5	Draw isometric and orthographic drawings using CAD packages.

Mapping of Course Outcomes (COs) with Program Outcomes (POs) & Program Specific Outcomes (PSOs)

COs	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
3101T.1	3	1	1	-	-	-	-	-	-	3	-	-	3	1
3101T.2	3	3	2	-	-	--	-	-	-	3	-	-	3	1
3101T.3	3	1	1	-	-	--	-	-	-	3	-	-	3	1
3101T.4	3	3	3	-	-	-	-	-	1	3	-	-	3	1
3101T.5	3	2	3	1	-	-	-	-	2	3	-	-	3	1
	3	2	2	-	-	-	-	-	1	3	-	-	3	1

3/2/1 Indicates Strength of Correlation. 3-High, 3-Medium and 1-Low

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DEPARTMENT OF HUMANITIES AND SCIENCE

COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

SEM: I-II	Reg: R15	AY: 2017-2018

Course Code:	Course Name: Network Analysis Lab	L	T	P	C
15A04202	Prerequisite: None	-	-	4	2

COURSE OUTCOMES (COs)

CO No.	COURSE OUTCOME
4202.1	Analyze the various network theorems
4202.2	Evaluate the frequency response of series and parallel resonance circuits
4202.3	Analyze the Transient response of series DC Circuits
4202.4	Design the frequency response of various filters

COs	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
4202.1	3	3	1	-	-	-	-	1	1	1	-	-	2	2
4202.2	3	3	2	2	-	-	-	1	1	1	-	-	2	2
4202.3	3	3	1	-	-	-	-	1	1	1	-	-	2	2
4202.4	3	3	2	2	-	-	-	1	1	1	-	-	2	2
AVG	3	3	2	2	-	-	-	1	1	1	-	-	2	2

3/2/1 Indicates Strength of Correlation. 3-High, 2-Medium and 1-Low

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DEPARTMENT OF HUMANITIES AND SCIENCE

COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

SEM: I-II	Reg: R15	AY: 2017-2018

Course Code:	Course Name: Engineering Physics Lab	L	T	P	C
15A56102	Prerequisite: None	-	-	4	2

COURSE OUTCOMES (COs)

CO No.	COURSE OUTCOME
6102.1	Analyze the importance of Interference & Diffraction of light
6102.2	Apply Lasers & Fiber optics to measure various parameters
6102.3	Calculate the Energy gap of Semiconductor laser diode
6102.4	Apply the applications of magnetic materials in day-to-day science

COs	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
6102.1	3	3	-	-	-	-	-	1	1	1	-	-	-	-
6102.2	3	2	-	-	-	-	-	1	1	1	-	-	-	-
6102.3	3	2	-	-	-	-	-	1	1	1	-	-	-	-
6102.4	3	2	-	-	-	-	-	1	1	1	-	-	-	-
AVG	3	2	-	-	-	-	-	1	1	1	-	-	-	-

3/2/1 Indicates Strength of Correlation. 3-High, 2-Medium and 1-Low

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

SEM: I - II	Reg: R15	AY: 2017-2018

Course Code:	Course Name: Engineering & IT Workshop	L	T	P	C
15A99201	Prerequisite:	-	-	4	2

COURSE OUTCOMES (COs)

CO No.	COURSE OUTCOME
9201.1	Understand Disassemble and Assemble a Personal Computer and prepare the computer ready to use. (BTL2)
9201.2	Design the Documents using Word processors. (BTL6)
9201.3	Design Slide presentations using the presentation tool. (BTL6)
9201.4	Demonstrate the Interconnect of two or more computers for information sharing and install single or dual operating systems on computer. (BTL2)
9201.5	Illustrate the Access from Internet and Browse it to obtain the required information. (BTL2)

Mapping of Course Outcomes (COs) with Program Outcomes (POs) & Program Specific Outcomes (PSOs)

COs	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
9201.1	3	2	3	2	-	-	-	-	3	-	-	3	2	3
9201.2	2	3	2	3	-	-	-	-	3	-	-	2	3	2
9201.3	3	2	2	2	-	-	-	-	3	-	-	2	2	3
9201.4	2	3	2	2	-	-	-	-	3	-	-	2	2	3
9201.5	2	3	3	2	-	-	-	-	3	-	-	2	3	2
AVG	2	3	2	2	-	-	-	-	3	-	-	2	3	3

3/2/1 Indicates Strength of Correlation. 3-High, 3-Medium and 1-Low

RAMIREDDY SUBBARAMI REDDY
ENGINEERING COLLEGE
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DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

CO'S AND PO'S MAPPING

JNTUA-R15 REGULATION

INDEX

List of all courses offered by the institution for the regulation R15, JNTUA

II B.Tech, I Sem ECE Cos and pos mapping (R15-JNTUA)

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DEPARTMENT OF ELECTRONICS& COMMUNICATION ENGINEERING

COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

SEM: II-I	Reg: R15	AY: 2019-2020

Course Code:	Course Name: MATHEMATICS-III	L	T	P	C
15A54301	Prerequisite: None	3	1	0	3

COURSE OUTCOMES (COs)

CO No.	COURSE OUTCOME
54301.1	Solve engineering problems by applying the concept of matrices(L3)
54301.2	Interpret and solve non- linear equations with a single variable. (L2)
54301.3	Apply numerical methods for various mathematical operations such as Interpolation, Differentiation, Integration. (L3)
54301.4	Apply curve-fitting techniques for data representations and computation in engineering analysis. (L3)
54301.5	Compare numerical solutions of ordinary differential equations with the method of successive approximations. (L4)

Mapping of Course Outcomes (COs) with Program Outcomes (POs) & Program Specific Outcomes (PSOs)

Cos	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
54301.1	2	2	3	1	-	-	-	-	-	-	-	-	2	-
54301.2	2	3	2	1	1	-	-	-	-	-	-	1	2	-
54301.3	2	2	1	1	1	-	-	-	-	-	-	-	2	-
54301.4	2	2	2	2	2	-	-	-	-	-	-	2	3	-
54301.5	2	2	2	2	2	-	-	-	-	-	-	2	3	-
AVG	2	2	2	1	2	-	-	-	-	-	-	2	2	-

3/2/1 Indicates Strength of Correlation. 3-High, 3-Medium and 1-Low

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	DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING					
	COURSE OUTCOMES & MAPPING OF COs with POs & PSOs					
	SEM: II-I	**Reg: R15**	**AY: 2019-2020**			
Course Code:	**Course Name: ELECTRONIC DEVICES AND CIRCUITS**		**L**	**T**	**P**	**C**
15A04301	Prerequisite: None		**3**	**1**	**0**	**3**

COURSE OUTCOMES (COs)

CO No.	COURSE OUTCOME
4301.1	Construct electronic circuits using various diodes. (L2)
4301.2	Develop LMPS (Linear Mode Power Supply) units using rectifiers, filters & regulators. (L3)
4301.3	Demonstrate the construction, working and characteristics of BJT, JFET and MOSFET in various modes(L2)
4301.4	Analyse DC bias circuits for BJT and FET Amplifiers. (L4)
4301.5	Analyse transistor amplifier circuits using BJT & FET(L4)

Mapping of Course Outcomes (COs) with Program Outcomes (POs) & Program Specific Outcomes (PSOs)

Cos	PO												PSO	
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**
4301.1	3	**2**	1	-	-	-	-	-	-	-	-	-	3	1
4301.2	3	2	1	-	-	-	-	-	-	-	-	-	3	1
4301.3	3	3	2	-	-	-	-	-	-	-	-	-	3	1
4301.4	3	3	2	-	-	-	-	-	-	-	-	-	3	1
4301.5	3	3	2	-	-	-	-	-	-	-	-	-	3	1
AVG	3	**3**	2	-	-	-	-	-	-	-	-	-	3	1

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DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

SEM: II-I	Reg: R15	AY: 2019-2020

Course Code:	Course Name: **SWITCHING THEORY AND LOGIC DESIGN**	L	T	P	C
15A04302	Pre-requisite: EMTL	**3**	**1**	**0**	**3**

COURSE OUTCOMES (COs)

CO No.	COURSE OUTCOME
4302.1	Understand Boolean algebra, Number systems and logic gates in the development of logic circuits. (L2)
4302.2	Apply K-Map & Tabular Methods to minimize logic functions. (L3)
4302.3	Design different combinational Logic circuits. (L6)
4302.4	Design different Sequential Logic circuits and their applications. (L6)
4302.5	Design different combinational logic circuits using PLDs.(L6)

Mapping of Course Outcomes (COs) with Program Outcomes (POs) & Program Specific Outcomes (PSOs)

Cos	PO												PSO	
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**
4302.1	3	3	1	2	-	-	-	-	-	-	-	2	1	2
4302.2	3	3	1	1	-	-	-	-	-	-	-	2	1	2
4302.3	3	3	2	2	-	-	-	-	-	-	-	1	1	2
4302.4	3	3	2	2	-	-	-	-	-	-	-	2	1	2
4302.5	2	2	2	2	-	-	-	-	-	-	-	2	2	3
AVG	3	3	2	2	-	-	-	-	-	-	-	2	1	**2**

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

SEM: II-I	Reg: R15	AY: 2019-2020

Course Code:	Course Name SIGNALS AND SYSTEMS	L	T	P	C
15A04303	Prerequisite: None	3	1	0	3

COURSE OUTCOMES (COs)

CO No.	COURSE OUTCOME
4303.1	Apply Fourier series to analyse periodic signals and their spectra.(L3)
4303.2	Analyse continuous time signals using Fourier transform. (L4)
4303.3	Examine signal transmission through linear systems(L4)
4303.4	Analyses discrete time signals using discrete time Fourier transform(L4)
4303.5	Apply Laplace and z transform to analyse continuous & discrete time systems(L3)

Mapping of Course Outcomes (COs) with Program Outcomes (POs) & Program Specific Outcomes (PSOs)

COs	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
4303.1	1	3	1	-	-	-	-	-	-	-	-	-	1	1
4303.2	2	2	2	-	-	-	-	-	-	-	-	-	2	1
4303.3	3	3	2	-	-	-	-	-	-	-	-	-	2	1
4303.4	2	2	2	-	-	-	-	-	-	-	-	-	2	2
4303.5	2	2	2	-	-	-	-	-	-	-	-	-	1	1
AVG	2	2	2	-	-	-	-	-	-	-	-	-	2	1

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DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

SEM: II-I	Reg: R15	AY: 2019-2020

Course Code:	Course Name: PROBABILITY THEORY AND STOCHASTIC PROCESSES	L	T	P	C
15A04304	Pre-requisite: Digital System Design	3	1	0	3

COURSE OUTCOMES (COs)

CO No.	COURSE OUTCOME
4304.1	Analyse various probability density functions of random variables. (L4)
4304.2	Apply the concepts of Multiple random variables in communication systems. (L3)
4304.3	Solve the engineering problems involving random processes. (L6)
4304.4	Analyse the spectral characteristics of random process. (L4)
4304.5	Analyse the response of Linear system with random inputs and also compare different spectral band random process. (L4)

Mapping of Course Outcomes (COs) with Program Outcomes (POs) & Program Specific Outcomes (PSOs)

Cos	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
4304.1	3	3	1	1	1	1	-	-	-	1	-	1	2	-
4304.2	3	3	1	1	1	1	-	-	-	1	-	1	2	-
4304.3	3	3	1	1	1	1	-	-	-	1	-	1	2	-
4304.4	3	3	1	1	1	1	-	-	-	1	-	1	2	-
4304.5	3	3	1	1	1	1	-	-	-	1	-	1	2	-
AVG	3	3	1	1	1	1	-	-	-	1	-	1	2	-

3/2/1 Indicates Strength of Correlation. 3-High, 3-Medium and 1-Low

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DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

SEM: II-I	Reg: R15	AY: 2019-2020

Course Code:	Course Name: ELECTRICAL TECHNOLOGY	L	T	P	C
15A02306	Pre-requisite: None	3	1	-	3

COURSE OUTCOMES (COs)

CO No.	COURSE OUTCOME
2306.1	Explain the operation and construction of DC generators using EMF equation. (L2)
2306.2	Explain the operation and construction of DC motor using torque equation. (L2)
2306.3	Analyse the Operating Principle and design aspects of Single-phase transformers. (L4)
2306.4	Analyse the Operating Principle and design aspects of Three phase induction motors. (L4)
2306.5	Interpret the principle, constructional features of different synchronous machines. (L4)

Mapping of Course Outcomes (COs) with Program Outcomes (POs) & Program Specific Outcomes (PSOs)

Cos	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
2306.1	2	3	2	2	-	-	-	-	-	-	-	2	2	1
2306.2	3	3	2	2	-	-	-	-	-	-	-	2	2	2
2306.3	3	3	2	2	-	-	-	-	-	-	-	2	2	2
2306.4	2	2	2	2	-	-	-	-	-	-	-	2	3	3
2306.5	3	2	2	2	-	-	-	-	-	-	-	2	3	3
AVG	3	3	2	2	-	-	-	-	-	-	-	2	3	2

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DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

SEM: II-I	Reg: R15	AY: 2019-2020

Course Code: 15A04305	Course Name: ELECTRONIC DEVICES AND CIRCUITS LABORATORY	L	T	P	C

COURSE OUTCOMES (COs)

CO No.	COURSE OUTCOME
4305.1	Understand the parameters of Diodes and transistors from the characteristics. (l2)
4305.2	Demonstrate the rectifier and voltage regulator circuits using diodes. (L2)
4305.3	Construct various amplifiers using BJTs and FETs. (L6)
4305.4	analyze the characteristics of SCR and UJT. (L4)

Mapping of Course Outcomes (COs) with Program Outcomes (POs) & Program Specific Outcomes (PSOs)

Cos	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
4305.1	3	2	1	1	-	-	-	-	1	1	2	1	3	1
4305.2	3	2	1	1	-	-	-	-	1	1	2	1	3	1
4305.3	3	2	1	1	-	-	-	-	1	1	2	1	3	1
4305.4	3	3	2	1	-	-	-	-	1	1	2	1	3	1
AVG	3	2	2	1	-	-	-	-	1	1	2	1	3	1

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

SEM: II-I	Reg: R15	AY: 2019-2020

Course Code:	Course Name: ELECTRICAL TECHNOLOGY AND BASIC SIMULATION LABORATORY	L	T	P	C
15A02307	Prerequisite: None	-	-	4	2

COURSE OUTCOMES (COs)

CO No.	COURSE OUTCOME
2307.1	Explain the magnetization characteristics of DC generator & motor and find critical field resistance & efficiency. (L2)
2307.2	Demonstrate the OC & SC test of single-phase transformer & find the efficiency. (L2)
2307.3	Apply the various operations on Continuous and Discrete time signals. (L3)
2307.4	analyze the LTI systems using transforms. (L4)

Mapping of Course Outcomes (COs) with Program Outcomes (POs) & Program Specific Outcomes (PSOs)

Cos	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
2307.1	3	2	1	1	-	-	-	1	1	1	3	1	2	2
2307.2	3	2	1	1	-	-	-	1	1	1	3	1	2	2
2307.3	3	2	1	1	-	-	-	1	1	1	3	1	2	1
2307.4	3	3	2	1	-	-	-	1	1	1	3	1	2	1
AVG	3	2	1	1	-	-	-	1	1	1	3	1	2	2

3/2/1 Indicates Strength of Correlation. 3-High, 3-Medium and 1-Low

II B.Tech, II Sem ECE Cos and pos mapping (R15-JNTUA)

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DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

SEM: II-II	Reg: R15	AY: 2019-2020

Course Code:	Course Name: MATHEMATICS-IV	L	T	P	C
15A54402	Pre-requisite: None	3	1	0	3

COURSE OUTCOMES (COs)

CO No.	COURSE OUTCOME
4402.1	Apply the Frobenius method to obtain a series solution for the given linear second order Ordinary Differential equations. (L3)
4402.2	Solve the engineering problems using Bessel functions and Legendre's polynomials. (L3)
4402.3	Analyse the complex functions with reference to their analyticity. (L4)
4402.4	Apply Taylor's & Laurent's series to solve complex functions.(L3)
4402.5	Solve improper integrals by using residue method. (L3)

Mapping of Course Outcomes (COs) with Program Outcomes (POs) & Program Specific Outcomes (PSOs)

Cos	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
4402.1	2	3	1	2	-	-	-	-	-	-	-	-	2	-
4402.2	2	2	1	2	-	-	-	-	-	-	-	-	2	-
4402.3	3	2	2	3	1	-	-	-	-	-	-	1	2	-
4402.4	3	2	2	2	-	-	-	-	-	-	-	2	2	-
4402.5	2	2	1	3	-	-	-	-	-	-	-	1	2	-
AVG	2	2	1	2	1	-	-	-	-	-	-	1	2	-

3/2/1 Indicates Strength of Correlation. 3-High, 2-Medium and 1-Low

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DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

SEM: II-II	Reg: R15	AY: 2019-2020

Course Code:	Course Name: ELECTRONIC CIRCUIT ANALYSIS	L	T	P	C
15A04401	Pre-requisite: NONE	-	-	4	2

COURSE OUTCOMES (COs)

CO No.	COURSE OUTCOME
4401.1	Analyze the various feedback Amplifiers & Oscillators.(L4)
4401.2	Analyze the Small signal high frequency transistor Amplifier model for CE Configuration.(L4)
4401.3	Apply the concepts of h-parameter & analyze the Multi stage amplifiers and differential amplifiers.(L3)
4401.4	Examine the design aspects of different power amplifiers.(L4)
4401.5	Examine the design aspects of different tuned amplifiers.(L4)

Mapping of Course Outcomes (COs) with Program Outcomes (POs) & Program Specific Outcomes (PSOs)

Cos	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
4401.1	3	3	2	1	-	-	-	-	-	-	-	1	3	1
4401.2	3	3	2	1	-	-	-	-	-	-	-	1	3	1
4401.3	3	2	1	1	-	-	-	-	-	-	-	1	2	1
4401.4	3	2	1	1	-	-	-	-	-	-	-	1	2	1
4401.5	3	2	1	1	-	-	-	-	-	-	-	1	3	1
AVG	3	2	1	1	-	-	-	-	-	-	-	1	3	1

3/2/1 Indicates Strength of Correlation. 3-High, 2-Medium and 1-Low

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DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

SEM: II-II	Reg: R15	AY: 2019-2020

Course Code:	Course Name: ANALOG COMMUNICATION SYSTEMS	L	T	P	C
15A04402	Pre-requisite: NONE	-	-	4	2

COURSE OUTCOMES (COs)

CO No.	COURSE OUTCOME
4402.1	Analyze the Amplitude modulation & demodulation systems in time & frequency domains.(L4)
4402.2	Analyze the Angle modulation & demodulation systems in time & frequency domains.(L4)
4402.3	Analyze the performance of anaolg communication system in the presence of noise.(L4)
4402.4	Analyze different discrete modulation & demodulation techniques.(L4)
4402.5	Solve basic coomunication problems & calculate information rate and channel capacity of discrete communication channel.(L3)

Mapping of Course Outcomes (COs) with Program Outcomes (POs) & Program Specific Outcomes (PSOs)

Cos	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
4402.1	2	1		-	-	-	-	-	-	-	-	-	2	2
4402.2	3	2	2	-	-	-	-	-	-	-	-	-	3	2
4402.3	3	1	2	-	-	-	-	-	-	-	-	-	1	1
4402.4	3	1		-	-	-	-	-	-	-	-	-	2	1
4402.5	3	3	1	-	-	-	-	-	-	-	-	-	1	1
AVG	3	2	2	-	-	-	-	-	-	-	-	-	2	1

3/2/1 Indicates Strength of Correlation. 3-High, 2-Medium and 1-Low

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DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

SEM: II-II	Reg: R15	AY: 2019-2020

Course Code:	Course Name: ELECTROMAGNETIC THEOTY AND TRANSMISSION LINES	L	T	P	C
15A04403	Pre-requisite:	-	-	24	12

COURSE OUTCOMES (COs)

CO No.	COURSE OUTCOME
4403.1	Analyze and solve the problems of electric and magnetic fields that vary with time and space.(L4)
4403.2	Apply Maxwell's equations in solving electromagnetic field equations.(L3)
4403.3	Analyze electromagnetic wave propagation in different media.(L4)
4403.4	Explain the concept of transmission lines and their applications.(L2)
4403.5	Analyze and design various impedance matching techniques.(L4)

Mapping of Course Outcomes (COs) with Program Outcomes (POs) & Program Specific Outcomes (PSOs)

Cos	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
4403.1	3	3	2	1	-	-	-	-	-	3	-	2	2	-
4403.2	3	3	1	1	-	-	-	-	-	2	-	2	2	-
4403.3	3	3	3	1	-	-	-	-	-	1	-	2	1	-
4403.4	3	3	3	1	-	-	-	-	-	1	-	2	2	-
4403.5	3	3	3	1	-	-	-	-	-	2	-	2	1	-
AVG	3	3	2	1	-	-	-	-	-	2	-	2	2	-

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COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

SEM: II-II	Reg: R15	AY: 2019-2020

Course Code:	Course Name: DATA STRUCTURES	L	T	P	C
15A05201	Pre-requisite:	-	-	24	12

COURSE OUTCOMES (COs)

CO No.	COURSE OUTCOME
5201.1	Apply the concept of arrays with asymptotic notations in building linear and non linear data structures. (L3)
5201.2	Analyze stacks, queues and linked list using dynamic memory allocation.(L4)
5201.3	Develope algorithms for trees and graphs.(L3)
5201.4	Compare and implement different sorting techniques.(L5)
5201.5	Build different searching techniques and hashing methods.(L3)

Mapping of Course Outcomes (COs) with Program Outcomes (POs) & Program Specific Outcomes (PSOs)

Cos	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
5201.1	3	2	2	2	-	-	-	-	-	-	-	2	2	3
5201.2	3	3	3	3	-	-	-	-	-	-	-	2	2	3
5201.3	3	3	2	3	-	-	-	-	-	-	-	3	2	2
5201.4	2	3	3	2	-	-	-	-	-	-	-	3	3	2
5201.5	2	3	3	2	-	-	-	-	-	-	-	3	2	2
Avg	3	3	3	2	-	-	-	-	-	-	-	3	2	2

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COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

SEM: II-II	Reg: R15	AY: 2019-2020

Course Code:	Course Name: CONTROL SYSTEMS ENGINEERING	L	T	P	C
15A02303	Pre-requisite:	-	-	24	12

COURSE OUTCOMES (COs)

CO No.	COURSE OUTCOME
2303.1	Apply mathematical models, signal flow graph & Block diagram representation to determine transfer function of control systems .(L3)
2303.2	Analyse the time domain responses of first and second-order systems. (L4)
2303.3	Analyse control systems by applying Routh-Hurwitz and root-locus techniques.(L4)
2303.4	Apply Bode plot, Polar & Nyquist plot concepts to analyze the control systems in frequency domain.(L3)
2303.5	Apply state space model for a given physical system and solve the state equations. (L3)

Mapping of Course Outcomes (COs) with Program Outcomes (POs) & Program Specific Outcomes (PSOs)

Cos	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
2303.1	3	3	3	2	-	-	-	-	-	-	-	2	3	2
2303.2	3	2	2	2	-	-	-	-	-	-	-	2	3	2
2303.3	3	3	3	2	-	-	-	-	-	-	-	1	3	2
2303.4	2	3	2	2	-	-	-	-	-	-	-	1	3	2
2303.5	2	2	2	2	-	-	-	-	-	-	-	1	3	2
Avg	3	3	2	2	-	-	-	-	-	-	-	-	3	2

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COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

SEM: II-II	Reg: R15	AY: 2019-2020

Course Code:	Course Name: ELECTRONIC CIRCUIT ANALYSIS LABORATORY	L	T	P	C
15A04404	Pre-requisite:	-	-	24	12

COURSE OUTCOMES (COs)

CO No.	COURSE OUTCOME
4404.1	Analyze the single and multistage amplifiers at low, mid and high frequencies using simulation software and Hardware.(L4)
4404.2	Analyze the transistor oscillators using simulation software and Hardware.(L4)
4404.3	Determine the efficiencies of power amplifiers using simulation software.(L5)
4404.4	Analyze Frequency response of tuned amplifiers using hardware and multisim soft ware.(L4)

Mapping of Course Outcomes (COs) with Program Outcomes (POs) & Program Specific Outcomes (PSOs)

Cos	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
4404.1	3	3	2	1	2	-	-	1	1	1	3	1	2	1
4404.2	3	3	2	1	2	-	-	1	1	1	3	1	3	1
4404.3	3	2	1	1	1	-	-	1	1	1	3	1	2	1
4404.4	3	3	2	1	2	-	-	1	1	1	3	1	3	1
Avg	3	3	2	1	2	-	-	1	1	1	3	1	3	1

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COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

SEM: II-II	Reg: R15	AY: 2019-2020

Course Code:	Course Name ANALOG COMMUNICATION SYSTEMS LABORATORY	L	T	P	C
15A04405	Pre-requisite:	-	-	24	12

COURSE OUTCOMES (COs)

CO No.	COURSE OUTCOME
4405.1	Analyze behaviour of analog modulations systems in the time domain.(L4)
4405.2	Analyze behaviour of pulse modulations systems in the time domain.(L4)
4405.3	Illustrate the characteristics of radio receiver and antenna measurements(L2)

Mapping of Course Outcomes (COs) with Program Outcomes (POs) & Program Specific Outcomes (PSOs)

Cos	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
4405.1	3	3	1	1				1	1	1	3	1	1	1
4405.2	3	3	1	1				1	1	1	3	1	1	1
4405.3	3	2	1	1				1	1	1	3	1	1	1
Avg	3	3	1	1				1	1	1	3	1	1	1

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COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

SEM: II-II	Reg: R15	AY: 2019-2020

Course Code:	Course Name: Comprehensive Online Examination-I	L	T	P	C
15A04406	Pre-requisite:	-	-	24	12

COURSE OUTCOMES (COs)

CO No.	COURSE OUTCOME
4406.1	Acquire fundamental engineering knowledge(L1).
4406.2	Demonstrate the ability to navigate skills and online learning(L2).
4406.3	Apply the concept of problem-solving ability in competitive exams(L3).

Mapping of Course Outcomes (COs) with Program Outcomes (POs) & Program Specific Outcomes (PSOs)

Cos	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
4406.1	2	1	-	-	-	-	-	1	-	-	-	-	-	-
4406.2	2	1	-	-	-	-	-	1	-	-	-	-	-	-
4406.3	3	2	-	-	-	-	-	1	-	-	-	-	-	-
Avg	2	1	-	-	-	-	-	1	-	-	-	-	-	-

3/2/1 Indicates Strength of Correlation. 3-High, 2-Medium and 1-Low

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DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

CO'S AND PO'S MAPPING

JNTUA-R15 REGULATION

INDEX

List of all courses offered by the institution for the regulation R15, JNTUA

III B.Tech, I Sem ECE Cos and pos mapping (R15-JNTUA)

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DEPARTMENT OF ELECTRONICS& COMMUNICATION ENGINEERING

COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

SEM: III-I	Reg: R15	AY: 2020-2021

Course Code:	Course Name:Computer Organization	L	T	P	C
15A04511	Prerequisite: None	3	1	0	3

COURSE OUTCOMES (COs)

CO No.	COURSE OUTCOME
4511.1	Analyze different functional units, bus structure and addressing modes in computer(L4).
4511.2	Explain the functional units of the processor such as register file and ALU(L2).
4511.3	Differentiate the use of main memory, cache memory and virtual memory in the computer system(L2).
4511.4	Explain the input/output interfaces & memory organization(L2).
4511.5	Apply the concepts of the pipelining and basic characteristics of multiprocessors(L3).

Mapping of Course Outcomes (COs) with Program Outcomes (POs) & Program Specific Outcomes (PSOs)

Cos	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
4511.1	3	3	1	1	-	-	-	-	-	-	-	1	1	1
4511.2	3	3	1	1	-	-	-	-	-	-	-	1	1	1
4511.3	3	3	1	1	-	-	-	-	-	-	-	1	1	1
4511.4	3	3	1	1	-	-	-	-	-	-	-	1	1	1
4511.5	3	3	1	1	-	-	-	-	-	-	-	1	1	1
AVG	3	3	1	1	-	-	-	-	-	-	-	1	1	1

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COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

YEAR &SEM:III-I	**Reg: R15**	**AY: 2020-2021**

Course Code:	**Course Name:** Antennas and Wave Propagation	**L**	**T**	**P**	**C**
15A04501	Prerequisite: None	**3**	**1**	**0**	**3**

COURSE OUTCOMES (COs)

CO No.	**COURSE OUTCOME**
4501.1	Explain the basics of antenna parameters & radiation pattern(L2).
4501.2	Design VHF, UHF and Microwave antennas(L6).
4501.3	Analyze the construction of micro strip, flat sheets, corner and parabolic reflector antennas(L4).
4501.4	Design the antenna arrays & Make use of antenna measurements to assess antenna's performance(L6).
4501.5	Explain different modes of wave propagation in free space & mechanism of the atmospheric effects on radio wave propagation(L2).

Mapping of Course Outcomes (COs) with Program Outcomes (POs) & Program Specific Outcomes (PSOs)

Cos	**PO**												**PSO**	
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**
4501.1	3	3	3	2	-	-	-	-	-	2	-	-	-	
4501.2	3	3	2	2	2	-	-	-	-	2	-	-	-	
4501.3	3	3	3	2	2	-	-	-	-	2	-	-	-	
4501.4	3	3	3	2	1	-	-	-	-	2	-	-	-	
4501.5	3	2	1	1	-	-	-	-	-	2	-	-	-	
AVG	3	3	2	2	2	-	-	-	-	2	-	-	-	

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COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

YEAR &SEM:III-I	Reg: R15	AY: 2020-2021

Course Code:	Course Name: Digital Communication Systems	L	T	P	C
15A04502	Pre-requisite: EMTL	3	1	0	3

COURSE OUTCOMES (COs)

CO No.	COURSE OUTCOME
4502.1	Apply the fundamentals concepts of sampling theorem along with different coding and modulation techniques in communication systems(L3).
4502.2	Differentiate the basic principles of baseband and passband digital modulation schemes(L2)
4502.3	Employ the Geometric Representation of Signals in Signal Space(L2).
4502.4	Analyze the different modulation & demodulation for band pass data transmission and their probability of error(L4).
4502.5	Apply different channel encoding techniques for error detection and correction(L3)

Mapping of Course Outcomes (COs) with Program Outcomes (POs) & Program Specific Outcomes (PSOs)

Cos	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
4502.1	3	3	1	1	1	1	-	-	-	1	-	-	-	1
4502.2	3	3	1	1	1	1	-	-	-	1	-	-	-	1
4502.3	3	3	1	1	1	1	-	-	-	1	-	-	-	1
4502.4	3	3	1	1	1	1	-	-	-	1	-	-	-	1
4502.5	3	3	1	1	1	1	-	-	-	1	-	-	-	1
AVG	3	3	1	1	1	1	-	-	-	1	-	-	-	1

3/2/1 Indicates Strength of Correlation. 3-High, 2-Medium and 1-Low

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COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

YEAR &SEM:III-I	Reg: R15	AY: 2020-2021

Course Code:	Course Name: Linear Integrated Circuits and Applications	L	T	P	C
15A04503	Prerequisite: None	3	1	0	3

COURSE OUTCOMES (COs)

CO No.	COURSE OUTCOME
4503.1	Explain the construction and characteristics of the operational-amplifiers(L2).
4503.2	Analyze the feedback and its effect on the performance of op-amp(L4).
4503.3	Develop knowledge on some linear applications of Op-amp and on the design of active filters using Op-amps(L6).
4503.4	Design various waveform generators using Op-amp, 555 Timer and PLL(L6).
4503.5	Analyze data converter (ADC and DAC) Circuits using Op amps(L4).

Mapping of Course Outcomes (COs) with Program Outcomes (POs) & Program Specific Outcomes (PSOs)

COs	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
4503.1	3	2	2	-	2	-	-	-	-	3	2	2	3	-
4503.2	3	2	2	-	2	-	-	-	-	3	2	2	3	-
4503.3	3	2	2	-	2	-	-	-	-	3	2	2	3	-
ECEDEPT 4503.4	3	2	2	-	2	-	-	-	-	3	2	2	3	-
4503.5	3	2	2	-	2	-	-	-	-	3	2	2	3	-
AVG	3	2	2	-	2	-	-	-	-	3	2	2	3	-

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COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

YEAR &SEM:III-I	Reg: R15	AY: 2020-2021

Course Code:	Course Name: Digital System Design	L	T	P	C
15A04504	Pre-requisite: None	3	1	0	3

COURSE OUTCOMES (COs)

CO No.	COURSE OUTCOME
4504.1	Construct the logic circuits using different types of logic families(L6).
4504.2	Develop VHDL programs for digital circuits(L6).
4504.3	Design and implement various combinational circuits using basic IC structures and VHDL(L6).
4504.4	Design and implement various sequential circuits using using basic IC structures and VHDL(L6).
4504.5	Develop VHDL programs for various complex combinational and Sequential circuits using VHDL(L6).

Mapping of Course Outcomes (COs) with Program Outcomes (POs) & Program Specific Outcomes (PSOs)

Cos	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
4504.1	1	-	-	-	2	-	-	-	1	-	2	-	-	3
4504.2	1	-	-	-	2	-	-	-	1	-	2	-	-	3
4504.3	1	2	2	2	2	-	-	-	1	-	2	2	1	3
4504.4	1	2	2	2	2	-	-	-	1	-	2	2	1	3
4504.5	1	2	2	2	2	-	-	-	1	-	2	2		3
AVG	1	2	2	2	2	-	-	-	1	-	2	2		3

3/2/1 Indicates Strength of Correlation. 3-High, 3-Medium and 1-Low

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COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

YEAR &SEM:III-I	Reg: R15	AY: 2020-2021

Course Code:	Course Name: Linux Programming & Scripting	L	T	P	C
15A04505	Pre-requisite: None	3	1	-	3

COURSE OUTCOMES (COs)

CO No.	COURSE OUTCOME
4505.1	Understand basic Linux commands and usage of file operations.
4505.2	Explain Linux networking services.
4505.3	Use basic Perl scripting.
4505.4	Understand widget implementation using Tcl/Tk.
4505.5	Understand control flow and exception handling using Python

Mapping of Course Outcomes (COs) with Program Outcomes (POs) & Program Specific Outcomes (PSOs)

Cos	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
4505.1	3	3	3	2	2	-	-	-	-	-	-	2	2	2
4505.2	3	3	2	2	2	-	-	-	-	-	-	2	2	1
4505.3	3	2	3	3	3	-	-	-	-	-	-	2	2	2
4505.4	3	2	2	2	3	-	-	-	-	-	-	2	2	2
4505.5	3	2	3	2	2	-	-	-	-	-	-	2	2	1
AVG	3	2	3	2	2	-	-	-	-	-	-	2	2	2

3/2/1 Indicates Strength of Correlation. 3-High, 2-Medium and 1-Low

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DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

YEAR &SEM:III-I	Reg: R15	AY: 2020-2021

Course Code: 15A04507	Course Name: IC Applications Laboratory	L	T	P	C

COURSE OUTCOMES (COs)

CO No.	COURSE OUTCOME
4507.1	Design negative feedback amplifiers and analyze their characteristics using Op-amp(L6).
4507.2	Design multivibrator, integrator, differentiator using Op-amp(L6).
4507.3	Design active filters and function generators and using Op-amp(L6).
4507.4	Design VCO, AGC, PLL, AVC and regulators using linear ICs(L6).
4507.1	Design negative feedback amplifiers and analyze their characteristics using Op-amp(L6).

Mapping of Course Outcomes (COs) with Program Outcomes (POs) & Program Specific Outcomes (PSOs)

Cos	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
4507.1	3	2	2	-	2	-	-	-	-	1	2	2	-	2
4507.2	3	2	2	-	2	-	-	-	-	3	2	2	-	2
4507.3	3	2	2	-	2	-	-	-	-	2	2	2	-	3
4507.4	3	2	2	-	2	-	-	-	-	2	2	2	-	3
4507.1	1	2	2	-	2	-	-	-	-	1	2	2	-	3
AVG	3	2	2	-	2	-	-	-	-	2	2	2	-	3

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

YEAR &SEM:III-I	Reg: R15	AY: 2020-2021

Course Code:	Course Name: Digital Communication Systems Laboratory	L	T	P	C
15A04508	Prerequisite: None	-	-	4	2

COURSE OUTCOMES (COs)

CO No.	COURSE OUTCOME
4508.1	analyze Time division multiplexing and demultiplexing techniques(L4).
4508.2	Analyze the PCM, DPCM, DM, ADCM using hardware &software(L4).
4508.3	Analyze the different shift keying techniques using hardware &software(L4).
4508.4	Analyze the QAM using signal space analysis(L4)

Mapping of Course Outcomes (COs) with Program Outcomes (POs) & Program Specific Outcomes (PSOs)

Cos	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
4508.1	2	1	2	1	-	-	-	-	2	2	-	-	1	
4508.2	2	3	1	1	-	-	-	-	2	2	-	-	1	
4508.3	2	1	1	1	-	-	-	-	2	2	-	-	1	
4508.4	2	2	2	1	-	-	-	-	2	2	-	-	1	
AVG	2	1	2	1	-	-	-	-	2	2	-	-	1	

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COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

YEAR &SEM:III-I	Reg: R15	AY: 2020-2021

Course Code:	Course Name: Audit course – Social Values & Ethics	L	T	P	C
15A99501	Pre-requisite: None	3	1	0	3

COURSE OUTCOMES (COs)

CO No.	COURSE OUTCOME
9501.1	Develop the capability of shaping themselves in the society & develop the roles and responsibility of NSS activity(L6).
9501.2	Explain the features of constitution of India(L2).
9501.3	Explain the development of the society around them and organization they work.(L2)
9501.4	Develop themselves into professionals & follow professional ethics(L6).
9501.1	Develop the capability of shaping themselves in the society & develop the roles and responsibility of NSS activity(L6).

Mapping of Course Outcomes (COs) with Program Outcomes (POs) & Program Specific Outcomes (PSOs)

Cos	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
9501.1	-	-	-	-	-	2	1	3	-	-	-	2	1	1
9501.2	-	-	-	-	-	1	1	2	-	-	-	1	1	1
9501.3	-	-	-	-	-	2	1	3	-	-	-	2	1	1
9501.4	-	-	-	-	-	2	1	3	-	-	-	2	1	1
9501.1	-	-	-	-	-	2	1	3	-	-	-	2	1	1
AVG	-	-	-	-	-	2	1	3	-	-	-	2	1	1

3/2/1 Indicates Strength of Correlation. 3-High, 2-Medium and 1-Low

III B.Tech, II Sem ECE Cos and pos mapping (R15-JNTUA)

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DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

SEM: III-II	Reg: R15	AY: 2020-2021

Course Code:	Course Name: Managerial Economics and Financial Analysis	L	T	P	C
15A52301	Pre-requisite: None	3	1	0	3

COURSE OUTCOMES (COs)

CO No.	COURSE OUTCOME
2301.1	Analyze the consumer behavior with regard to their product or services and measure demand of a particular product or services by applying various methods in given situation(L4).
2301.2	Compare concept of production & cost analysis(L4).
2301.3	Determine the price of a product or services in given market condition(L5).
2301.4	Interpret the financial accounting and the financial ratios(L2).
2301.5	Summarize Capital and its types and budget techniques(L2).

Mapping of Course Outcomes (COs) with Program Outcomes (POs) & Program Specific Outcomes (PSOs)

Cos	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
2301.1	2	-	-	-	2	1	-	-	-	-	-	1	-	-
2301.2	3	-	1	-	-	2	-	-	-	-	-	2	2	2
2301.3	2	-	-	-	-	1	-	-	-	-	-	1	-	-
2301.4	2	-	-	-	2	1	-	2	-	-	-	1	-	-
2301.5	2	-	1	-	2	1	-	-	-	-	-	1	-	-
AVG	2	-	1	-	2	1	-	2	-	-	-	1	2	2

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DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

SEM: III-II	Reg: R15	AY: 2020-2021

Course Code:	Course Name: Microprocessors & Microcontrollers	L	T	P	C
15A04601	Pre-requisite: NONE	-	-	4	2

COURSE OUTCOMES (COs)

CO No.	COURSE OUTCOME
4601.1	Explain the concepts of Intel x86 series of processors(L2).
4601.2	Apply the concept of addressing modes, instruction set and assembler directives for programming the 8086 microprocessors(L3).
4601.3	Explain the concepts of MSP 430 low power microcontroller(L2)
4601.4	Analyze the concepts of interrupts, low power modes and RTC of MSP 430(L4).
4601.5	Apply the different interfacing protocols to implement real time applications using MSP430(L3).

Mapping of Course Outcomes (COs) with Program Outcomes (POs) & Program Specific Outcomes (PSOs)

Cos	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
4601.1	2	3	1	2	1	1	-	-	-	1	-	1	2	1
4601.2	2	3	1	2	1	1	-	-	-	1	-	1	2	1
4601.3	2	3	1	2	1	1	-	-	-	1	-	1	2	1
4601.4	2	3	1	2	1	1	-	-	-	1	-	1	2	1
4601.5	2	3	1	2	1	1	-	-	-	1	-	1	2	1
AVG	2	3	1	2	1	1	-	-	-	1	-	1	2	1

3/2/1 Indicates Strength of Correlation. 3-High, 2-Medium and 1-Low

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COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

SEM: III-II	Reg: R15	AY: 2020-2021

Course Code:	Course Name: Electronic Measurements and Instrumentation	L	T	P	C
15A04602	Pre-requisite: NONE	-	-	4	2

COURSE OUTCOMES (COs)

CO No.	COURSE OUTCOME
4602.1	Explain the performance characteristics of AC & Dc meters used in instrumentation(L2).
4602.2	Explain the construction, principle and working of CRO and time period &voltage measurements(L2).
4602.3	Explain function generators, wave analyzers, logic analyzers and spectrum analyzers(L2).
4602.4	Analyze different DC & AC bridges for their application in measurement and also explain Q meter, EMI and EMC(L4).
4602.5	Explain the principles involved in sensors & transducers(L2).

Mapping of Course Outcomes (COs) with Program Outcomes (POs) & Program Specific Outcomes (PSOs)

Cos	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
4602.1	3	2	1	-	-	-	-	-	-	1	-	2	3	2
4602.2	3	1	2	-	-	-	-	-	-	1	-	2	3	1
4602.3	2	1	2	-	-	-	-	-	-	1	-	1	2	1
4602.4	2	3	2	-	-	-	-	-	-	1	-	1	2	3
AVG	3	1	2	-	-	-	-	-	-	1	-	2	3	1

3/2/1 Indicates Strength of Correlation. 3-High, 2-Medium and 1-Low

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COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

SEM: III-II	Reg: R15	AY: 2020-2021

Course Code:	Course Name: Digital Signal Processing	L	T	P	C
15A04603	Pre-requisite:	-	-	24	12

COURSE OUTCOMES (COs)

CO No.	COURSE OUTCOME
4603.1	Analyze discrete time signals and systems in time domain and frequency domain(L4).
4603.2	Calculate Fourier transform for discrete time signals by using various transformation techniques(L3)
4603.3	Develop structures for realization of discrete time FIR and IIR systems(L6).
4603.4	Design of linear phase FIR and IIR filters by various techniques(L6).
4603.5	Explain basic concepts of interpolation and decimation(L2).

Mapping of Course Outcomes (COs) with Program Outcomes (POs) & Program Specific Outcomes (PSOs)

Cos	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
4603.1	1	2	2	2	-	-	-	-	-	-	-	1	2	1
4603.2	1	1	1	1	-	-	-	-	-	-	-	1	2	1
4603.3	2	2	2	2	-	-	-	-	-	-	-	1	1	2
4603.4	1	1	2	2	-	-	-	-	-	-	-	1	2	2
4603.5	2	1	2	2	-	-	-	-	-	-	-	1	1	1
AVG	1	1	2	2	-	-	-	-	-	-	-	1	2	1

3/2/1 Indicates Strength of Correlation. 3-High, 2-Medium and 1-Low

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COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

SEM: III-II	Reg: R15	AY: 2020-2021

Course Code:	Course Name: VLSI Design	L	T	P	C
15A04604	Pre-requisite:	-	-	24	12

COURSE OUTCOMES (COs)

CO No.	COURSE OUTCOME
4604.1	Explain about IC fabrication and relation between different parameters of MOSFET showing its characteristics(L2).
4604.2	Apply lambda-based rules to develop layouts, stick diagrams of logic circuits and estimate sheet resistance, area capacitance and delays(L3).
4604.3	Design digital system at gate level and physical level(L6).
4604.4	Design different sub systems using various VLSI design styles(L6).
4604.5	Explain about EDA tools & testing of logic circuits(L2).

Mapping of Course Outcomes (COs) with Program Outcomes (POs) & Program Specific Outcomes (PSOs)

Cos	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
4604.1	3	-	-	-	-	-	-	-	-	-	-	1	-	2
4604.2	3	2	1	1	-	-	-	-	-	-	-	1	-	2
4604.3	3	3	3	2	-	-	-	-	-	-	-	1	-	3
4604.4	3	3	3	2	-	-	-	-	-	-	-	1	-	3
4604.5	3	2	-	-	1	-	-	-	-	-	-	1	-	2
AVG	3	2	2	2	1	-	-	-	-	-	-	1	-	2

3/2/1 Indicates Strength of Correlation. 3-High, 2-Medium and 1-Low

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COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

SEM: III-II	Reg: R15	AY: 2020-2021

Course Code:	Course Name: MATLAB Programming	L	T	P	C
15A04605	Pre-requisite: NIL	3	1	0	3

COURSE OUTCOMES (COs)

CO No.	COURSE OUTCOME
4605.1	Understand the MATLAB Desktop, command window menu & tools (L2).
4605.2	Write the MATLAB programming for arrays and functions and files(L2).
4605.3	Analyze In-built (or) user define functions, Mathematical functions in MATLAB. (L4)
4605.4	Design code in MATLAB using different logical variables, conditional statements, Loops & Switches. (L6)
4605.5	Implement real time examples for matrix methods using MATLAB(L3).

Mapping of Course Outcomes (COs) with Program Outcomes (POs) & Program Specific Outcomes (PSOs)

Cos	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
4605.1	3	-	-	-	-	-	-	-	-	-	-	1	-	-
4605.2	3	-	-	-	-	-	-	-	-	-	-	1	-	-
4605.3	3	-	-	-	-	-	-	-	-	-	-	1	-	-
4605.4	3	2	3	2	-	-	-	-	-	-	-	2	-	2
4605.5	3	3	3	3	-	-	-	-	-	-	-	2	-	2
AVG	3	3	3	3	-	-	-	-	-	-	-	2	-	2

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COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

SEM: III-II	Reg: R15	AY: 2020-2021

Course Code:	Course Name: Microprocessors & Microcontrollers Laboratory	L	T	P	C
15A04607	Pre-requisite:	-	-	24	12

COURSE OUTCOMES (COs)

CO No.	COURSE OUTCOME
4607.1	Write 8086 assembly language programs(L2).
4607.2	Make use of programmable peripheral devices and their interfacing in assembly programming(L3).
4607.3	Make use of MSP 430 and their Interfacing devices in CC Studio and simulate programs using embedded C for MSP 430(L3).

Mapping of Course Outcomes (COs) with Program Outcomes (POs) & Program Specific Outcomes (PSOs)

Cos	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
4607.1	2	1	2	1	2	-	-	-	1	1	1	2	1	1
4607.2	2	1	2	1	2	-	-	-	1	1	1	2	1	1
4607.3	2	2	2	2	2	-	-	-	1	1	1	2	2	2
AVG	**2**	**2**	**2**	1	2	-	-	-	1	1	1	2	1	1

3/2/1 Indicates Strength of Correlation. 3-High, 2-Medium and 1-Low

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COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

SEM: III-II	Reg: R15	AY: 2020-2021

Course Code:	Course Name Digital Signal Processing Laboratory	L	T	P	C
15A04608	Pre-requisite:	-	-	24	12

COURSE OUTCOMES (COs)

CO No.	COURSE OUTCOME
4608.1	Analyze discrete time signals & systems using MATLAB(L4).
4608.2	Design & implement IIR & FIR filters for different specifications using MATLAB(L6)
4608.3	Analyze discrete time signals & systems using floating point DSP processor kit with code composer studio (CCS)(L4).
4608.4	Design & implement IIR & FIR filters using DSP processor kit with code composer studio (CCS)(L6).

Mapping of Course Outcomes (COs) with Program Outcomes (POs) & Program Specific Outcomes (PSOs)

Cos	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
4608.1	3	3	1		1	-	-	1	1	1	3	1	2	1
4608.2	3	3	3	1	1	-	-	1	1	1	3	1	3	2
4608.3	3	3	2	1	2	-	-	1	1	1	3	1	2	1
4608.4	3	3	3	1	2	-	-	1	1	1	3	1	3	2
AVG	3	3	2	1	2	-	-	1	1	1	3	1	3	2

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DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

SEM: III-II	Reg: R15	AY: 2020-2021

Course Code:	Course NamAdvanced English Language Communication Skills (AELCS) Laboratory	L	T	P	C
15A52602	Pre-requisite:	-	-	24	12

COURSE OUTCOMES (COs)

CO No.	COURSE OUTCOME
2602.1	Develop communication skills through comprehensive and vocabulary(L6).
2602.2	Apply writing skills in preparing resume, email and technical reports(L3)
2602.3	Build presentation skills through poster and oral(L2).
2602.4	Analyze the students for job skills and professional development activities(L4).
2602.5	Develop management skills and analyze problem solving techniques(L6).

Mapping of Course Outcomes (COs) with Program Outcomes (POs) & Program Specific Outcomes (PSOs)

Cos	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
2602.1	-	-	-	-	-	-	-	1	2	3	3	1	-	-
2602.2	-	-	-	-	-	-	-	1	2	3	3	1	-	-
2602.3	-	-	-	-	-	-	-	1	2	3	3	1	-	-
2602.4	-	-	-	-	-	-	-	1	3	3	3	1	-	-
2602.5	-	-	-	-	-	-	-	1	2	3	3	1	-	-
AVG	-	-	-	-	-	-	-	1	2	3	3	1	-	-

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DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

SEM: III-II	Reg: R15	AY: 2020-2021

Course Code:	Course Name: Comprehensive Online Examination-II	L	T	P	C
15A04609	Pre-requisite:	-	-	24	12

COURSE OUTCOMES (COs)

CO No.	COURSE OUTCOME
4609.1	Acquire fundamental engineering knowledge(L1).
4609.2	Demonstrate the ability to navigate skills and online learning(L2).
4609.3	Apply the concept of problem-solving ability in competitive exams(L3).

Mapping of Course Outcomes (COs) with Program Outcomes (POs) & Program Specific Outcomes (PSOs)

Cos	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
4609.1	2	1	-	-	-	-	-	1	-	-	-	-	-	-
4609.2	2	1	-	-	-	-	-	1	-	-	-	-	-	-
4609.3	3	2	-	-	-	-	-	1	-	-	-	-	-	-
AVG	2	1	-	-	-	-	-	1	-	-	-	-	-	-

3/2/1 Indicates Strength of Correlation. 3-High, 2-Medium and 1-Low

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DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

CO'S AND PO'S MAPPING

JNTUA-R15 REGULATION

INDEX

List of all courses offered by the institution for the regulation R15, JNTUA

IV B.Tech, I Sem ECE Cos and pos mapping (R15-JNTUA)

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DEPARTMENT OF ELECTRONICS& COMMUNICATION ENGINEERING

COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

SEM: IV-I	Reg: R15	AY: 2021-2022

Course Code:	Course Name: OPTICAL FIBER COMMUNICATION	L	T	P	C
15A04701	Prerequisite: None	3	1	0	3

COURSE OUTCOMES (COs)

CO No.	COURSE OUTCOME
4701.1	Analyze the performance of digital and analog optical fiber systems (BTL4)
4701.2	Evaluate the system bandwidth, noise bit rate of digital fiber system (BTL5)
4701.3	Evaluate the system link loss, distortion (BTL5)
4701.4	Understand the characteristics of fiber sources and detectors (BTL2)
4701.5	Design and conduct experiments and analyses the results (BTL6)

Mapping of Course Outcomes (COs) with Program Outcomes (POs) & Program Specific Outcomes (PSOs)

Cos	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
4701.1	3	3	3	-	-	-	-	1	-	-	-	1	2	2
4701.2	3	2	2	-	-	-	-	1	-	-	-	1	2	2
4701.3	3	2	1	-	-	-	-	1	-	-	-	1	2	1
4701.4	3	2	2	-	-	-	-	1	-	-	-	1	1	1
4701.5	3	2	1	-	-	-	-	1	-	-	-	1	2	1
AVG	3	2	2	-	-	-	-	1	-	-	-	1	2	1

3/2/1 Indicates Strength of Correlation. 3-High, 3-Medium and 1-Low

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

YEAR &SEM:IV-I	**Reg: R15**	**AY: 2021-2022**

Course Code:	**Course Name:** EMBEDDED SYSTEM	**L**	**T**	**P**	**C**
15A04702	Prerequisite: None	**3**	**1**	**0**	**3**

COURSE OUTCOMES (COs)

CO No.	**COURSE OUTCOME**
4702.1	Design of embedded systems leading to 32-bit application development. (L6)
4702.2	Understand hardware-interfacing concepts to connect digital as well as analog sensors while ensuring low power considerations. (L2)
4702.3	implement the protocols used by microcontroller to communicate with external sensors and actuators in real world.
4702.4	Understand Embedded Networking (L2)
4702.5	Understand Embedded Networking and IoT concepts based upon connected MCUs (L2)

Mapping of Course Outcomes (COs) with Program Outcomes (POs) & Program Specific Outcomes (PSOs)

Cos	**PO**												**PSO**	
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**
4702.1	3	-	2	-	-	-	-	1	-	1	1	1	1	3
4702.2	3	-	2	-	-	-	-	1	-	2	1	1	1	3
4702.3	3	-	2	-	-	-	-	1	-	2	1	1	1	3
4702.4	3	-	2	-	-	-	-	1	-	1	1	1	1	3
4702.5	3	-	2	-	-	-	-	1	-	1	1	1	1	3
AVG	3	-	2	-	-	-	-	1	-	1	1	1	2	3

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COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

SEM: IV-I	Reg: R15	AY: 2021-2022

Course Code:	Course Name: MICROWAVE ENGINEERING	L	T	P	C
15A04703	Pre-requisite: EMTL	3	1	0	3

COURSE OUTCOMES (COs)

CO No.	COURSE OUTCOME
4703.1	Analyze the waveguides using wave equations. (L4)
4703.2	Describe the characteristics of microwave circuits through S- Parameters. (L2)
4703.3	Analyze various microwave Oscillators & Amplifiers. (L4)
4703.4	Analyze various microwave components. (L4)
4703.5	Explain various methods of microwave measurements. (L2)

Mapping of Course Outcomes (COs) with Program Outcomes (POs) & Program Specific Outcomes (PSOs)

Cos	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
4703.1	3	2	1	2	-	-	-	1	-	1	-	1	1	2
4703.2	3	2	1	1	-	-	-	1	-	1	-	1	1	2
4703.3	3	2	1	1	-	-	-	1	-	1	-	1	1	2
4703.4	3	2	1	2	-	-	-	1	-	1	-	1	1	2
4703.5	2	1		1	-	-	-	1	-	1	-	-	1	2
AVG	3	2	1	2	-	-	-	1	-	1	-	1	1	2

3/2/1 Indicates Strength of Correlation. 3-High, 2-Medium and 1-Low

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

Class & Sem: IV-I	Reg: R15	AY: 2021-2022

Course Code:	Course Name: DATA COMMUNICATIONS & NETWORKING	L	T	P	C
15A04704	Prerequisite: None	3	1	0	3

COURSE OUTCOMES (COs)

CO No.	COURSE OUTCOME
4704.1	Understand the fundamental concepts of computer networking, protocols, architectures and applications of OSI & TCP/IP models (L1)
4704.2	Discuss the process of multiplexing, switching and transmission media in networks, protocols in the data link layer (L3)
4704.3	Demonstrate the multiple access methods, IEEE standards, Ethernet (L5)
4704.4	Design issues related to network layer routing algorithms, Internet protocols (L4)
4704.5	Analyze the various types of cryptography and network security techniques (L4)

Mapping of Course Outcomes (COs) with Program Outcomes (POs) & Program Specific Outcomes (PSOs)

COs	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
4704.1	3	2	-	-	-	-	-	-	-	-	-	1	1	-
4704.2	3	2	-	-	-	-	-	-	-	-	-	1	1	-
4704.3	3	3	-	-	-	-	-	-	-	-	-	1	2	-
4704.4	3	2	-	-	-	-	-	-	-	-	-	1	1	-
4704.5	3	3	-	-	-	-	-	-	-	-	-	1	2	-
AVG	3	3	-	-	-	-	-	-	-	-	-	1	2	-

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COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

SEM: IV-I	Reg: R15	AY: 2021-2022

Course Code:	Course Name: RADAR SYSTEMS	L	T	P	C
15A04705	Pre-requisite: MICROWAVES	3	1	0	3

COURSE OUTCOMES (COs)

CO No.	COURSE OUTCOME
4705.1	Explain Radar fundamentals and analysis of radar signals. (L2)
4705.2	To understand the difference between CW radar and FM CW radar. (L2)
4705.3	Able to calculate the blind speed and MTI radar parameters. (L3)
4705.4	Able to identify the tracking of the target using various tracking radars. (L4)
4705.5	Identify the difference types of radar receivers. (L1)

Mapping of Course Outcomes (COs) with Program Outcomes (POs) & Program Specific Outcomes (PSOs)

Cos	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
4705.1	2	2	1	-	-	-	-	-	-	-	-	-	2	-
4705.2	2	2	1	-	-	-	-	-	-	-	2	2	2	-
4705.3	2	3	1	-	-	-	-	-	-	-	1	1	2	-
4705.4	2	2	2	-	-	-	-	-	-	-	2	2	2	-
4705.5	2	2	1	-	-	-	-	-	-	-	-	-	2	-
AVG	2	2	1	-	-	-	-	-	-	-	1	1	2	-

3/2/1 Indicates Strength of Correlation. 3-High, 3-Medium and 1-Low

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COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

SEM: IV-I	Reg: R15	AY: 2021-2022

Course Code:	Course Name: DIGITAL IMAGE PROCESSING	L	T	P	C
15A04708	Pre-requisite: None	3	1	-	3

COURSE OUTCOMES (COs)

CO No.	COURSE OUTCOME
4708.1	Understand the basic fundamentals of Image Processing (L2)
4708.2	Apply various Image Transformations with their properties(L3)
4708.3	Explain about various techniques of image enhancement in different domains (L4)
4708.4	Analyze the Image for segmentation and Algebraic approaches for restoration of an image (L4)
4708.5	Classify the Redundancies in Images and determine various Image Formats and compression standards. (L4,L5)

Mapping of Course Outcomes (COs) with Program Outcomes (POs) & Program Specific Outcomes (PSOs)

Cos	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
4708.1	3	1	1	2	2	-	-	1	-	-	-	-	3	1
4708.2	3	2	1	2	3	-	-	1	-	-	-	-	3	-
4708.3	3	2		2	2	-	-	1	-	-	1	-	3	1
4708.4	3	2	1	2	1	-	-	1	-	-	1	-	3	1
4708.5	3	1	1	1	1	-	-	1	-	-	1	-	3	1
AVG	3	2	1	2	2	-	-	1	-	-	1	-	3	1

3/2/1 Indicates Strength of Correlation. 3-High, 2-Medium and 1-Low

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COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

SEM: IV-I	Reg: R15	AY: 2021-2022

Course Code: 15A04711	Course Name: MICROWAVE AND OPTICAL COMMUNICATION LABORATORY	L	T	P	C

COURSE OUTCOMES (COs)

CO No.	COURSE OUTCOME
4711.1	Understand the characteristics of Reflex klystron and GUNN diode (L2)
4711.2	Calculate the frequency, attenuation, VSWR using microwave bench set-up. (L4)
4711.3	Determine the parameters of Magic-Tee and Directional coupler using bench set-up. (L5)
4711.4	Understand the characteristics of optical devices like LASER and LED(L2)
4711.5	Design and analyze an optical fiber link. (L4)

Mapping of Course Outcomes (COs) with Program Outcomes (POs) & Program Specific Outcomes (PSOs)

Cos	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
4711.1	3	-	2	-	-	-	-	-	-	-	-	2	-	2
4711.2	2	2	2	-	-	-	-	-	-	-	-	2	-	2
4711.3	3	2	1	-	-	-	-	-	-	-	-	2	-	2
4711.4	3	2	1	-	-	-	-	-	-	-	-	2	-	2
4711.5	3	2	1	-	-	-	-	-	-	-	-	2	-	2
AVG	3	2	2	-	-	-	-	-	-	-	-	2	-	2

3/2/1 Indicates Strength of Correlation. 3-High, 2-Medium and 1-Low

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	COURSE OUTCOMES & MAPPING OF COs with POs & PSOs				
	SEM: IV-I	**Reg: R15**	**AY: 2021-2022**		
Course Code:	**Course Name:** VLSI & EMBEDDED SYSTEM LABORATORY	**L**	**T**	**P**	**C**
15A04712	Prerequisite: None	**-**	**-**	**4**	**2**

COURSE OUTCOMES (COs)

CO No.	**COURSE OUTCOME**
4712.1	Design and draw the internal structure of the various digital integrated circuits(L6)
4712.2	Develop VHDL/Verilog HDL source code, perform simulation using relevant simulator and analyze the obtained simulation results using necessary synthesizer. (L5)
4712.3	Design and analyze the different configurations of interfacing modules of TM4C microcontroller (L6)

Mapping of Course Outcomes (COs) with Program Outcomes (POs) & Program Specific Outcomes (PSOs)

Cos	**PO**												**PSO**	
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**
4712.1	3	-	3	2	2	-	-	-	1	1	1	1	1	3
4712.2	3	-	3	2	2	-	-	-	1	1	1	1	1	3
4712.3	3	-	3	2	2	-	-	-	1	1	1	1	1	3
AVG	3	-	1	2	2	-	-	-	1	1	1	1	1	3

3/2/1 Indicates Strength of Correlation. 3-High, 3-Medium and 1-Low

IV B.Tech, II Sem ECE Cos and pos mapping (R15-JNTUA)

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COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

SEM: IV-II	Reg: R15	AY: 2021-2022

Course Code:	Course Name: LOW POWER VLSI CIRCUITS & SYSTEMS	L	T	P	C
15A04802	Pre-requisite: VLSI DESIGN	3	1	0	3

COURSE OUTCOMES (COs)

CO No.	COURSE OUTCOME
4802.1	Describe the need for low power design and recall the fundamentals of MOS transistor (L1, L2)
4802.2	Describe and derive the MOS inverter characteristics and design the combinational circuits. (L2, L6)
4802.3	Describe the sources of power dissipation and classify various supply voltage scaling (L2, L4)
4802.4	Determine various methods of Minimizing Switched Capacitance(L5)
4802.5	Evaluate the methods of Minimizing Leakage Power (L5)

Mapping of Course Outcomes (COs) with Program Outcomes (POs) & Program Specific Outcomes (PSOs)

Cos	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
4802.1	1	1	2	2	-	1	-	1	-	-	-	2	1	3
4802.2	2	1	1	1	-	1	-	1	-	-	-	2	1	3
4802.3	2	2	1	2	-	1	-	1	-	-	-	1	1	3

4802.4	2	1	1	2	-	1	-	-	-	-	-	1	1	3
4802.5	1	1	1	1	2	1	-	-	-	-	-	2	1	3
AVG	2	1	1	2	2	1	-	1	-	-	-	2	1	3
3/2/1 Indicates Strength of Correlation. 3-High, 2-Medium and 1-Low														

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COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

SEM: IV-II	Reg: R15	AY: 2021-2022

Course Code:	Course Name: RF INTEGRATED CIRCIUTS	L	T	P	C
15A04804	Pre-requisite: CMOS DESIGN	3	1	0	3

COURSE OUTCOMES (COs)

CO No.	COURSE OUTCOME
4804.1	Understand the structure of radio frequency system. (L2)
4804.2	Analyze the bandwidth estimation techniques and rise time and delay time (L4)
4804.3	Identify the low noise amplifier and subsampling mixers L2)
4804.4	Explain various types of RF power amplifiers. (L4)
4804.5	Distinguish various frequency synthesis techniques (L2)

Mapping of Course Outcomes (COs) with Program Outcomes (POs) & Program Specific Outcomes (PSOs)

Cos	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
4804.1	2	1	2	1	-	-	-	-	-	-	-	-	-	2
4804.2	2	3	1	1	-	-	-	-	-	-	-	-	-	2
4804.3	2	1	1	1	-	-	-	-	-	-	-	-	-	2
4804.4	2	2	2	1	-	-	-	-	-	-	-	-	-	2
4804.5	3	2	3	1	-	-	-	-	-	-	-	-	-	2
AVG	2	2	2	1	-	-	-	-	-	-	-	-	-	2

3/2/1 Indicates Strength of Correlation. 3-High, 2-Medium and 1-Low

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COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

SEM: IV-II	Reg: R15	AY: 2021-2022

Course Code:	Course Name: COMPREHENSIVE VIVA VOCE	L	T	P	C
15A04805	Pre-requisite: NONE	-	-	4	2

COURSE OUTCOMES (COs)

CO No.	COURSE OUTCOME
4805.1	Recall the fundamentals of mathematics, science and Engineering(L1)
4805.2	Relate comprehensive understanding of techniques applicable to their own area of professional practice(L2)
4805.3	Develop their Communication skills and Build confidence to face the interviews(L6)

Mapping of Course Outcomes (COs) with Program Outcomes (POs) & Program Specific Outcomes (PSOs)

Cos	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
4805.1	1	1	-	-	-	-	-	1	-	1	-	-	2	2
4805.2	2	1	-	-	-	-	-	1	-	2	-	-	2	2
4805.3	3	3	-	1	-	1	-	1	-	3	-	-	2	2
AVG	2	2	-	1	-	1	-	1	-	2	-	-	2	2

3/2/1 Indicates Strength of Correlation. 3-High, 2-Medium and 1-Low

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COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

SEM: IV-II	Reg: R15	AY: 2021-2022

Course Code:	Course Name: TECHNICAL SEMINAR	L	T	P	C
15A04806	Pre-requisite: NONE	-	-	4	2

COURSE OUTCOMES (COs)

CO No.	COURSE OUTCOME
4806.1	Develop interest towards research-oriented field with ability to search the literature and brief report preparation. (L4)
4806.2	Develop the skills, competencies and points of view needed by professionals in the field most closely related to the course(L5)
4806.3	Develop the discussion and critical thinking about topics of current intellectual importance. (L5)
4806.4	Develop the interpersonal & communication skills and awareness. (L6)
4806.5	Develop presentation skills. (L6)

Mapping of Course Outcomes (COs) with Program Outcomes (POs) & Program Specific Outcomes (PSOs)

Cos	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
4806.1	1	-	-	-	-	-	-	1	2	3	-	-	2	2
4806.2	2	-	-	-	-	-	-	1	2	3	-	-	2	2
4806.3	2	-	-	-	-	-	-	1	2	3	-	-	2	2
4806.4	1	-	-	-	-	-	-	1	2	3	-	-	2	2
4806.5	1	-	-	-	-	-	-	1	2	3	-	-	2	2
AVG	1	-	-	-	-	-	-	1	2	3	-	-	2	2

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COURSE OUTCOMES & MAPPING OF COs with POs & PSOs

SEM: IV-II	Reg: R15	AY: 2021-2022

Course Code:	Course Name: PROJECT WORK	L	T	P	C
15A04807	Pre-requisite:	-	-	24	12

COURSE OUTCOMES (COs)

CO No.	COURSE OUTCOME
4807.1	Identify problems, formulate literature survey and analyze engineering problems. (L1, L4)
4807.2	Apply the theoretical concepts to solve industrial problems with teamwork and multidisciplinary approach(L3)
4807.3	Design system component that acquires the need for public health and environment consideration. (L6)
4807.4	Form a team for carrying the project and perform documentation effectively. (L6)

Mapping of Course Outcomes (COs) with Program Outcomes (POs) & Program Specific Outcomes (PSOs)

Cos	PO												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
4807.1	3	3	2	-	-	-	2	2	3	2	-	1	2	2
4807.2	3	1	2	2	1	1	-	2	3	2	3	1	2	2
4807.3	3	3	3	-	3	3	-	2	3	2	3	1	3	3
4807.4	3	3	1	-	-	-	2	2	3	2	3	1	2	2
AVG	3	3	2	2	2	2	2	2	3	2	3	1	2	2

3/2/1 Indicates Strength of Correlation. 3-High, 2-Medium and 1-Low