Program Name: I. B.Tech **Faculty Name:** Sri.T.Santhi Sree

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	I	**ENGLISH-I**	**R161101**	18-06-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
66 Hrs	4	-	3 Hrs	30	70	3

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

1. To improve the language proficiency of the students in English with emphasis on LSRW skills.
2. To enable the students to study and comprehend the prescribed lessons and subjects more effectively relating
to their theoretical and practical components.
3. To develop the communication skills of the students in both formal and informal situations.

Course Outcomes:

Student able to:

CO1: Summarize how self introspection brings harmony and satisfaction. (K2)
CO2: Develop scientific attitude to solve many problems which we find difficult to tackle. (K3)
CO3: Analyze clearly and logically and write clearly and logically. (K4)
CO4: Agree that all men can come together and avert the peril. (K5)
CO5: Outline the formation of the planet and realize our place in the universe. (K2)
CO6: Develop humor and the use of words for irony. (K3)

POs' / COs'	PO1 [k3]	PO2 [k4]	PO3 [k5]	PO4 [K5]	PO5 [K3]	PO6 [K3]	PO7 [K3]	PO8 [K3]	PO9 [K6]	PO10 [K2]	PO11 [K6]	PO12 [K1]	PSO1 [K3]	PSO2 [K3]	PSO3 [K3]	PSO4 [K2]
CO1 [K2]	-	-	-	-	-	-	1	1	1	-	-	-	-	-	-	2
CO2 [K3]	-	1	-	-	2	-	-	-	1	-	-	-	-	-	-	3
CO3 [K4]	-	-	-	-	-	-	-	3	1	-	1	-	-	-	-	3
CO4 [K5]	-	-	-	-	-	-	3	3	1	-	-	-	-	-	-	3
CO5 [K2]	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	2
CO6 [K3]	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	3

Program Name: I. B.Tech **Faculty Name:** Sri.J.A.V.Ravindra Babu

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	I	**MATHEMATICS-I**	**R161102**	18-06-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
66 Hrs	4	-	3 Hrs	30	70	3

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

1. The course is designed to equip the students with the necessary mathematical skills and techniques that are essential for an engineering course.
2. The skills derived from the course will help the student from a necessary base to develop analytic and design concepts.

Course Outcomes:
Student able to:

CO1: Classify differential equations by order linearity and homogeneity. (K2)
CO2: Solve linear equations with constant coefficients. (K3)
CO3: solve differential equations using Laplace transforms and inverses Laplace transforms. (K3)
CO4: Estimate the Maximum and Minimum of the function of two variables. (K5)
CO5: Solve linear partial differential equations of both first and second order. (K3)
CO6: solve linear second order PDEs by separation of variables, with applications to the wave, diffusion and Laplace's equations. (K3)

POs' / COs'	PO1 [k3]	PO2 [k4]	PO3 [k5]	PO4 [K5]	PO5 [K3]	PO6 [K3]	PO7 [K3]	PO8 [K3]	PO9 [K6]	PO10 [K2]	PO11 [K6]	PO12 [K1]	PSO1 [K3]	PSO2 [K3]	PSO3 [K3]	PSO4 [K2]
CO1 [K2]	1	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-
CO2 [K3]	2	3	-	-	-	-	-	-	-	-	-	2	-	-	-	-
CO3 [K3]	-	-	1	2	-	-	-	-	-	-	-	-	-	-	2	-
CO4 [K5]	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-
CO5 [K3]	2	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-
CO6 [K3]	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-

Program Name: I. B.Tech **Faculty Name:** Sri.K.Bhanu Chander

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	I	**MATHEMATICS-II**	**R161110**	18-06-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
66 Hrs	4	-	3 Hrs	30	70	3

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

1. The course is designed to equip the students with the necessary mathematical skills and techniques that are essential for an engineering course.
2. The skills derived from the course will help the student from a necessary base to develop analytic and design concepts.

Course Outcomes:

Student able to:

CO1: Solve algebraic or transcendental equation in a simple manner. (K6)
CO2: Construct new data points within the range of a discrete set of known data points. (K6)
CO3: Solve differential equations by numerically. (K6)
CO4: Decompose any periodic function or periodic signal into the sum of a (possibly infinite) set of simple oscillating functions, namely sine's and cosines (or complex exponentials) (K5)
CO5: Decompose a function of time (a signal) into the frequencies that make it up. (K5)
CO6: To solve the difference equations. (K6)

POs' / COs'	PO1 [k3]	PO2 [k4]	PO3 [k5]	PO4 [K5]	PO5 [K3]	PO6 [K3]	PO7 [K3]	PO8 [K3]	PO9 [K6]	PO10 [K2]	PO11 [K6]	PO12 [K1]	PSO1 [K3]	PSO2 [K3]	PSO3 [K3]	PSO4 [K2]
CO1 [K6]	1	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-
CO2 [K6]	2	3	-	-	-	-	-	-	-	-	-	2	-	-	-	-
CO3 [K6]	-	-	1	2	-	-	-	-	-	-	-	-	-	-	2	-
CO4 [K5]	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-
CO5 [K5]	2	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-
CO6 [K6]	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-

Program Name: I. B.Tech **Faculty Name:** Sri.P.Naresh

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	I	**ENGINEERING PHYSICS**	**R161104**	18-06-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
66 Hrs	4	-	3 Hrs	30	70	3

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

The courses are designed to:

- Impart Knowledge of Physical Optics phenomena like Interference, Diffraction and Polarization involving required to design instruments with higher resolution.
- Teach Concepts of coherent sources, its realization and utility optical instrumentation.
- Study the concepts regarding the bulk response of materials to the EM fields and their analytically study in the back-drop of basic quantum mechanics.
- Understand the physics of Semiconductors and their working mechanism for their utility in sensors.

Course Outcomes:

Student able to:

CO1: Classify and explain the concepts of principles of superposition, Interference, Diffraction and polarization (K2)

CO2: Explain the concepts of production of lasers, wave propagation in optical fibers, structures of crystals and XRD technique (K5)

CO3: Analyze properties of Magnetic, Dielectric, Superconductivity and applications of the devices in different fields in engineering (K4)

CO4: List out the Absorption coefficients of materials and explain the Fundamental laws of electromagnetism and Maxwell's Electromagnetic (K4)

CO5: Explain the properties and theories of matter waves in Quantum levels and Classify the materials into conductors, semi – conductors & insulators (K5)

CO6: Explain the properties of semiconductors and Mechanisms of LEDs, Photo conductors and solar cells by minimizing the environmental pollution. (K5)

POs' / COs'	**PO1 [k3]**	**PO2 [k4]**	**PO3 [k5]**	**PO4 [K5]**	**PO5 [K3]**	**PO6 [K3]**	**PO7 [K3]**	**PO8 [K3]**	**PO9 [K6]**	**PO10 [K2]**	**PO11 [K6]**	**PO12 [K1]**	**PSO1 [K3]**	**PSO2 [K3]**	**PSO3 [K3]**	**PSO4 [K2]**
CO1 [K2]	1	1		-	-	-	-	-	-	-	-	-	-	-	-	-
CO2 [K5]	3	3		-	-	-	-	-	-	-	-	-	-	-	-	-
CO3 [K4]	3	2		-	-	-	-	-	-	-	-	-	-	-	-	-
CO4 [K4]	3	2		-	-	-	-	-	-	-	-	-	-	-	-	-
CO5 [K5]	3	3		-	-	-	-	-	-	-	-	-	-	-	-	-
CO6 [K5]	3	3		-	-	-	-	-	-	-	-	-	-	-	-	-

Program Name: I. B.Tech **Faculty Name:** Sri.M.Udaya Tejaswini

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	I-I	**COMPUTER PROGRAMMING**	**R161107**	18-06-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
66 Hrs	4	-	3 Hrs	30	70	3

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

- Formulating algorithmic solutions to problems and implementing algorithms in C.
- Notion of Operation of a CPU, Notion of an algorithm and computational procedure, editing and executing Programs in Linux.
- Understanding branching, iteration and data representation using arrays.
- Modular programming and recursive solution formulation.

- Understanding pointers and dynamic memory allocation.
- Understanding miscellaneous aspects of C.
- Comprehension of file operations.

Course Outcomes:

Student able to:

CO1: Design algorithms using fundamentals concepts of computer system Using different data types, operators and standard library functions. (K6)

CO2: Design applications involving the control flow statements. (K6)

CO3: Design a case study involving modular programming. (K6)

CO4: Design application involving arrays and strings. (K6)

CO5: Design applications using structures, unions, pointers. (K6)

CO6: Design applications using file system concepts. (K6)

POs' / COs'	PO1 [k3]	PO2 [k4]	PO3 [k5]	PO4 [K5]	PO5 [K3]	PO6 [K3]	PO7 [K3]	PO8 [K3]	PO9 [K6]	PO10 [K2]	PO11 [K6]	PO12 [K1]	PSO1 [K3]	PSO2 [K3]	PSO3 [K3]	PSO4 [K2]
CO1 [K6]	3	3	3	-	-	-	-	3	3	3	2	3	3	3	3	3
CO2 [K6]	3	3	3	3	-	-	-	3	3	3	2	3	3	3	3	3
CO3 [K6]	3	3	3	3	-	-	-	3	3	3	2	2	3	3	3	3
CO4 [K6]	3	3	3	3	-	-	-	3	3	3	2	3	3	3	3	3
CO5 [K6]	3	3	3	3	-	-	-	3	3	3	2	3	3	3	3	3
CO6 [K6]	3	3	3	3	-	-	-	3	3	3	2	3	3	3	3	3

Program Name: I. B.Tech **Faculty Name:** R.Rajesh/D.Prasad

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	I-II	**ELECTRICAL AND MECHANICAL TECHNOLOGY**	**R161214**	19-11-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
66 Hrs	4	-	3 Hrs	30	70	3

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

1. To learn the basic principles of electrical law's and analysis of networks.
2. To understand the principle of operation and construction details of DC machines.
3. To understand the principle of operation and construction details of transformer.
4. To understand the principle of operation and construction details of alternator and 3-Phase induction motor.
5. To Understand the principles and construction of various measuring instruments.

Course Outcomes:

Student able to:

CO1: Determine resultants of different force systems. (K5)
CO2: Apply conditions of static equilibrium to plane force systems. (K3)
CO3: Determine centroid and center of gravity of composite bodies. (K5)
CO4: Determine Moment of inertia and Mass moment of inertia of composite Bodies. (K5)
CO5: Solve problems in kinematic and dynamic systems. (K6)
CO6: Calculate work, energy for different systems. (K1)

POs' / COs'	PO1 [k3]	PO2 [k4]	PO3 [k5]	PO4 [K5]	PO5 [K3]	PO6 [K3]	PO7 [K3]	PO8 [K3]	PO9 [K6]	PO10 [K2]	PO11 [K6]	PO12 [K1]	PSO1 [K3]	PSO2 [K3]	PSO3 [K3]	PSO4 [K2]
CO1 [K5]	3	3	-	-	-	-	-	-	-	-	-	-	3	-	-	-
CO2 [K3]	2	1	-	-	-	-	-	-	-	-	-	-	2	-	-	-
CO3 [K5]	3	3	-	-	-	-	-	-	-	-	-	-	3	-	-	-
CO4 [K5]	3	3	-	-	-	-	-	-	-	-	-	-	3	-	-	-
CO5 [K6]	3	3	-	-	-	-	-	-	-	-	-	-	3	-	-	-
CO6 [K1]	1	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-

Program Name: I. B.Tech **Faculty Name:** Sri.K.Surendra Babu

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	I	**ENGINEERING DRAWING**	**R161113**	18-06-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
66 Hrs	4	-	3 Hrs	30	70	3

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

1. Engineering drawing being the principle method of communication for engineers, the objective is to introduce the students, the techniques of constructing the various types of polygons, curves and scales.
2. The Objective is also to visualize and represent the 3D objects in 2D planes with proper dimensioning, scaling etc.

Course Outcomes:
Student able to:

CO1: Construct the polygons, curves and various types of scales.(K3)
CO2: Project the points and lines parallel to one plane and inclined to other. (K3)
CO3: Draw the projections of the lines inclined to both the planes. (K5)
CO4: Draw the projections of the plane inclined to both the planes. (K5)
CO5: Draw the projections of the various types of solids in different positions inclined to one of the planes. (K5)
CO6: Convert the isometric view to orthographic view and vice versa. (K6)

POs' / COs'	PO1 [k3]	PO2 [k4]	PO3 [k5]	PO4 [K5]	PO5 [K3]	PO6 [K3]	PO7 [K3]	PO8 [K3]	PO9 [K6]	PO10 [K2]	PO11 [K6]	PO12 [K1]	PSO1 [K3]	PSO2 [K3]	PSO3 [K3]	PSO4 [K2]
CO1 [K3]	-	-	-	-	2	-	-	-	-	-	-	-	-	-	2	-
CO2 [K3]	-	-	-	-	2	-	-	-	-	-	-	-	-	-	2	-
CO3 [K5]	-	-	-	-	2	-	-	-	-	-	-	-	-	-	3	-
CO4 [K5]	-	-	-	-	2	-	-	-	-	-	-	-	-	-	3	-
CO5 [K5]	-	-	-	-	2	-	-	-	-	-	-	-	-	-	3	-
CO6 [K6]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-

Program Name: I. B.Tech **Faculty Name:** T.Santhi Sree

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	I-II	**ENGLISH-II**	**R161201**	19-11-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
66 Hrs	4	-	3 Hrs	30	70	3

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

1. To improve the language proficiency of the students in English with emphasis on LSRW skills.
2. To enable the students to study and comprehend the prescribed lessons and subjects more effectively relating
to their theoretical and practical components.
3. To develop the communication skills of the students in both formal and informal situations.

Course Outcomes:

Student able to:

CO1: Interpret that technology should help solve the problems of common man.(K2)

CO2: Summarize that climate must be preserved. (K2)

CO3: Apply emerging technologies such as nanotechnology for the betterment of human life. (K3)

CO4: Outlinethat water is the elixir of life and try to conserve it. (K2)

CO5: Develop the attitude of devotion and dedication to hard work to succeed in life. (K6)

CO6: Solve personal problems and prioritize national problems. (K6)

POs' / COs'	PO1 [k3]	PO2 [k4]	PO3 [k5]	PO4 [K5]	PO5 [K3]	PO6 [K3]	PO7 [K3]	PO8 [K3]	PO9 [K6]	PO10 [K2]	PO11 [K6]	PO12 [K1]	PSO1 [K3]	PSO2 [K3]	PSO3 [K3]	PSO4 [K2]
CO1 [K2]	1	1	-	-	1	-	1	1	1	-	1	3	-	-	-	2
CO2 [K2]	-	-	-	-	1	-	1	-	1	-	-	-	-	-	-	3
CO3 [K3]	2	-	-	-	2	-	-	-	1	-	1	3	-	-	-	3
CO4 [K2]	-	-	-	-	-	-	1	-	1	-	1	-	-	-	-	3
CO5 [K6]	-	-	-	-	-	-	3	3	2	-	-	-	-	-	-	2
CO6 [K6]	3	-	-	-	-	-	3	3	2	-	-	3	-	-	-	3

Program Name: I. B.Tech **Faculty Name:** Dr.K.Surya Kumari

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	I-II	**ENVIRONMENTAL STUDIES**	**R161212**	19-11-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
66 Hrs	4	-	3 Hrs	30	70	3

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

- The objectives of the course is to impart
- Overall understanding of the natural resources
- Basic understanding of the ecosystem and its diversity
- Acquaintance on various environmental challenges induced due to unplanned anthropogenic activities
- An understanding of the environmental impact of developmental activities

- Awareness on the social issues, environmental legislation and global treaties

Course Outcomes:

Student able to:

CO1: Classify various environmental challenges induced due to unplanned anthropogenic activities. To provide basic knowledge on ecosystems; its diversity and protection methods. Role of food webs and food chains in an ecosystem.**(K2)**

CO2: Illustrate natural resources and their importance for the sustenance of the life and recognize the need to conserve the natural resources**(K2)**

CO3: Illustratethe biodiversity of India and the threats to biodiversity and conservation practices to protect the biodiversity**(K2)**

CO4: Explain the role of individual in minimizing pollution and management of wastes. **(K2)**

CO5: Explain the knowledge of environmental legislation and urban related problems**(K2)**

CO6: Explain the knowledge of environmental management and green concepts. **(K2)**

POs' / COs'	PO1 [k3]	PO2 [k4]	PO3 [k5]	PO4 [K5]	PO5 [K3]	PO6 [K3]	PO7 [K3]	PO8 [K3]	PO9 [K6]	PO10 [K2]	PO11 [K6]	PO12 [K1]	PSO1 [K3]	PSO2 [K3]	PSO3 [K3]	PSO4 [K2]
CO1 [K2]	1	1	1	-	1	1	1	1	1	-	-	-	-	-	-	-
CO2 [K2]	1	1	1	-	1	1	1	1	1	2	-	-	-	-	-	-
CO3 [K2]	1	1	1	-	1	1	1	1	1	2	1	-	-	-	-	-
CO4 [K2]	1	1	1	1	1	1	-	1	1	2	-	-	-	-	-	-
CO5 [K2]	1	1	1	1	1	1	-	1	1	2	-	-	-	-	-	-
CO6 [K2]	1	1	1	1	1	1	1	1	1	2	1	3	-	-	-	-

Program Name: I. B.Tech **Faculty Name:** D.Ratna Babu

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	I-II	**MATHEMATICS-III**	**R13202**	19-11-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
66 Hrs	4	-	3 Hrs	30	70	3

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

1. The course is designed to equip the students with the necessary mathematical skills and techniques that are essential for an engineering course.
2. The skills derived from the course will help the student from a necessary base to develop analytic and design concepts.
3. Understand the most basic numerical methods to solve simultaneous linear equations

Course Outcomes:

Student able to:

CO1: Acquire knowledge about rank, solve the system of linear equations and apply to electric circuits.(K1)

CO2: Infer the properties of Eigen values and Eigen vectors & apply in free vibration of a two-mass system. Acquire knowledge about Cayley-Hamilton theorem & its applications, quadratic forms and reduction to normal forms. (K2)

CO3: Evaluate double and triple integrals to find area, volume, mass and moment of inertia of plane and solid region. Acquire knowledge about application of integral to lengths, volumes and surface areas of revolution. (K5)

CO4: Acquire knowledge about Gamma and Beta function and to evaluate improper integrals by using Beta & Gamma. (K1)

CO5: Acquire knowledge of gradient, divergence, curl and the various applications of it. (K1)

CO6: Acquire knowledge about line, surface & volume integrals and apply to find work done and understand the vector integral theorems by related problems. (K1)

POs' / COs'	PO1 [k3]	PO2 [k4]	PO3 [k5]	PO4 [K5]	PO5 [K3]	PO6 [K3]	PO7 [K3]	PO8 [K3]	PO9 [K6]	PO10 [K2]	PO11 [K6]	PO12 [K1]	PSO1 [K3]	PSO2 [K3]	PSO3 [K3]	PSO4 [K2]
CO1 [K1]	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-
CO2 [K2]	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-
CO3 [K5]	3	3	2	2	-	-	-	-	-	-	-	-	-	-	-	-
CO4 [K1]	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-
CO5 [K1]	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-
CO6 [K1]	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-

Program Name: I. B.Tech **Faculty Name:** M.Udaya Tejaswini

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	I-II	**DATA STRUCTURES**	**R161213**	19-11-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
66 Hrs	4	-	3 Hrs	30	70	3

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

1. To be familiar with basic techniques handling problems with Data structures
2. Solve problems using data structures such as linear lists, stacks, queues, hash tables

Course Outcomes:

Student able to:

CO1: Illustrate the Basic data structure of arrays and their applications.(K3)
CO2: Illustrate the basic data structure of stacks and queues and their applications.(K2)
CO3: Illustrate the basic data structure of linked list.(K3)
CO4: Implementing data structures like trees and compare their Performance.(K2)
CO5: Implementing data structures like graphs and compare their performance.(K3)
CO6: Apply Algorithm for solving problems like sorting, insertion and deletion of data.(K3)

POs' / COs'	PO1 [k3]	PO2 [k4]	PO3 [k5]	PO4 [K5]	PO5 [K3]	PO6 [K3]	PO7 [K3]	PO8 [K3]	PO9 [K6]	PO10 [K2]	PO11 [K6]	PO12 [K1]	PSO1 [K3]	PSO2 [K3]	PSO3 [K3]	PSO4 [K2]
CO1 [K3]	1	1	1	1	1	1	1	-	1	2	1	3	-	-	-	2
CO2 [K2]	1	1	1	1	1	1	1	-	1	2	1	3	-	-	-	2
CO3 [K3]	1	1	1	1	1	1	1	-	1	2	1	3	-	-	-	2
CO4 [K2]	2	1	1	1	2	2	2	-	1	3	1	3	-	-	-	3
CO5 [K3]	2	1	1	1	2	2	2	-	1	3	1	3	-	-	-	3
CO6 [K3]	2	1	1	1	2	2	2	-	1	3	1	3	-	-	-	3

Program Name: I. B.Tech **Faculty Name:** G.Anuradha

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	I-II	**APPLIED CHEMISTRY**	**R161211**	19-11-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
66 Hrs	4	-	3 Hrs	30	70	3

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

- Plastics are nowadays used in household appliances; also they are used as composites (FRP) in aerospace Industries (Unit I).
- Fuels as a source of energy are a basic need of any industry, particularly industries like thermal power stations, steel industry, fertilizer industry etc., and hence they are introduced (Unit II).
- The basics for the construction of galvanic cells as well as some of the sensors used in instruments are introduced. Also if corrosion is to be controlled, one has to understand the mechanism of corrosion which itself is explained by electrochemical theory (Unit III).

- With the increase in demand, a wide variety of materials are coming up; some of them have excellent engineering properties and a few of these materials are introduced (Unit IV).
- Understanding of crystal structures will help to understand the conductivity, semiconductors and superconductors. Magnetic properties are also studied (Unit V).
- With the increase in demand for power and also with depleting sources of fossil fuels, the demand for alternative sources of fuels is increasing. Some of the prospective fuel sources are introduced (Unit VI).

Course Outcomes:

Student able to:

CO1: Appraise the quality and utility of suitable water for industrial as well as domestic applications.(K5)

CO2: Extrapolate the knowledge of cell, electrode, cathode, anode, electrolysis, electromotive force, reference electrode and batteries in chemical and other engineering areas. (K2)

CO3: Identify and evaluate different factors influencing corrosion and protection methods. (K3)

CO4: Substantiate the utility of polymers in chemical and hardware industries. **Inculcate** knowledge of basic construction materials with its vital role. (K2)

CO5: Extrapolate the application of fuels in day to day life and
To understand energy–related problems and solve them. (K2)

CO6: Explore the engineering applications of polymeric materials, cement, nano materials, liquid crystals, pv cells etc and Familiar with principle application of green chemistry and green synthesis. (K2)

POs' / **COs'**	**PO1 [k3]**	**PO2 [k4]**	**PO3 [k5]**	**PO4 [K5]**	**PO5 [K3]**	**PO6 [K3]**	**PO7 [K3]**	**PO8 [K3]**	**PO9 [K6]**	**PO10 [K2]**	**PO11 [K6]**	**PO12 [K1]**	**PSO1 [K3]**	**PSO2 [K3]**	**PSO3 [K3]**	**PSO4 [K2]**
CO1 [K5]	3	3	-	2	3	-	-	-	-	-	1	3	-	-	-	-
CO2 [K2]	1	1	-	1	1	-	-	-	-	-	1	3	-	-	-	-
CO3 [K3]	2	1	-	1	2	-	-	-	-	-	1	3	-	-	-	-
CO4 [K2]	1	1	1	1	1	-	-	-	-	-	1	3	-	-	-	-
CO5 [K2]	1	1	1	1	1	1	-	-	-	-	1	3	-	-	-	-
CO6 [K2]	1	1	1	1	1	1	1	-	-	-	1	3	-	-	-	-

Program Name: I. B.Tech **Faculty Name:** Sri.T.Santhi Sree

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	I	**ENGLISH COMMUNICATION SKILLS LAB-1**	**R161114**	18-06-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
45 Hrs	-	3	3 Hrs	25	50	2

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

To enable the students to learn through practice the communication skills of listening, speaking, reading and writing.

Course Outcomes:

Student able to:

CO1: Relate himself with G.D .Naidu to become successful entrepreneurs. (K2)

CO2: How grit and determination can take a common man to heights(K1)

CO3: Apply interest in multiple fields of knowledge and social service to make life worthy. (K3)

CO4: Invent new things by emulating Vijay Bhatkar. (K6)

POs' / COs'	PO1 [k3]	PO2 [k4]	PO3 [k5]	PO4 [K5]	PO5 [K3]	PO6 [K3]	PO7 [K3]	PO8 [K3]	PO9 [K6]	PO10 [K2]	PO11 [K6]	PO12 [K1]	PSO1 [K3]	PSO2 [K3]	PSO3 [K3]	PSO4 [K2]
CO1 [K2]	-	-	1	-	-	1	1	1	1	2	1	1	-	-	-	2
CO2 [K1]	-	-	-	-	-	-	-	1	1	1	1	-	-	-	-	1
CO3 [K3]	-	-	-	-	-	-	-	2	1	3	-	-	-	-	-	3
CO4 [K6]	3	3	-	-	-	3	-	3	2	3	2	-	-	-	-	3

Program Name: I. B.Tech **Faculty Name:** Sri.P.Naresh

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	I	**ENGINEERING PHYSICS LAB**	**R161115**	18-06-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
45 Hrs	-	3	3 Hrs	25	50	2

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

Student able to:

Training field oriented Engineering graduates to handle instruments and their design methods to improve the accuracy of measurements.

Course Outcomes:

CO1: Illustrate the concepts of principles of superposition, Interference and Diffraction. (K2)

CO2: Explain the concepts of finding acceleration due to gravity, radius of gyration and rigidity modulus, velocity of sound in air. (K5)

CO3: Compare the characteristics of electronic devices P-N semiconductor diode & Zener diode and applications of the devices in different fields in engineering (K5)

CO4: Find the experimental values and compare with their standard values. (K1)

CO5: Extend the results to recent developments (K2)

CO6: Examine the basics of physics in engineering field. (K4)

POs' / COs'	PO1 [k3]	PO2 [k4]	PO3 [k5]	PO4 [K5]	PO5 [K3]	PO6 [K3]	PO7 [K3]	PO8 [K3]	PO9 [K6]	PO10 [K2]	PO11 [K6]	PO12 [K1]	PSO1 [K3]	PSO2 [K3]	PSO3 [K3]	PSO4 [K2]
CO1 [K2]	1	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-
CO2 [K5]	3	3	-	-	3	-	-	-	-	-	-	-	-	-	-	-
CO3 [K5]	3	3	-	-	3	-	-	-	-	-	-	-	-	-	-	-
CO4 [K1]	1	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-
CO5 [K2]	1	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-
CO6 [K4]	3	2	-	-	3	-	-	-	-	-	-	-	-	-	-	-

Program Name: I. B.Tech **Faculty Name:** Sri.P.Naresh

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	I	**ENGINEERING PHYSICS VERTUAL LABS ASSIGNMENTS**	**R161115**	18-06-2018

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

Training Engineering students to prepare a technical document and Improving their writing skills.

Course Outcomes:

Student able to:

CO1: Explain the concepts and principles (K5)
CO2: Verify the relations of magnetic properties (K5)
CO3: Identify the applications of the devices in different fields (K3)
CO4: Find the experimental values and compare with their standard values. (K1)
CO5: Extend the results to recent developments (K2)
CO6: Examine the basics of physics in engineering field. (K4)

POs' / COs'	PO1 [k3]	PO2 [k4]	PO3 [k5]	PO4 [K5]	PO5 [K3]	PO6 [K3]	PO7 [K3]	PO8 [K3]	PO9 [K6]	PO10 [K2]	PO11 [K6]	PO12 [K1]	PSO1 [K3]	PSO2 [K3]	PSO3 [K3]	PSO4 [K2]
CO1 [K5]	1	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-
CO2 [K5]	3	3	-	-	3	-	-	-	-	-	-	-	-	-	-	-
CO3 [K3]	3	3	-	-	3	-	-	-	-	-	-	-	-	-	-	-
CO4 [K1]	1	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-
CO5 [K2]	1	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-
CO6 [K4]	3	2	-	-	3	-	-	-	-	-	-	-	-	-	-	-

Program Name: I. B.Tech **Faculty Name:** M.Udaya Tejaswini

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	I-II	**COMPUTER PROGRAMMING LAB**	**R161228**	19-11-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
45 Hrs	-	3	3 Hrs	25	50	2

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

1. Understand the basic concept of C Programming, and its different modules that includes conditional and looping expressions, Arrays, Strings, Functions, Pointers, Structures and File programming.
2. Acquire knowledge about the basic concept of writing a program.

3. Role of constants, variables, identifiers, operators, type conversion and other building blocks of C Language.
4. Use of conditional expressions and looping statements to solve problems associated with conditions and repetitions.
5. Role of Functions involving the idea of modularity.

.

Course Outcomes:

Student able to:

CO1: Design algorithms using fundamental concepts of computer system.(K6)

CO2: Construct programs in C language Using different data types ,operators and standard library functions.(K6)

CO3: Design applications involving the control flow statements.(K6)

CO4: Design a case study involving modular programming.(K6)

CO5: Design application involving arrays and strings.(K6)

CO6: Design applications using structures, unions, pointers and file system concepts.(K6)

POs' / COs'	PO1 [k3]	PO2 [k4]	PO3 [k5]	PO4 [K5]	PO5 [K3]	PO6 [K3]	PO7 [K3]	PO8 [K3]	PO9 [K6]	PO10 [K2]	PO11 [K6]	PO12 [K1]	PSO1 [K3]	PSO2 [K3]	PSO3 [K3]	PSO4 [K2]
CO1 [K6]	3	3	3	-	-	-	-	3	2	3	2	3	3	3	3	3
CO2 [K6]	3	3	3	3	-	-	-	3	2	3	2	3	3	3	3	3
CO3 [K6]	3	3	3	3	-	-	-	3	2	3	2	2	3	3	3	3
CO4 [K6]	3	3	3	3	-	-	-	3	2	3	2	3	3	3	3	3
CO5 [K6]	3	3	3	3	-	-	-	3	2	3	2	3	3	3	3	3
CO6 [K6]	3	3	3	3	-	-	-	3	2	3	2	3	3	3	3	3

Program Name: I. B.Tech **Faculty Name:** Sri.N.V.Malavika

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	I	**ENGINEERING WORKSHOP&IT WORKSHOP**	**R161117**	18-06-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
45 Hrs	-	3	3 Hrs	25	50	2

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

1. Understand the basic components and peripherals of a computer.
2. To become familiar in configuring a system.
3. Learn the usage of productivity tools002E
4. Acquire knowledge about the netiquette and cyber hygiene.
5. Get hands on experience in trouble shooting a system?

Course Outcomes:

Student able to:

CO1: Prepare the simple jobs as per specification using carpentry tools.**(K3)**
CO2: Prepare the simple jobs as per specification using fitting tools. **(K3)**
CO3: Prepare the simple jobs as per specification using tin smithy tools. **(K3)**
CO4: Make simple connections as per specifications given. **(K6)**
CO5: Infer different types of hardware devices, operating systems and software tools through practical exposure. **(K2)**
CO6: Illustrate various tables using word and excel and develop different types of charts by analyzing the data given in the tables. **(K2)**

POs' / COs'	PO1 [k3]	PO2 [k4]	PO3 [k5]	PO4 [K5]	PO5 [K3]	PO6 [K3]	PO7 [K3]	PO8 [K3]	PO9 [K6]	PO10 [K2]	PO11 [K6]	PO12 [K1]	PSO1 [K3]	PSO2 [K3]	PSO3 [K3]	PSO4 [K2]
CO1 [K5]	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2 [K5]	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO3 [K3]	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO4 [K1]	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO5 [K2]	1	1	1	1	-	-	-	1	1	-	-	3	1	1	1	2
CO6 [K4]	3	2	1	1	-	-	-	3	1	-	-	3	3	3	3	3

Program Name: I. B.Tech **Faculty Name:** T.Santhi Sree

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	I-II	**ENGLISH COMMUNICATION SKILLS LAB-2**	**R161221**	19-11-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
45 Hrs	-	3	3 Hrs	25	50	2

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

To enable the students to learn demonstratively the communication skills of listening, speaking, reading and writing.

Course Outcomes:

Student able to:

CO1: Infer different components of non-verbal communication.(K2)
CO2: Develop communication skills including soft skills. (K6)
CO3: Infer how to participate in GDs and interviews. (K2)
CO4: Improve Presentation skills. (K6)

POs' / COs'	PO1 [k3]	PO2 [k4]	PO3 [k5]	PO4 [K5]	PO5 [K3]	PO6 [K3]	PO7 [K3]	PO8 [K3]	PO9 [K6]	PO10 [K2]	PO11 [K6]	PO12 [K1]	PSO1 [K3]	PSO2 [K3]	PSO3 [K3]	PSO4 [K2]
CO1 [K2]	-	-	-	-	-	-	-	-	1	2	-	-	-	-	-	1
CO2 [K6]	-	-	-	-	-	-	-	-	2	3	-	-	-	-	-	1
CO3 [K2]	-	-	-	-	-	-	-	1	1	2	-	-	-	-	-	1
CO4 [K6]	-	-	-	-	-	-	-	-	2	3	-	-	-	-	-	1

Program Name: I. B.Tech **Faculty Name:** G.Anuradha

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	I-II	**APPLIED CHEMISTRY LAB**	**R161227**	19-11-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
66 Hrs	-	3	3 Hrs	25	50	2

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

Student able to

1. The students entering into the professional course have practically very little exposure to lab classes.
2. The experiments introduce volumetric analysis; redox titrations with different indicators; EDTA titrations;

3. Then they are exposed to a few instrumental methods of chemical analysis. Thus at the end of the lab course,
4. The student is exposed to different methods of chemical analysis and use of some commonly employed instruments. They thus acquire some experimental skills.

Course Outcomes:

Student able to:

CO1: Develop knowledge on analysis with basic concepts of molarity, normality, molality, mole fractions. (K6)
CO2: Determine the quality of food and water using neutralization titration. (K5)
CO3: Appraise the quality of a product or water using complexometric titration. (K5)
CO4: Determine the quantity of ions in the sample using precipitation titration. (K5)
CO5: Analyze pH of the given samples. (K4)
CO6: Estimate quality of food and water based on conductivity and potential samples. (K6)

POs' / COs'	PO1 [k3]	PO2 [k4]	PO3 [k5]	PO4 [K5]	PO5 [K3]	PO6 [K3]	PO7 [K3]	PO8 [K3]	PO9 [K6]	PO10 [K2]	PO11 [K6]	PO12 [K1]	PSO1 [K3]	PSO2 [K3]	PSO3 [K3]	PSO4 [K2]
CO1 [K6]	3	-	-	3	3	-	-	-	-	-	-	3	-	-	-	-
CO2 [K5]	3	3	2	2	3	3	-	-	-	-	-	3	-	-	-	-
CO3 [K5]	3	3	2	2	3	3	-	-	-	-	-	3	-	-	-	-
CO4 [K5]	3	3	2	2	3	3	-	-	-	-	-	3	-	-	-	-
CO5 [K4]	3	3	1	1	3	3	-	-	-	-	1	3	-	-	-	-
CO6 [K6]	3	3	3	3	3	3	-	-	-	-	2	3	-	-	-	-

Program Name: II. B.Tech **Faculty Name: T. Sireesha**

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	II-I	**ELECTRONIC DEVICES AND CIRCUITS**	**R1621041**	18-06-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
66 Hrs	4	-	3 Hrs	30	70	3

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

- The basic concepts of semiconductor physics are to be reviewed.
- Study the physical phenomena such as conduction, transport mechanism and electrical characteristics of different diodes.
- The application of diodes as rectifiers with their operation and characteristics with and without filters are discussed.

- The principal of working and operation of Bipolar Junction Transistor and Field Effect Transistor and their Characteristics are explained.
- The need of transistor biasing and its significance is explained. The quiescent point or operating point is explained.
- Small signal equivalent circuit analysis of BJT and FET transistor amplifiers in different configuration is explained.

Course Outcomes:

Student able to:

CO1: Illustrate the basic concepts of semiconductor physics.**(K2)**
CO2: Explain the operation of semiconductor diode and special diodes.**(K2)**
CO3: Analyze the operation of rectifiers with and without filters. .**(K4)**
CO4: Illustrate the operation, characteristics, current flow and configurations of BJTs and FETs. .**(K2)**
CO5: Analyze Transistor and FET biasing methods and Thermal stabilization. .**(K4)**
CO6: Analyze small signal low frequency transistor amplifier circuits using BJT & FET in different configurations. .**(K4)**

POs' / COs'	PO1 [k3]	PO2 [k4]	PO3 [k5]	PO4 [K5]	PO5 [K3]	PO6 [K3]	PO7 [K3]	PO8 [K3]	PO9 [K6]	PO10 [K2]	PO11 [K6]	PO12 [K1]	PSO1 [K3]	PSO2 [K3]	PSO3 [K3]	PSO4 [K2]
CO1 [K2]	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2 [K2]	1	1	1	1	-	-	-	-	-	-	-	-	1	-	1	2
CO3 [K4]	1	1	1	1	-	-	-	-	-	-	-	-	1	--	1	2
CO4 [K2]	2	1	1	1	-	-	-	-	-	-	-	-	2	-	-	1
CO5 [K4]	2	1	1	1	-	-	-	-	-	-	-	-	2	-	2	1
CO6 [K4]	2	1	1	1	-	-	-	-	-	-	-	-	2	-	2	1

Program Name: II. B.Tech **Faculty Name: U. Ravi Kiran**

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	II-I	MEFA	**R1621026**	18-06-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
66 Hrs	4	-	3 Hrs	30	70	3

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

Student able to

- The Learning objectives of this paper is to understand the concept and nature of Managerial Economics and its relationship with other disciplines and also to understand the Concept of Demand and Demand forecasting, Production function, Input Output relationship, Cost-Output relationship and Cost-Volume-Profit Analysis.
- To understand the nature of markets, Methods of Pricing in the different market structures and to know the different forms of Business organization and the concept of Business Cycles.

- To learn different Accounting Systems, preparation of Financial Statement and uses of different tools for performance evaluation. Finally, it is also to understand the concept of Capital, Capital Budgeting and the techniques used to evaluate Capital Budgeting proposals.

.

Course Outcomes:

Student able to:

CO1: Infer the concepts of Managerial Economics and it's relationship with other disciplines.**(K_2)**

CO2: Infer the concepts of production function and cost-volume-profit analysis. **(K_2)**

CO3: Illustrate the nature of competition and pricing in different market situations and know about different market structures. **(K_2)**

CO4: Contrast different forms of business organizations and business cycles. **(K_3)**

CO5: Analyze financial statements of a company like profit and loss accounts and balance sheets. **(K_4)**

CO6: Demonstrate knowledge of capital structures and capital Budgeting**(K_2)**

POs' / COs'	PO1 [k3]	PO2 [k4]	PO3 [k5]	PO4 [K5]	PO5 [K3]	PO6 [K3]	PO7 [K3]	PO8 [K3]	PO9 [K6]	PO10 [K2]	PO11 [K6]	PO12 [K1]	PSO1 [K3]	PSO2 [K3]	PSO3 [K3]	PSO4 [K2]
CO1 [K2]	-	-	-	-	-	1	-	-	1	2	1	-	-	-	-	2
CO2 [K2]	-	-	-	-	-	1	-	-	1	2	1	-	-	-	-	2
CO3 [K2]	-	-	-	-	-	1	-	-	1	2	1	-	-	-	-	2
CO4 [K3]	-	-	-	-	-	-	-	-	1	3	1	-	-	-	-	1
CO5 [K4]	-	-	-	-	-	-	-	-	1	3	1	-	-	-	-	1
CO6 [K2]	-	-	-	-	-	-	-	-	1	2	1	-	-	-	-	2

Program Name: II. B.Tech **Faculty Name: P. Manoj Kumar**

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	II-I	NETWORK ANALYSIS	**R1621044**	18-06-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
66 Hrs	4	-	3 Hrs	30	70	3

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

Student able to

- To understand the basic concepts on RLC circuits.
- To know the behavior of the steady states and transients states in RLC circuits.
- To know the basic Laplace transforms techniques in periods' waveforms.
- To understand the two port network parameters.
- To understand the properties of LC networks and filters.

Course Outcomes:

Student able to:

- **CO1:** Explain the Electrical Circuits ,A.C Fundamentals and Network Topology **(k5)**
- **CO2:** Analyze A.C Circuits Complex impedance and phasor notation for R-L, R-C, R-L-C and Star- Delta conversion **(k6)**
- **CO3:** Analyze Coupled Circuits and Resonance Circuits **(k6)**
- **CO4:** Evaluate the Thevinin's, Norton's, Milliman's, Reciprocity, Compensation, Substitution, Superposition, Max Power Transfer, Tellegens- problem. **(k6)**
- **CO5:** Explain the two port network parameters **(k6)**
- **CO6:** Analysis and performance of Transient circuits **(k6)**

POs' / COs'	PO1 [k3]	PO2 [k4]	PO3 [k5]	PO4 [K5]	PO5 [K3]	PO6 [K3]	PO7 [K3]	PO8 [K3]	PO9 [K6]	PO10 [K2]	PO11 [K6]	PO12 [K1]	PSO1 [K3]	PSO2 [K3]	PSO3 [K3]	PSO4 [K2]
CO1 [K2]	3	3	2	-	-	-	-	-	-	-	-	2	-	-	3	-
CO2 [K2]	3	3	3	-	-	-	-	-	-	-	-	-	-	-	3	-
CO3 [K4]	3	3	3	-	-	-	-	-	-	-	-	-	-	-	3	-
CO4 [K3]	3	3	3	-	-	-	-	-	-	-	-	-	-	-	3	-
CO5 [K4]	3	3	2	-	-	-	-	-	-	-	-	-	-	-	3	-
CO6 [K2]	3	3	3	-	-	-	-	-	-	-	-	-	-	-	3	-

Program Name: I. B.Tech **Faculty Name: Dr.J.Lakshmi Narayana**

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	II-I	**RVSP**	R1621045	18-06-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
66 Hrs	4	-	3 Hrs	30	70	3

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

- To give students an introduction to elementary probability theory, in preparation for courses on statistical analysis, random variables and stochastic processes.
- To mathematically model the random phenomena with the help of probability theory concepts.
- To introduce the important concepts of random variables and stochastic processes.
- To analyze the LTI systems with stationary random process as input.
- To introduce the types of noise and modelling noise sources.

Course Outcomes:

Student able to:

- **CO1:** Identify random variables and Define and manipulate distribution and density functions.**(K3)**
- **CO2:** Compute various operations like expectations, variances,. etc. from probability density functions and probability distribution functions**(K2)**
- **CO3:** Characterize probability models and function of random variables based on single & multiples random variables. **(K4)**
- **CO4:** Explain the concept of random process, differentiate between stochastic and ergodic processes. **(K2)**
- **CO5:** Illustrate the concept of random processes and determine covariance and spectral density of stationary random processes. **(K2)**
- **CO6:** Apply the principles of a random process in system concepts. **(K3)**

POs' / COs'	PO1 [k3]	PO2 [k4]	PO3 [k5]	PO4 [K5]	PO5 [K3]	PO6 [K3]	PO7 [K3]	PO8 [K3]	PO9 [K6]	PO10 [K2]	PO11 [K6]	PO12 [K1]	PSO1 [K3]	PSO2 [K3]	PSO3 [K3]	PSO4 [K2]
CO1 [K3]	2	1	-	-	-	-	-	-	-	3	-	-	-	-	2	-
CO2 [K2]	1	1	-	1	-	-	-	-	-	-	-	-	-	-	1	2
CO3 [K4]	2	2	1	1	-	-	-	-	-	-	-	-	-	-	3	1
CO4 [K2]	1	1	1	1	-	-	-	-	-	3	-	-	-	-	1	2
CO5 [K2]	1	1	1	1	-	-	-	-	-	2	-	-	-	-	1	2
CO6 [K3]	2	1	-	-	-	-	2	-	-	1	-	-	-	-	2	1

Program Name: II. B.Tech **Faculty Name: D. Srikanth**

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	II-I	**SS**	**R1621043**	18-06-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
66 Hrs	4	-	3 Hrs	30	70	3

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

- To introduce the terminology of signals and systems.
- To introduce Fourier tools through the analogy between vectors and signals.
- To introduce the concept of sampling and reconstruction of signals.
- To analyze the linear systems in time and frequency domains.
- To study z-transform as mathematical tool to analyze discrete-time signals and systems.

Course Outcomes:

Student able to:

- **CO1:** Determine the mathematical representation and classify the signals based on their properties and represent signals in terms of mutual orthogonality**(K5)**
- **CO2:** Knowledge of Frequency domain representation and analysis concepts using Fourier Transforms & Sampling**(K3)**
- **CO3:** Analyzean LTI system and understand the concepts of Sampling theorem and apply it to reconstruct analog signals. **(K4)**
- **CO4:** Illustrate the process of convolution and correlation between signals, its implication for analysis of linear time invariant systems**(K2)**
- **CO5:** Determine the properties of continuous time signals and system using Laplace transforms. **(K5)**
- **CO6:** Apply the concepts of Z-transforms, its properties and ROC to solve differential equations**(K3)**

POs' / COs'	PO1 [k3]	PO2 [k4]	PO3 [k5]	PO4 [K5]	PO5 [K3]	PO6 [K3]	PO7 [K3]	PO8 [K3]	PO9 [K6]	PO10 [K2]	PO11 [K6]	PO12 [K1]	PSO1 [K3]	PSO2 [K3]	PSO3 [K3]	PSO4 [K2]
CO1 [K5]	3	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-
CO2 [K3]	2	1	1	1	-	-	-	-	-	-	-	-	-	-	2	-
CO3 [K4]	3	2	1	1	-	-	-	-	-	-	-	-	-	-	3	-
CO4 [K2]	1	1	1	1	-	-	-	-	-	-	-	-	-	-	1	-
CO5 [K5]	3	3	2	2	-	-	-	-	-	-	-	-	-	-	3	-
CO6 [K3]	2	1	1	1	-	-	-	-	-	-	-	-	-	-	2	-

Program Name: I. B.Tech **Faculty Name: M.N.L.Kalyani**

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	II-I	**STLD**	**R1621042**	18-06-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
66 Hrs	4	-	3 Hrs	30	70	3

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

Student able to

- To study the basic philosophy underlying the various number systems, negative number representation, binary arithmetic, binary codes and error detecting and correcting binary codes.
- To study the theory of Boolean algebra and to study representation of switching functions using Boolean expressions and their minimization techniques.
- To study the combinational logic design of various logic and switching devices and their realization.

- To study the sequential logic circuits design both in synchronous and Asynchronous modes for various complex logic and switching devices, their minimization techniques and their realizations.
- To study some of the programmable logic devices and their use in realization of switching functions.

Course Outcomes:

Student able to:

CO1: Determine the philosophy of number systems and codes.**(K5)**

CO2: Simplify the logic expressions using Boolean laws and postulates and design them by using logic gates. Minimize the logic expressions using map method and tabular method. **(K4)**

CO3: Design of combinational logic circuits using conventional gates. **(K6)**

CO4: Design of combinational logic using various PLD's and synthesizing of threshold functions. **(K6)**

CO5: Analyze and design sequential systems composed of standard sequential modules, such as flip-flops and latches, counters and registers. **(K4)**

CO6: Design the FSM for completely specified and incompletely specified sequential machines. **(K6)**

POs' / **COs'**	**PO1 [k3]**	**PO2 [k4]**	**PO3 [k5]**	**PO4 [K5]**	**PO5 [K3]**	**PO6 [K3]**	**PO7 [K3]**	**PO8 [K3]**	**PO9 [K6]**	**PO10 [K2]**	**PO11 [K6]**	**PO12 [K1]**	**PSO1 [K3]**	**PSO2 [K3]**	**PSO3 [K3]**	**PSO4 [K2]**
CO1 [K5]	3	3	2	2	1	-	-	-	-	**3**	-	-	3	3	-	1
CO2 [K4]	3	2	1	1	1	-	-	-	-	-	-	-	3	3	-	1
CO3 [K6]	3	3	3	3	1	-	-	-	-	-	-	-	3	3	-	1
CO4 [K6]	3	3	3	3	1	-	-	-	-	-	-	-	3	3	-	1
CO5 [K4]	3	2	1	1	1	-	-	-	-	-	-	-	3	3	-	1
CO6 [K6]	3	3	3	3	1	-	-	-	-	-	-	-	3	3	-	1

Program Name: II. B.Tech **Faculty Name: D. Srikanth/ T. Sireesha**

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	II-I	EDC LAB	**R1621046**	19-11-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
45 Hrs	-	3	3 Hrs	25	50	2

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

Student able to

- To indentify the basic electronic devices.
- To observe the characteristics of diodes like PN, Zener diode.
- Be familiar with rectifiers and filters.
- To observe the characteristics of transistors (BJT ,FET & UJT).
- To analyze transistor amplifiers and their frequency responses.

Course Outcomes:

Student able to:

- **CO1:** Operate different electronic equipment and electronic components. .(K2)
- **CO2:** Plot the volt ampere characteristics of different types of diodes and transistors. Library functions.(K2)
- **CO3:** Verify operation of Rectifier circuits and Zener regulator circuit. .(K3)
- **CO4:** Analyze the frequency response of BJT and FET amplifiers. .(K4)

POs' / COs'	PO1 [k3]	PO2 [k4]	PO3 [k5]	PO4 [K5]	PO5 [K3]	PO6 [K3]	PO7 [K3]	PO8 [K3]	PO9 [K6]	PO10 [K2]	PO11 [K6]	PO12 [K1]	PSO1 [K3]	PSO2 [K3]	PSO3 [K3]	PSO4 [K2]
CO1 [K2]	-	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-
CO2 [K2]	1	1	1	1	-	-	-	-	-	-	-	-	1	-	-	2
CO3 [K3]	1	1	1	1	-	-	-	-	-	-	-	-	2	-	-	3
CO4 [K4]	2	2	1	1	-	-	-	-	-	-	-	-	3	-	-	3

Program Name: II. B.Tech **Faculty Name: P. Manoj Kumar /K. Narendra**

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	II-I	**N&ET LAB**	**R1621047**	18-06-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
66 Hrs	-	3	3 Hrs	25	50	2

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

- To determine resonance frequency, Q-factor of RLC network.
- To analysis time response of first orders RC/RL network for non-sinusoidal inputs.
- To estimate parameters of two port networks
- To understand the concept network theorems in network reduction of electrical networks.
- To determine efficiency of dc shunt machine with actual loading.
- To analyses performance of 3 phase induction motor
- To understand the significance of regulation of an alternators through synchronous impedance method.

Course Outcomes:

Student able to:

- **CO1:** verify the theorem of the given network**(K3)**
- **CO2:** Analyze the series and parallel resonance condition, two port network parameters.**(K4)**
- **CO3:** verify and analyze the characteristics of dc and ac machines**(K3)**

POs' / COs'	PO1 [k3]	PO2 [k4]	PO3 [k5]	PO4 [K5]	PO5 [K3]	PO6 [K3]	PO7 [K3]	PO8 [K3]	PO9 [K6]	PO10 [K2]	PO11 [K6]	PO12 [K1]	PSO1 [K3]	PSO2 [K3]	PSO3 [K3]	PSO4 [K2]
CO1 [K3]	2	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-
CO2 [K4]	3	2	1	1	-	-	-	-	-	-	-	-	-	-	-	-
CO3 [K3]	2	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-

Program Name: II. B.Tech **Faculty Name: Y.Kumari**

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	II-II	**ECA**	**R1622041**	19-11-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
66 Hrs	4	-	3 Hrs	30	70	3

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

- Small signal high frequency BJT transistor amplifier Hybrid-π equivalent circuit and the expressions for conductance's and capacitances are derived.
- Cascading of single stage amplifiers is discussed. Expressions for overall voltage gain are derived.
- The concept of feedback is introduced. Effect of negative feedback on amplifier characteristics is explained and necessary equations are derived.
- Bas ic principle of oscillator circuits is explained and different oscillator circuits are given with their analysis.
- Power amplifiers Class A, Class B, Class C, Class AB and other types of amplifiers are analyzed.
- Different types of tuned amplifier circuits are analyzed.

Course Outcomes:

Student able to:

- **CO1:** Analysis of BJT and FET Amplifier circuits at high frequencies**(K4)**
- **CO2:** Analysis of cascaded transistor and FET amplifier circuits. **(K4)**
- **CO3:** Performance comparison of feedback amplifiers. **(K5)**
- **CO4:** Analysis of different oscillator circuits with BJT and FET. **(K4)**
- **CO5:** Analysis of power amplifiers. **(K4)**
- **CO6:** Analysis of Tuned amplifiers. **(K4)**

POs' / COs'	PO1 [k3]	PO2 [k4]	PO3 [k5]	PO4 [K5]	PO5 [K3]	PO6 [K3]	PO7 [K3]	PO8 [K3]	PO9 [K6]	PO10 [K2]	PO11 [K6]	PO12 [K1]	PSO1 [K3]	PSO2 [K3]	PSO3 [K3]	PSO4 [K2]
CO1 [K4]	3	2	1	1	3	-	-	-	-	-	-	-	3	-	3	3
CO2 [K4]	3	2	1	1	3	-	-	-	-	-	-	-	3	-	3	3
CO3 [K5]	3	1	2	2	3	-	-	-	-	-	-	-	3	-	3	3
CO4 [K4]	3	2	1	1	3	-	-	-	-	-	-	-	3	-	3	3
CO5 [K4]	3	2	1	1	3	-	-	-	-	-	-	-	3	-	3	3
CO6 [K4]	3	2	1	1	3	-	-	-	-	-	-	-	3	-	3	3

Program Name: II. B.Tech **Faculty Name: D.Srikanth**

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	II-II	**AC**	**R1622044**	19-11-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
66 Hrs	4	-	3 Hrs	30	70	3

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

- To familiarize students with various techniques for amplitude modulation and demodulation of analog signals
- To familiarize students with techniques for generating and demodulating narrow-band and wide-band frequency and phase modulated signals
- To understand the influence of noise on the performance of Analog communication systems

Course Outcomes:

Student able to:

- **CO1:** Demonstrate &compare various AM techniques.**(K2)**
- **CO2:** analyze the blocks and stage of all AM systems both in time domain & frequency demine**(K4)**
- **CO3:** Illustrate the basics of angle modulation and they can classify into phase and frequency modulation**(K2)**
- **CO4:** Analyze the effect of noise and also performance (SNR) of different modulation schemes in the presence of noise. **(K4)**
- **CO5:** Illustrate basicknowledgeofvarious Modulated Signals through Transmitters & Receivers. **(K2)**
- **CO6:** Analyze various pulse modulation techniques and TDM**(K4)**

POs' / COs'	PO1 [k3]	PO2 [k4]	PO3 [k5]	PO4 [K5]	PO5 [K3]	PO6 [K3]	PO7 [K3]	PO8 [K3]	PO9 [K6]	PO10 [K2]	PO11 [K6]	PO12 [K1]	PSO1 [K3]	PSO2 [K3]	PSO3 [K3]	PSO4 [K2]
CO1 [K2]	**1**	1	**1**	-	-	-	-	-	-	**2**	**1**	**1**	-	-	1	-
CO2 [K4]	**3**	2	**1**	-	-	-	-	-	-	**3**	**1**	**1**	-	-	3	-
CO3 [K2]	**1**	1	**1**	-	-	-	-	-	-	**2**	**1**	**1**	-	-	1	-
CO4 [K4]	**3**	2	**1**	**1**	**3**	**3**	-	-	-	-	**1**	**1**	-	-	3	-
CO5 [K2]	**1**	1	**1**	**1**	**1**	**1**	-	-	-	-	**1**	**1**	-	-	1	-
CO6 [K4]	**3**	2	**1**	**1**	**3**	-	-	-	-	-	**1**	**1**	-	-	3	-

Program Name: II. B.Tech **Faculty Name: P.Manoj Kumar**

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	II-II	**CONTROL SYSTEMS**	**R1622042**	19-11-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
66 Hrs	4	-	3 Hrs	30	70	3

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

- To introduce the concepts of open loop and closed loop systems, mathematical models of mechanical and electrical systems, and concepts of feedback
- To study the characteristics of the given system in terms of the transfer function and introducing various approaches to reduce the overall system for necessary analysis
- To develop the acquaintance in analyzing the system response in time-domain and frequency domain in terms of various performance indices
- To analyze the system in terms of absolute stability and relative stability by different approaches
- To design different control systems for different applications as per given specifications

- To introduce the concepts of state variable analysis, design and also the concepts of controllability and observability

Course Outcomes:

Student able to:

CO1: Measure electrical & mechanical systems by mathematical modeling.(K5)
CO2: Evaluate overall transfer function using block diagram algebra and signal flow graph. (K5)
CO3: Evaluate Transient, Steady State behavior and time response of second order systems. (K5)
CO4: Explain the skills of absolute and relative stability of LTI systems. (K5)
CO5: Create Capability to analyze the stability of LTI systems using frequency response methods. (K6)
CO6: Design of compensators and analyses physical systems as state models. (K6)

POs' / COs'	PO1 [k3]	PO2 [k4]	PO3 [k5]	PO4 [K5]	PO5 [K3]	PO6 [K3]	PO7 [K3]	PO8 [K3]	PO9 [K6]	PO10 [K2]	PO11 [K6]	PO12 [K1]	PSO1 [K3]	PSO2 [K3]	PSO3 [K3]	PSO4 [K2]
CO1 [K5]	3	3	2	2	3	3	3	-	-	-	-	3	-	-	3	-
CO2 [K5]	3	3	2	2	-	-	-	-	-	-	-	-	-	-	3	-
CO3 [K5]	3	3	2	2	3	-	-	-	-	-	-	-	-	-	3	-
CO4 [K5]	3	3	2	2	3	-	-	-	-	-	-	-	-	-	3	-
CO5 [K6]	3	3	3	3	3	-	-	-	-	-	-	-	-	-	3	-
CO6 [K6]	3	3	3	3	3	3	-	-	-	-	-	3	-	-	3	-

Program Name: Ii. B.Tech **Faculty Name: B.Praveen kitti/R.V.Shashank**

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	II-II	**EMTL**	**R1622043**	19-11-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
66 Hrs	4	-	3 Hrs	30	70	3

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

The main objectives of this course are to understand:

- Fundamentals of steady electric and magnetic fields using various laws
- The concept of static and time varying Maxwell equations and power flow using pointing theorem
- Wave characteristics in different media for normal and oblique incidence
- Various concepts of transmission lines and impedance measurements

Course Outcomes:

Student able to:

- **CO1:** Analyze the basic concepts of electric and magnetic fields using different laws**(K4)**
- **CO2:** Assess the relationship between electric and magnetic fields and derive Maxwell's Equation. **(K5)**
- **CO3:** Formulate the wave equations in perfect dielectric and conduction media**(K6)**
- **CO4:** Compile and derive the equations of reflection and refraction of Electromagnetic waves in different media(K6)
- **CO5:** Analyze transmission lines and their parameters(K4)
- **CO6:** Elaborate various parameters for transmission lines using either a Smith chart or classical theory. (K6)

POs' / COs'	PO1 [k3]	PO2 [k4]	PO3 [k5]	PO4 [K5]	PO5 [K3]	PO6 [K3]	PO7 [K3]	PO8 [K3]	PO9 [K6]	PO10 [K2]	PO11 [K6]	PO12 [K1]	PSO1 [K3]	PSO2 [K3]	PSO3 [K3]	PSO4 [K2]
CO1 [K4]	3	2	1	-	-	-	-	-	-	-	-	1	-	-	-	-
CO2 [K5]	3	3	2	-	-	-	-	-	-	-	-	1	-	-	-	-
CO3 [K6]	3	3	3	-	-	-	-	-	-	-	-	1	-	-	3	-
CO4 [K6]	3	3	3	-	-	-	-	-	-	-	-	1	-	-	1	-
CO5 [K4]	3	2	1	1	1	-	1	-	-	-	-	1	-	-	1	-
CO6 [K6]	3	3	3	3	1	-	1	-	-	-	-	1	-	-	2	-

Program Name: I. B.Tech **Faculty Name: N.RAMA KRISHNA**

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	II-II	**MS**	**R1622026**	19-11-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
72 Hrs	4	-	3 Hrs	30	70	3

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

- To familiarize with the process of management and to provide basic insight into select contemporary management practices
- To provide conceptual knowledge on functional management and strategic management.

Course Outcomes:

Student able to:

- **CO1:** Infer the Nature of Management theories and motivation styles**(K2)**
- **CO2:** Analyze the principle of project Management and project Crashing. **(K4)**
- **CO3:** Illustrate the principles of Functional Management. **(K2)**
- **CO4:** Analyze strategic Management principles and understand them. **(K4)**
- **CO5:** Analyze the fundamentals of Business Ethics and Communication. **(K4)**
- **CO6:** Demonstrate knowledge of Principles of Contemporary Management Practices.**(K2)**

POs' / COs'	PO1 [k3]	PO2 [k4]	PO3 [k5]	PO4 [K5]	PO5 [K3]	PO6 [K3]	PO7 [K3]	PO8 [K3]	PO9 [K6]	PO10 [K2]	PO11 [K6]	PO12 [K1]	PSO1 [K3]	PSO2 [K3]	PSO3 [K3]	PSO4 [K2]
CO1 [K2]	-	-	-	-	-	1	-	-	1	2	1	-	-	-	-	2
CO2 [K4]	-	-	-	-	-	3	-	-	1	3	1	-	-	-	-	3
CO3 [K2]	-	-	-	-	-	1	-	-	1	2	1	-	-	-	-	2
CO4 [K4]	-	-	-	-	-	-	-	-	1	3	1	-	-	-	-	3
CO5 [K4]	-	-	-	-	-	-	-	-	1	3	1	-	-	-	-	3
CO6 [K2]	-	-	-	-	-	-	-	1	1	2	1	-	-	-	-	2

Program Name: II. B.Tech **Faculty Name: K.Sundar Srinivas**

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	II-II	**PDC**	**R1622044**	19-11-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
66 Hrs	4	-	3 Hrs	30	70	3

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

- To understand the concept of wave shaping circuits, Switching Characteristics of diode and transistor.
- To study the design and analysis of various Multivibrators.
- To understand the functioning of different types of time-base Generators.
- To learn the working of logic families & Sampling Gates.

Course Outcomes:

Student able to:

CO1: Analyze linear wave shaping circuits. (K4)
CO2: Developnon linear wave shaping circuits usi ng diodes and transistors. (K3)
CO3: Design transistor switch and logic gates. (K6)
CO4: Design different multi vibrators using transistors. (K6)
CO5: Explain various time base generators using transistors. (K2)
CO6: Discuss various synchronization techniques and sampling gates(K6)

POs' / COs'	PO1 [k3]	PO2 [k4]	PO3 [k5]	PO4 [K5]	PO5 [K3]	PO6 [K3]	PO7 [K3]	PO8 [K3]	PO9 [K6]	PO10 [K2]	PO11 [K6]	PO12 [K1]	PSO1 [K3]	PSO2 [K3]	PSO3 [K3]	PSO4 [K2]
CO1 [K4]	3	2	1	1	3	-	-	-	-	-	-	-	3	3	3	-
CO2 [K3]	2	1	1	1	2	-	-	-	-	-	-	-	-	2	-	-
CO3 [K6]	3	3	3	3	-	-	-	-	-	-	-	1	3	3	3	-
CO4 [K6]	3	3	3	3	-	-	-	-	-	-	-	-	-	3	-	-
CO5 [K2]	1	1	1	1	-	-	-	-	-	-	-	-	1	1	1	-
CO6 [K6]	3	3	3	-	-	-	-	-	-	-	-	-	-	1	-	-

Program Name: II. B.Tech **Faculty Name: D.Srikanth/G.V.Ramanaiah**

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	II-II	**AC LAB**	**R1622047**	19-11-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
45 Hrs	-	3	3 Hrs	25	50	2

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

The main objective of analog communication laboratory is to study various analog modulation schemes using hardware, and software through SCILAB

Course Outcomes:

Student able to:

- **CO1:** Verify various modulation and demodulation techniques through hardware and software.**(K2)**
- **CO2:** Design and verify operation of Pre-emphasis and De-Emphasis circuits and to plot the frequency response. **(K6)**
- **CO3:** Illustrate the operations of different types of detectors. **(K2)**
- **CO4:** Verification of Spectral analysis of AM and FM on spectrum analyzer. **(K2)**
- **CO5:** Verification of pulse modulation techniques like PAM, PWM and PPM. **(K2)**
- **CO6:** Verify sampling theorem and its effects. **(K2)**

POs' / COs'	PO1 [k3]	PO2 [k4]	PO3 [k5]	PO4 [K5]	PO5 [K3]	PO6 [K3]	PO7 [K3]	PO8 [K3]	PO9 [K6]	PO10 [K2]	PO11 [K6]	PO12 [K1]	PSO1 [K3]	PSO2 [K3]	PSO3 [K3]	PSO4 [K2]
CO1 [K2]	1	-	1	1	1	1	1	1	1	2	1	3	-	-	-	2
CO2 [K6]	3	-	3	3	3	3	3	3	2	3	2	3	-	-	-	3
CO3 [K2]	1	-	1	1	1	1	-	-	1	2	1	3	-	-	-	2
CO4 [K2]	1	-	1	-	-	-	-	-	1	2	1	3	-	-	-	2
CO5 [K2]	1	-	1	1	1	1	1	1	1	2	1	3	-	-	-	2
CO6 [K2]	1	-	1	1	1	1	1	1	1	2	1	3	-	-	-	2

Program Name: II. B.Tech **Faculty Name: Y.Kumari/D.Suresh Babu**

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	II-II	**ECA LAB**	**R1622046**	19-11-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
45 Hrs	-	3	3 Hrs	25	50	2

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

Student able to

- To prepare the students how to use modern simulation tools such as ESIM, MULTISIM etc. for design ,analysis and performance evaluation of electronic circuits.
- Design, simulate and construct various electronic circuits through software and hardware.
- To develop problem solving skills in electronic circuits and to design electronic circuits to meet desired specifications

Course Outcomes:

Student able to:

CO1: Design different types of Amplifier and Oscillator circuits**(K6)**

CO2: Simulate different types of Amplifier and Oscillator circuits using software tool. **(K6)**

CO3: Test different types of Amplifiers and Oscillator circuits using hardware. **(K4)**

POs' / COs'	PO1 [k3]	PO2 [k4]	PO3 [k5]	PO4 [K5]	PO5 [K3]	PO6 [K3]	PO7 [K3]	PO8 [K3]	PO9 [K6]	PO10 [K2]	PO11 [K6]	PO12 [K1]	PSO1 [K3]	PSO2 [K3]	PSO3 [K3]	PSO4 [K2]
CO1 [K6]	3	3	3	3	-	-	-	-	-	-	-	-	3	-	3	-
CO2 [K6]	3	-	3	3	3	-	-	-	-	-	-	-	3	-	3	-
CO3 [K4]	3	-	1	1	-	-	-	-	-	-	-	-	3	-	3	-

Program Name: III. B.Tech **Faculty Name: G.V.Ramanaiah**

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	III-I	**LICA**	R1631042	18-06-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
66 Hrs	4	-	3 Hrs	30	70	3

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

1. To understand the basic operation &performance parameters of differential amplifiers.
2. To understand & learn the measuring techniques of performance parameters of OP-AMP
3. To learn the linear and non-linear applications of operational amplifiers.
4. To understand the analysis & design of different types of active filters using opamps
5. To learn the internal structure, operation and applications of different analog ICs
6. To Acquire skills required for designing and testing integrated circuits

Course Outcomes:

Student able to:

CO1: Analyze the characteristics of op-amps.(K4)
CO2: Evaluate DC and AC characteristics of op-amp. (K5)
CO3: Inspect the Linear and Non Linear Applications of Op-Amp. (K4)
CO4: Design different types of Active filters. (K6)
CO5: Apply the Timer circuits and Phase Locked Loop for variousapplications. (K3)
CO6: Inspect different types of ADC and DAC Circuits. (K4)

POs' / COs'	PO1 [k3]	PO2 [k4]	PO3 [k5]	PO4 [K5]	PO5 [K3]	PO6 [K3]	PO7 [K3]	PO8 [K3]	PO9 [K6]	PO10 [K2]	PO11 [K6]	PO12 [K1]	PSO1 [K3]	PSO2 [K3]	PSO3 [K3]	PSO4 [K2]
CO1 [K4]	3	2	1	-	-	-	-	-	-	-	-	3	3	-	-	-
CO2 [K5]	3	3	2	2	-	-	-	-	-	-	-	3	3	-	-	-
CO3 [K4]	3	2	1	1	3	3	-	-	1	-	-	3	3	-	-	-
CO4 [K6]	3	3	3	3	3	-	-	-	-	-	-	3	3	-	3	-
CO5 [K3]	2	1	1	1	2	2	-	-	1	-	-	3	2	-	-	-
CO6 [K4]	3	2	1	1	3	3	-	-	1	3	1	3	3	3	3	-

Program Name: III. B.Tech **Faculty Name: B.Mohan Swaroop**

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	III-I	**DSD DICA**	R1631043	18-06-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
66 Hrs	4	-	3 Hrs	30	70	3

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

The main objectives of this course are:

1. Introduction of digital logic families and interfacing concepts for digital design is considered.
2. VHDL fundamentals were discussed to modeling the digital system design blocks.
3. VHDL compilers, simulators and synthesis tools are described, which are used to verify digital systems in a technology-independent fashion.
4. Design and implementation of combinational and sequential digital logic circuits is explained.

Course Outcomes:

Student able to:

CO1: Application:Develop:-- Illustrate the elements of VHDL and develop the VHDL programs for internal circuits for Integrated circuits .(K3)

CO2: Comprehension: Explain:--Explain the concepts of pre layout simulation and post layout simulation ,synthesis . (K2)

CO3: Synthesise: Design:--Study different IC s for PLDs and Memories like ROM &RAM and design PLDs for various Boolean functions . (K6)

CO4: Synthesise: Design:--Demonstrate the concepts of CMOS behavior and different logic families and design various logic circuits using CMOS. (K6)

CO5: Application: Model:--outline design considerations for Integrated circuits of all combinational circuits like adder, subtractor, multipliers, multiplexers, encoders, decoders and model them using VHDL. (K3)

CO6: Application: Model:--outline design considerations for Integrated circuits of all sequential circuits like registers, counters, flip flops, model them using VHDL. (K3)

POs' / COs'	PO1 [k3]	PO2 [k4]	PO3 [k5]	PO4 [K5]	PO5 [K3]	PO6 [K3]	PO7 [K3]	PO8 [K3]	PO9 [K6]	PO10 [K2]	PO11 [K6]	PO12 [K1]	PSO1 [K3]	PSO2 [K3]	PSO3 [K3]	PSO4 [K2]
CO1 [K3]	-	1	1	-	2	-	-	-	-	-	1	-	-	-	-	-
CO2 [K2]	-	1	-	-	-	-	-	-	-	-	1	-	1	-	-	-
CO3 [K6]	-	3	3	-	3	-	-	-	2	-	2	-	3	-	-	-
CO4 [K6]	-	3	3	-	3	-	-	-	-	-	2	-	3	-	-	-
CO5 [K3]	-	1	1	-	2	-	-	-	-	-	1	-	2	-	-	-
CO6 [K3]	-	1	1	-	2	-	-	-	-	-	1	-	2	-	-	-

Program Name: III. B.Tech **Faculty Name: Dr.M.Rangarao**

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	III-I	**DC**	R1631044	18-06-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
66 Hrs	4	-	3 Hrs	30	70	3

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

1. Understand different pulse digital modulation techniques and their comparison
2 .Familiarize various digital modulation techniques and calculation of their error probabilities
3. Understand the concept of entropy and different source coding techniques
4. Familirize with block codes, cyclic codes and convolution codes

Course Outcomes:

Student able to:

CO1: Distinguish Different digital modulation systems. (K4)
CO2: Discuss different digital modulation techniques.(K6)
CO3: Analyze the performance of a Digital Communication System for probability of error and are able to design a digital communication system.(K4)
CO4: Estimate the amount of Information and entropy.(K5)
CO5: Compare various source coding techniques. (K5)
CO6: Analyze Block codes, cyclic codes and convolution codes. (K4)

POs' / COs'	PO1 [k3]	PO2 [k4]	PO3 [k5]	PO4 [K5]	PO5 [K3]	PO6 [K3]	PO7 [K3]	PO8 [K3]	PO9 [K6]	PO10 [K2]	PO11 [K6]	PO12 [K1]	PSO1 [K3]	PSO2 [K3]	PSO3 [K3]	PSO4 [K2]
CO1 [K4]	3	-	1	-	-	3	-	-	-	3	-	3	-	-	3	-
CO2 [K6]	3	-	3	-	-	3	-	-	-	3	-	3	-	-	3	-
CO3 [K4]	3	2	1	-	-	3	-	-	-	3	-	3	-	-	3	-
CO4 [K5]	3	3	2	2	-	3	-	-	-	3	-	3	-	-	3	-
CO5 [K5]	3	3	2	2	-	3	-	-	-	-	-	3	-	-	3	-
CO6 [K4]	3	2	1	1	-	-	-	-	-	3	-	3	-	-	3	-

Program Name: IV. B.Tech **Faculty Name: A.Ramesh**

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	IV-I	**CAO**	R1631041	18-06-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
66 Hrs	4	-	3 Hrs	30	70	3

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

The student will

- Understand the fundamentals of different instruction set architectures and their relationship to the CPU design.
- Understand the principles and the implementation of computer arithmetic and ALU.
- Understand the memory system, I/O organization
- Understand the operation of modern CPUs including interfacing, pipelining, memory systems and busses.
- Understand the principles of operation of multiprocessor systems.

Course Outcomes:

Student able to:

CO1: Solve arithmetic operations: addition, subtraction, multiplication and division of Binary, BCD using algorithms.(K3)

CO2: Illustrate Addressing modes and Instruction codes of a processor.(K2)

CO3: Design a memory module and analyze its operation by interfacing with the CPU.(K6)

CO4: Discuss the set of specific instructions, design CPU with micro programmed control.(K6)

CO5: Design an I/O module and analyze its operation.(K6)

CO6: Apply design techniques using Pipeline and Vector Processing for a Given CPU Organization,. (K3)

POs' / COs'	PO1 [k3]	PO2 [k4]	PO3 [k5]	PO4 [K5]	PO5 [K3]	PO6 [K3]	PO7 [K3]	PO8 [K3]	PO9 [K6]	PO10 [K2]	PO11 [K6]	PO12 [K1]	PSO1 [K3]	PSO2 [K3]	PSO3 [K3]	PSO4 [K2]
CO1 [K3]	2	1	-	-	-	-	-	-	-	-	-	3	2	2	2	-
CO2 [K2]	-	1	-	-	-	-	-	-	-	-	-	-	1	1	1	-
CO3 [K6]	-	3	-	-	-	-	-	-	-	-	-	-	3	3	3	-
CO4 [K6]	-	3	-	-	-	-	-	-	-	-	-	-	3	3	3	-
CO5 [K6]	3	-	-	-	-	-	-	-	-	-	-	3	3	3	3	-
CO6 [K3]	2	-	-	-	-	-	-	-	-	-	-	3	2	2	2	-

Program Name: III. B.Tech **Faculty Name: R.V.Shashanka**

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	III-I	**ANTENNAS AND WAVE PROPAGATION**	**R1631045**	18-06-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
66 Hrs	4	-	3 Hrs	30	70	3

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

The student will be able to

- Understand the applications of the electromagnetic waves in free space.
- introduce the working principles of various types of antennas
- Discuss the major applications of antennas with an emphasis on how antennas are employed to meet electronic system requirements.
- Understand the concepts of radio wave propagation in the atmosphere

Course Outcomes:

Student able to:

CO1: Identify the importance of various antenna parameters(K3)
CO2: Assess the characteristics of wire and Loop antennas(K5)
CO3: Design array antenna systems from specifications. (K6)
CO4: Measure the fields radiated by various types of antennas like Long wire, Microstrip, Helical etc., (K5)
CO5: Discuss VHF, UHF, Microwave antennas and their Design. (K6)
CO6: Elaborate various modes of radio wave propagation. (K6)

POs' / COs'	PO1 [k3]	PO2 [k4]	PO3 [k5]	PO4 [K5]	PO5 [K3]	PO6 [K3]	PO7 [K3]	PO8 [K3]	PO9 [K6]	PO10 [K2]	PO11 [K6]	PO12 [K1]	PSO1 [K3]	PSO2 [K3]	PSO3 [K3]	PSO4 [K2]
CO1 [K3]	2	1	-	-	-	-	-	-	-	3	-	-	-	-	2	-
CO2 [K5]	3	3	2	2	3	-	-	-	-	-	-	-	-	-	3	-
CO3 [K6]	3	3	3	3	3	-	-	-	-	-	-	-	-	-	3	-
CO4 [K5]	3	3	2	2	3	-	-	-	-	-	-	-	-	-	3	-
CO5 [K6]	3	3	3	3	3	-	-	-	-	3	-	-	-	-	3	-
CO6 [K6]	3	3	-	-	3	-	3	-	-	3	-	-	-	-	3	-

Program Name: III. B.Tech **Faculty Name: M.Rama krishna**

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	I	**PROFESSIONAL ETHICS and HUMAN VALUES**		18-06-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
25 Hrs	2	-	-	-	-	-

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

1. To give basic insights and inputs to the student to inculcate Human values to grow as a responsible human beings with proper personality.
2. Professional Ethics instills the student to maintain ethical conduct and discharge their professional duties.

Course Outcomes:

Student able to:

CO1: Analyzing the human values. (K4)
CO2: Attribute the ethical values to develop professional qualities. (K4)
CO3: Evaluate experimentation on social scale. (K5)
CO4: Create plausible project including safety factors. (K6)
CO5: Attribute responsibilities and rights of engineer's. (K4)
CO6: Differentiating issues on global scale. (K4)

POs' / COs'	PO1 [k3]	PO2 [k4]	PO3 [k5]	PO4 [K5]	PO5 [K3]	PO6 [K3]	PO7 [K3]	PO8 [K3]	PO9 [K6]	PO10 [K2]	PO11 [K6]	PO12 [K1]	PSO1 [K3]	PSO2 [K3]	PSO3 [K3]	PSO4 [K2]
CO1 [K4]	3	2	-	-	-	3	-	-	-	-	-	-	-	-	-	-
CO2 [K4]	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO3 [K5]	-	3	-	-	-	-	-	3	-	-	-	-	-	-	-	-
CO4 [K6]	-	3	-	-	-	3	-	-	-	-	-	-	-	-	-	-
CO5 [K4]	-	2	-	-	-	-	-	-	1	-	-	-	-	-	-	-
CO6 [K4]	-	2	-	-	-	-	-	-	1	-	-	-	-	-	-	-

Program Name: III. B.Tech **Faculty Name: Dr.M Rangarao/B.Mohan Swaroop**

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	III-I	**DSD DICA LAB**	R1631048	18-06-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
45 Hrs	-	3	3 Hrs	25	50	2

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

Student able to

- Understand the work flow of Xilinx tools for digital design.
- Simulate combinational logic circuits.
- Simulate Sequential logic circuits.
- Synthesize combinational logic circuits.
- Synthesize Sequential logic circuits.
- Implementation of memory elements and ALU.

Course Outcomes:

Student able to:

CO1: Synthesize: Design:-Design and draw the internal structure of the following Digital Integrated Circuits.(K6)

CO2: Analyze :Analyze :- Perform simulation using relevant simulator and analyze the obtained simulation results using necessary synthesizer. (K4)

CO3: Application: Develop:-Develop VHDL source code for Combinational ICs. (K3)

CO4: Application: Develop:-Develop VHDL source code for Sequential ICs. (K3)

POs' / COs'	PO1 [k3]	PO2 [k4]	PO3 [k5]	PO4 [K5]	PO5 [K3]	PO6 [K3]	PO7 [K3]	PO8 [K3]	PO9 [K6]	PO10 [K2]	PO11 [K6]	PO12 [K1]	PSO1 [K3]	PSO2 [K3]	PSO3 [K3]	PSO4 [K2]
CO1 [K6]	3	3	3	3	3	3	-	-	2	-	2	3	3	3	-	-
CO2 [K4]	3	2	1	1	3	3	-	-	1	-	1	1	3	3	-	-
CO3 [K3]	2	1	1	1	2	2	-	-	1	-	1	3	2	2	-	-
CO4 [K3]	2	1	1	1	2	2	-	-	1	-	1	3	2	2	-	-

Program Name: III. B.Tech **Faculty Name: G.V.Ramanaiah/S.Pradeep kumar**

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	III-I	**LICA LAB**	R1631047	18-06-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
45 Hrs	-	3	3 Hrs	25	50	2

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

Student able to

- Analyze and design various applications of Op-Amp IC 751
- Analyze and design various applications of Timer IC 555
- Understand various voltage regulators
- Understand various applications of IC 565
- Understand digital to analog conversion

Course Outcomes:

Student able to:

CO1: Design Adder, Subtractor, Comparator, integrator & differentiator using OP AmpIC741.(K6)

CO2: Design different types of active filters. (K6)

CO3: Design different oscillator circuits and Function generator using OP-Amp IC741. (K6)

CO4: Design different Multivibrators using IC555 timer. (K6)

CO5: Use IC565 for PLL, IC566 for VCO, IC723for voltage regulator &IC7805,7809,7912 for three terminal voltage regulators. (K3)

CO6: Design 4-bit DAC using OP-Amp. (K6)

POs' / COs'	PO1 [k3]	PO2 [k4]	PO3 [k5]	PO4 [K5]	PO5 [K3]	PO6 [K3]	PO7 [K3]	PO8 [K3]	PO9 [K6]	PO10 [K2]	PO11 [K6]	PO12 [K1]	PSO1 [K3]	PSO2 [K3]	PSO3 [K3]	PSO4 [K2]
CO1 [K6]	3	3	3	3	3	3	-	-	2	3	-	-	1	1	1	1
CO2 [K6]	3	3	3	3	3	3	-	-	2	3	-	-	1	1	1	1
CO3 [K6]	3	3	3	3	3	3	-	-	2	3	-	-	1	1	1	1
CO4 [K6]	3	3	3	3	3	3	-	-	2	3	-	-	1	1	1	1
CO5 [K3]	2	1	1	1	2	2	-	-	1	3	-	-	2	2	2	3
CO6 [K6]	3	3	3	3	3	3	-	-	2	3	-	-	1	1	1	1

Program Name: III. B.Tech **Faculty Name: K.Sundar srinivas/N.Mounika**

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	III-I	**PDC LAB**	R1631046	18-06-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
45 Hrs	-	3	3 Hrs	25	50	2

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

Student able to

- This laboratory aims to produce graduates to design a pulse circuits and to verify functionality of digital circuits along with their applications.
- This course makes the student solve engineering programming problems which lays foundation to analyze pulse circuits.
- The student will acquire knowledge to design multivibrators (using Transistors), filters, switch (using Transistor), Time base generators, Clippers and Clampers.
- The students will be able to realize logic gates using discrete components, and applications of Combinational and sequential Circuits.

Course Outcomes:

Student able to:

CO1: Design various Linear and Non Linear wave shaping networks.(K6)

CO2: Construct transistor as a switch. (K3)

CO3: Examine the working of various logic gates and sampling gates by using discrete Components. (K4)

CO4: Justifythe truth tables of different flip-flops. (K5)

CO5: Develop different Multivibrators. (K3)

CO6: Create sweep waveforms using UJT and bootstrap sweep circuit. (K6)

POs' / COs'	PO1 [k3]	PO2 [k4]	PO3 [k5]	PO4 [K5]	PO5 [K3]	PO6 [K3]	PO7 [K3]	PO8 [K3]	PO9 [K6]	PO10 [K2]	PO11 [K6]	PO12 [K1]	PSO1 [K3]	PSO2 [K3]	PSO3 [K3]	PSO4 [K2]
CO1 [K6]	3	3	3	3	-	-	-	-	-	-	-	-	-	3	3	-
CO2 [K3]	2	1	1	1	-	-	-	-	-	-	-	-	-	2	-	-
CO3 [K4]	3	2	1	1	-	-	-	-	-	-	-	-	3	3	3	-
CO4 [K5]	3	3	2	2	-	-	-	-	-	-	-	-	3	3	3	-
CO5 [K3]	2	1	1	1	-	-	-	-	-	-	-	-	-	2	2	-
CO6 [K6]	3	3	3	3	-	-	-	-	-	-	-	-	-	2	-	-

Program Name: III. B.Tech **Faculty Name: Dr.M.Rangarao**

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	III-II	**DSP**	**RT32042**	19-11-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
66 Hrs	4	-	3 Hrs	30	70	3

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

- The student will be able to
- Analyze the Discrete Time Signals and Systems
- Know the importance of FFT algorithm for computation of Discrete Fourier Transform
- Understand the various implementations of digital filter structures
- Learn the FIR and IIR Filter design procedures
- Know the need of Multi rate Processing
- Learn the concepts of DSP Processors

Course Outcomes:

Student able to:

CO1: Apply the difference equations concept in the analyzation of Discrete time systems.(K3)

CO2: Use the FFT algorithm for solving the DFT of a given signal.(K3)

CO3: Design a Digital filter (FIR&IIR) from the given specifications.(K6)

CO4: Build the FIR and IIR structures from the designed digital filter.(K6)

CO5: Use the Multirate Processing concepts in various applications(eg: Design of phase shifters, Interfacing of digital systems…).(K3)

CO6: Apply the signal processing concepts on DSP Processor.(K3)

POs' / COs'	PO1 [k3]	PO2 [k4]	PO3 [k5]	PO4 [K5]	PO5 [K3]	PO6 [K3]	PO7 [K3]	PO8 [K3]	PO9 [K6]	PO10 [K2]	PO11 [K6]	PO12 [K1]	PSO1 [K3]	PSO2 [K3]	PSO3 [K3]	PSO4 [K2]
CO1 [K3]	2	1	1	-	-	-	-	-	-	-	1	-	-	-	2	-
CO2 [K3]	2	1	-	1	-	-	-	-	-	-	-	-	-	-	2	-
CO3 [K6]	3	3	3	-	-	3	-	-	-	-	2	-	-	-	3	-
CO4 [K6]	3	3	3	3	-	3	-	-	-	-	2	-	-	-	3	-
CO5 [K3]	2	1	1	-	-	2	-	-	-	-	1	-	-	-	2	-
CO6 [K3]	2	-	-	-	-	2	2	-	1	-	1	1	-	-	2	-

Program Name: III. B.Tech **Faculty Name: M.Rama krishna**

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	III-II	**IPR&P**	**RT31016**	19-11-2018

.Total No. of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
25 Hrs	4	-	2 Hrs	-	-	-

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

Student able to

- Learn the concept of Intellectual Proprieties, its importance for engineers and recognize the need to obtain Intellectual right and various agencies supporting
- Learn Patent Law, Requirements to be patentable, Double Patenting and Patent Searching
- Learn what Trade Secret is and make use of Employee Confidentiality Agreement.

Course Outcomes:

Student able to:

CO1: Explain the concept of Intellectual Proprieties, its importance for engineers and recognize the need to obtain Intellectual right and various agencies supporting IP.(K2)

CO2: Explain copyright law in terms of Rights, Ownership, Transfer and Duration, Infringement and International Copyright Law and outline about Semiconductor Chip Protection Act. (K2)

CO3: Explain Patent Law, Requirements to be patentable, Double Patenting and Patent Searching. How International patent law works: PCT and Invention Developers and promoters. (K2)

CO4: Explain Trade Marks, its maintenance, Transfer of rights, Inter parties Proceedings, Infringement. Classify Likelihood of confusion in Trade Mark and outline International Trade Mark Law. (K2)

CO5: Explain what Trade Secret is and make use of Employee Confidentiality Agreement. Illustrate Trade Secret Law, Unfair Competition and Breach of Contract. (K2)

CO6: Explain what Cyber Law is: Cyber Crime and E-commerce, Data Security. Analyze how Information Technology Act works. (K2)

POs' / **COs'**	**PO1 [k3]**	**PO2 [k4]**	**PO3 [k5]**	**PO4 [K5]**	**PO5 [K3]**	**PO6 [K3]**	**PO7 [K3]**	**PO8 [K3]**	**PO9 [K6]**	**PO10 [K2]**	**PO11 [K6]**	**PO12 [K1]**	**PSO1 [K3]**	**PSO2 [K3]**	**PSO3 [K3]**	**PSO4 [K2]**
CO1 [K2]	-	1	1	-	-	1	1	1	1	2	1	3	-	-	-	2
CO2 [K2]	-	1	1	-	-	1	1	1	1	2	1	3	-	-	-	2
CO3 [K2]	-	1	1	-	-	1	1	1	1	2	1	3	-	-	-	2
CO4 [K2]	-	1	1	-	-	1	1	1	1	2	1	3	-	-	-	2
CO5 [K2]	-	1	1	-	-	1	1	1	1	2	1	3	-	-	-	2
CO6 [K2]	-	1	1	-	-	1	1	1	1	2	1	3	-	-	-	2

Program Name: III. B.Tech **Faculty Name: Pradeep Kumar**

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	III-II	**MPMC**	**RT32041**	19-11-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
75 Hrs	4	-	3 Hrs	30	70	3

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

Student able to

- Learn concepts of microprocessor, different addressing modes and programming of 8086.
- Understand interfacing of 8086, with memory and other peripherals.
- Learn concept of DMA, USART RS-232 and PIC controller.
- Study the features of advanced processors and Pentium processors.
- Study the features of 8051 Microcontroller, its instruction set and also other controllers.

Course Outcomes:

Student able to:

CO1: Explain the architecture, register set, memory organization, Minimum mode and Maximum mode operation, different addressing modes and instruction set of 8086.(K2)

CO2: Develop 8086 Assembly level programs for different addressing modes and for interrupts. (K3)

CO3: Develop programs for 8086 interfacing with different peripherals. (K3)

CO4: Explain the concepts of advanced processor 80386 and coprocessor 80387. (K2)

CO5: Develop assembly level programs for 8051 Microcontroller. (K3)

CO6: Explain the features, architecture, instruction set of PIC and ARM Microcontrollers.(K2)

POs' / COs'	PO1 [k3]	PO2 [k4]	PO3 [k5]	PO4 [K5]	PO5 [K3]	PO6 [K3]	PO7 [K3]	PO8 [K3]	PO9 [K6]	PO10 [K2]	PO11 [K6]	PO12 [K1]	PSO1 [K3]	PSO2 [K3]	PSO3 [K3]	PSO4 [K2]
CO1 [K2]	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2 [K3]	2	1	1	-	-	2	-	-	-	-	1	3	-	-	-	-
CO3 [K3]	2	-	1	1	2	2	-	-	1	3	1	3	2	2	2	3
CO4 [K2]	1	-	1	-	1	-	-	-	-	-	-	-	1	1	1	1
CO5 [K3]	2	1	1	-	2	2	-	-	1	-	1	3	2	2	2	3
CO6 [K2]	1	-	1	1	1	1	-	-	1	2	1	3	1	1	1	1

Program Name: III. B.Tech **Faculty Name: Dr.J.Lakshmi Narayana**

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	III-II	**MWE**	**RT32044**	19-11-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
66 Hrs	4	-	3 Hrs	30	70	3

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

The student will

- Understand fundamental characteristics of waveguides and Micro strip lines through electromagnetic field analysis.
- Understand the basic properties of waveguide components and Ferrite materials composition
- Understand the function, design, and integration of the major microwave components oscillators, power amplifier.
- Understand a Microwave test bench setup for measurements.

Course Outcomes:

Student able to:

CO1: Recall knowledge of transmission lines and waveguide structures and they usage as elements in impedance matching and filter circuits.(K1)

CO2: Inspect the various parameters and characteristics of the various Micro strips, cavity resonators. (K4)

CO3: Apply analysis methods to determine circuit properties of passive or active microwave devices. (K3)

CO4: Analyze the difference between the conventional tubes and the microwave tubes for the transmission of the EM waves. (K4)

CO5: Illustrate the significance, types and characteristics of the slow wave structures used for the transmission of the microwave frequencies. (K2)

CO6: Analyze and measure various microwave parameters using a Microwave test bench. (K4)

POs' / COs'	PO1 [k3]	PO2 [k4]	PO3 [k5]	PO4 [K5]	PO5 [K3]	PO6 [K3]	PO7 [K3]	PO8 [K3]	PO9 [K6]	PO10 [K2]	PO11 [K6]	PO12 [K1]	PSO1 [K3]	PSO2 [K3]	PSO3 [K3]	PSO4 [K2]
CO1 [K1]	1	1	-	-	-	-	-	-	-	-	-	1	-	-	1	-
CO2 [K4]	3	2	-	-	-	-	-	-	-	-	-	-	-	-	3	-
CO3 [K3]	2	-	-	-	-	-	-	-	-	-	1	-	-	2	-	-
CO4 [K4]	3	-	-	-	-	-	-	-	-	-	1	-	-	3	-	-
CO5 [K2]	1	-	-	-	-	-	-	-	-	-	-	3	-	-	1	-
CO6 [K4]	3	2	-	1	-	-	-	-	-	1	-	3	3	-	3	-

Program Name: III. B.Tech **Faculty Name: A.Ramesh**

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	III-II	**VLSI**	**RT41041**	19-11-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
72 Hrs	4	-	3 Hrs	30	70	3

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

The student will be introduced to

- Use mathematical methods and circuit analysis models in analysis of CMOS digital electronics circuits, including logic components and their interconnects.
- Learn the various fabrication steps of IC and come across basic electrical properties of MOSFET.
- Apply CMOS technology-specific layout rules in the placement and routing of transistors and interconnect and to verify the functionality, timing, power and parasitic effects.
- The concepts and techniques of modern integrated circuit design and testing (CMOS VLSI).
- Design static CMOS combinational and sequential logic at the transistor level, including mask layout.

Course Outcomes:

Student able to:

CO1: Demonstrate the fundamentals of IC technology such as various MOS fabrication technologies and IC production steps and electrical properties of MOS circuits.(K2)
CO2: Apply the Concept of nMOS and CMOS design rules to the layout of a circuit . (K3)
CO3: Explain basic circuit concepts and how it impacts scaling and performance. (K2)
CO4: Illustrate the considerations of subsystem design processes and Architectural issues. (K2)
CO5: Explain the concepts of VLSI design issues and current trends in semiconductor technology. (K2)
CO6: Explain FPGA architecture,configuration,configuration modes and step-by-step approach of FPGA design process. (K2)

POs' / COs'	PO1 [k3]	PO2 [k4]	PO3 [k5]	PO4 [K5]	PO5 [K3]	PO6 [K3]	PO7 [K3]	PO8 [K3]	PO9 [K6]	PO10 [K2]	PO11 [K6]	PO12 [K1]	PSO1 [K3]	PSO2 [K3]	PSO3 [K3]	PSO4 [K2]
CO1 [K2]	1	1	-	-	-	-	-	-	-	-	-	3	1	1	-	-
CO2 [K3]	-	1	-	-	-	-	-	-	-	-	-	3	2	2	-	-
CO3 [K2]	-	1	1	-	-	-	-	-	-	-	-	3	1	1	-	-
CO4 [K2]	-	1	-	-	-	-	-	-	-	-	-	3	1	1	-	-
CO5 [K2]	1	-	1	-	-	-	-	-	-	-	-	3	1	1	-	-
CO6 [K2]	1	-	-	-	-	-	-	-	-	-	-	3	1	1	-	-

Program Name: III. B.Tech **Faculty Name: N.Mounika/Ch.Amala**

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	III-II	**DC LAB**	**RT32047**	19-11-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
45 Hrs	-	3	3 Hrs	25	50	2

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

Student able to

- Study the multiplexing and de-multiplexing techniques.
- Understand pulse digital modulation systems such as PCM, DPCM and DM.
- Understand various digital modulation techniques.
- Study the need for source coding.
- Study Block codes, cyclic codes and convolution codes.

Course Outcomes:

Student able to:

- **CO1:** Illustrate the time-division multiplexing (TDM) systems.(K6)
- **CO2:** Evaluate base band modulation schemes. .(K5)
- **CO3:** Demonstrate different band pass modulation schemes. .(K2)
- **CO4:** Inspect the companding technique. .(K4)
- **CO5:** Estimate source coding techniques. .(K5)
- **CO6:** ExamineBinary Cyclic and Convolution Codes . .(K4)

POs' / COs'	PO1 [k3]	PO2 [k4]	PO3 [k5]	PO4 [K5]	PO5 [K3]	PO6 [K3]	PO7 [K3]	PO8 [K3]	PO9 [K6]	PO10 [K2]	PO11 [K6]	PO12 [K1]	PSO1 [K3]	PSO2 [K3]	PSO3 [K3]	PSO4 [K2]
CO1 [K6]	3	3	3	-	-	3	-	-	-	3	-	3	-	-	3	-
CO2 [K5]	3	3	2	-	-	3	-	-	-	3	-	3	-	-	3	-
CO3 [K2]	1	1	1	-	-	1	-	-	-	2	-	3	-	-	1	-
CO4 [K4]	3	2	1	1	-	3	-	-	-	3	-	3	-	-	3	-
CO5 [K5]	3	3	2	-	-	3	-	-	-	3	-	3	-	-	3	-
CO6 [K4]	3	2	1	1	-	3	-	-	-	3	-	3	-	-	3	-

Program Name: III. B.Tech **Faculty Name: Pradeep kumar/D.Gowthami**

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	III-II	**MPMC LAB**	**RT32046**	19-11-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
45Hrs	-	3	3 Hrs	25	50	2

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

The main objectives of the course is to impart

- To learn the programming concepts of 8086 microprocessor in Assembly Level Language using Assembler directives and also able to learn hardware and software interaction and integration.
- To understand the interfacing concepts of peripheral devices like A/D and D/A with 8255, 8279 Keyboard/Display Controller, generation of waveforms using Intel 8253/8254 with 8086 microprocessor.
- To learn the programming concepts of 8051 Microcontroller in Assembly Level Language using 8051.

- To understand the interfacing concepts of switches and LEDs, 7 segment display, Stepper motor interface, Traffic light controller with 8051 microcontroller.

Course Outcomes:

Student able to:

CO1: Apply the 8086 Microprocessor and 8051 Microcontroller instruction set for executing the different assembly level language programs using MASM/TASM Assembler.(K3)

CO2: Apply the Interfacing concepts of various I/O and peripheral devices like stepper motor, key board, ADC and DAC with 8086 assembly level language programs. (K3)

CO3: DevelopC programs for interfacing modules with 8051 using Keil U Vision software. (K3)

POs' / COs'	PO1 [k3]	PO2 [k4]	PO3 [k5]	PO4 [K5]	PO5 [K3]	PO6 [K3]	PO7 [K3]	PO8 [K3]	PO9 [K6]	PO10 [K2]	PO11 [K6]	PO12 [K1]	PSO1 [K3]	PSO2 [K3]	PSO3 [K3]	PSO4 [K2]
CO1 [K3]	-	-	1	-	2	-	-	-	1	-	1	-	-	-	-	3
CO2 [K3]	-	-	1	-	2	-	-	-	1	-	1	-	1	-	1	3
CO3 [K3]	-	-	1	-	2	-	-	-	1	-	1	-	-	-	1	-

Program Name: III. B.Tech **Faculty Name: Smt. G.M.G. Madhuri/A.Ramesh**

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	III-II	**VLSI LAB**	**RT4104L**	19-11-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
45 Hrs	-	3	3 Hrs	25	50	2

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

Student able to

- Use mathematical methods and circuit analysis models in analysis of CMOS digital electronics circuits, including logic components and their interconnects.
- Apply CMOS technology-specific layout rules in the placement and routing of transistors and interconnect and to verify the functionality, timing, power and parasitic effects.
- Design static CMOS combinational and sequential logic at the transistor level, including mask layout.

Course Outcomes:

CO1: Design Inverter, Universal gates ,Full adder and Full subtractorusing130nm CMOS technology with EDA Tools.(K6)

CO2: Design RS – latch, D-latch and Asynchronous counterUsing130nm CMOS Technology with EDA Tools. (K6)

CO3: Design Static RAM Using130nm CMOS Technology with EDA Tools. (K6)

CO4: Design Differential Amplifier and Ring oscillatorUsing130nm CMOS Technology with EDA Tools. (K6)

POs' / COs'	PO1 [k3]	PO2 [k4]	PO3 [k5]	PO4 [K5]	PO5 [K3]	PO6 [K3]	PO7 [K3]	PO8 [K3]	PO9 [K6]	PO10 [K2]	PO11 [K6]	PO12 [K1]	PSO1 [K3]	PSO2 [K3]	PSO3 [K3]	PSO4 [K2]
CO1 [K6]	1	1	1	-	-	-	-	-	-	-	-	1	-	3	-	-
CO2 [K6]	-	1	1	-	-	-	-	-	-	-	-	-	3	3	-	-
CO3 [K6]	1	1	1	-	-	-	-	-	-	-	-	1	3	-	-	-
CO4 [K6]	-	1	-	-	-	-	-	-	-	-	-	1	-	3	-	-

Program Name: IV. B.Tech **Faculty Name: A.Ramesh**

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	IV-I	**CAO**	**RT41044**	18-06-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
66 Hrs	4	-	3 Hrs	30	70	3

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

The student will

- Understand the fundamentals of different instruction set architectures and their relationship to the CPU design.
- Understand the principles and the implementation of computer arithmetic and ALU.
- Understand the memory system, I/O organization
- Understand the operation of modern CPUs including interfacing, pipelining, memory systems and busses.
- Understand the principles of operation of multiprocessor systems.

Course Outcomes:

Student able to:

CO1: Solve arithmetic operations: addition, subtraction, multiplication and division of Binary, BCD using algorithms.(K3)

CO2: Illustrate Addressing modes and Instruction codes of a processor.(K2)

CO3: Design a memory module and analyze its operation by interfacing with the CPU.(K6)

CO4: Discuss the set of specific instructions, design CPU with micro programmed control.(K6)

CO5: Design an I/O module and analyze its operation.(K6)

CO6: Apply design techniques using Pipeline and Vector Processing for a Given CPU organization,. (K3)

POs' / COs'	PO1 [k3]	PO2 [k4]	PO3 [k5]	PO4 [K5]	PO5 [K3]	PO6 [K3]	PO7 [K3]	PO8 [K3]	PO9 [K6]	PO10 [K2]	PO11 [K6]	PO12 [K1]	PSO1 [K3]	PSO2 [K3]	PSO3 [K3]	PSO4 [K2]
CO1 [K3]	2	1	-	-	-	-	-	-	-	-	-	3	2	2	2	-
CO2 [K2]	-	1	-	-	-	-	-	-	-	-	-	-	1	1	1	-
CO3 [K6]	-	3	-	-	-	-	-	-	-	-	-	-	3	3	3	-
CO4 [K6]	-	3	-	-	-	-	-	-	-	-	-	-	3	3	3	-
CO5 [K6]	3	-	-	-	-	-	-	-	-	-	-	3	3	3	3	-
CO6 [K3]	2	-	-	-	-	-	-	-	-	-	-	3	2	2	2	-

Program Name: IV. B.Tech **Faculty Name: Sri. T. Durga Prasad**

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	IV-I	**CN**	**RT41042**	18-06-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
66 Hrs	4	-	3 Hrs	30	70	3

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

- The aim of this course is to introduce key concepts and principles of computer networks.
- The course will use a top-down approach to study the Internet and its protocol stack. Architecture, protocol, application-examples will include email, web and media-streaming. We will cover communications services (e.g., TCP/IP) required to support such network applications.
- The implementation and deployment of communications services in practical networks: including wired and wireless LAN environments, will be followed by a discussion of issues of network-security and network-management.
- Internet's architecture and protocols will be used as the primary examples to illustrate the fundamental principles of computer networking.

Course Outcomes:

Student able to:

CO1: Infer the OSI and TCP/IP Network models and identifying, different types of network topologies and protocols.(K2)

CO2: Analyze Physical layer Multiplexing techniques and switching techniques. (K4)

CO3: Analyze the Design issues and protocols of Data link layer. (K4)

CO4: Summarize the concepts Random Access, controlled Access protocols and Network layer routing functionalities. (K2)

CO5: Analyze the Transport Services, Connection management, TCP and UDP protocols; ATM AAL Layer protocol. (K4)

CO6: Infer the Application layer (WWW and HTTP) architecture and message formats and the wireless web. (K2)

POs' / COs'	PO1 [k3]	PO2 [k4]	PO3 [k5]	PO4 [K5]	PO5 [K3]	PO6 [K3]	PO7 [K3]	PO8 [K3]	PO9 [K6]	PO10 [K2]	PO11 [K6]	PO12 [K1]	PSO1 [K3]	PSO2 [K3]	PSO3 [K3]	PSO4 [K2]
CO1 [K2]	1	1	1	1	-	1	-	-	1	2	1	-	-	-	-	-
CO2 [K4]	3	2	1	1	-	3	-	-	1	3	1	-	-	-	-	-
CO3 [K4]	3	2	1	1	-	3	-	-	1	3	1	-	-	-	-	-
CO4 [K2]	1	1	1	1	-	1	-	-	1	2	1	-	-	-	-	-
CO5 [K4]	3	2	1	1	-	3	-	-	1	3	1	-	-	-	-	-
CO6 [K2]	1	1	1	1	-	1	-	-	1	2	1	-	-	-	-	-

Program Name: IV. B.Tech **Faculty Name: Sri. S. Pradeep Kumar**

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	IV-I	**DIP**	**RT41043**	18-06-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
66 Hrs	4	-	3 Hrs	30	70	3

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

The student will

- Learn the fundamental concepts and applications of Digital Image Processing.
- Learn the concepts of and how to perform Intensity transformations and spatial filtering.
- Understand the relationship between Filtering in spatial and frequency domains,
- Understand the concepts of and how to perform Image restoration and reconstruction.
- Understand the concepts of different color models and Color image processing.

- Learn the concepts of Wavelets and multi-resolution processing, Image compression and Watermarking, Morphological image processing, Image segmentation, Representation and description.

Course Outcomes:

Student able to:

CO1: Distinguish different transforms on image useful for image processing applications.(K4)
CO2: Apply smoothing and sharpening operations on images in spatial and frequency domain. (K3)
CO3: Illustrate image restoration operations/techniques on images. (K2)
CO4: Learn effectively on color images and different color conversions on images. (K1)
CO5: Make use of wavelet transforms and compression methods to digital images which is required for storage and transmission. (K3)
CO6: Construct morphological operations on images and different image segmentation methods. (K6)

POs' / COs'	PO1 [k3]	PO2 [k4]	PO3 [k5]	PO4 [K5]	PO5 [K3]	PO6 [K3]	PO7 [K3]	PO8 [K3]	PO9 [K6]	PO10 [K2]	PO11 [K6]	PO12 [K1]	PSO1 [K3]	PSO2 [K3]	PSO3 [K3]	PSO4 [K2]
CO1 [K4]	3	2	1	-	3	-	-	-	-	-	1	3	-	-	3	3
CO2 [K3]	2	1	-	-	-	-	-	-	-	-	-	-	-	-	2	-
CO3 [K2]	1	1	1	-	-	-	-	-	-	-	-	-	-	-	1	-
CO4 [K1]	1	1	-	-	1	-	-	-	-	-	1	-	-	1	1	1
CO5 [K3]	2	1	-	-	-	-	-	-	-	3	-	-	-	-	2	-
CO6 [K6]	3	3	3	3	3	3	-	-	-	-	2	-	-	3	3	3

Program Name: IV. B.Tech **Faculty Name: Smt. Ch. Amala**

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	IV-I	**ELECTRONIC SWITCHING SYSTEMS**	**RT41048**	18-06-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
66 Hrs	4	-	3 Hrs	30	70	3

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

The student will be introduced to

- Understand the means of measuring traffic.
- Understand the implication of the traffic level on system design.

Course Outcomes:

CO1: Evaluate the time and space parameters of a switched signal
CO2: Establish the digital signal path in time and space between two terminals
CO3: Evaluate the inherent facilities within the system to test some of the SLIC, CODEC and Digital switch functions
CO4: Investigate the traffic capacity of the system
CO5: Evaluate the methods of collecting traffic data
CO6: Evaluate the method of interconnecting two separate digital switches

POs' / COs'	PO1 [k3]	PO2 [k4]	PO3 [k5]	PO4 [K5]	PO5 [K3]	PO6 [K3]	PO7 [K3]	PO8 [K3]	PO9 [K6]	PO10 [K2]	PO11 [K6]	PO12 [K1]	PSO1 [K3]	PSO2 [K3]	PSO3 [K3]	PSO4 [K2]
CO1 [K5]	3	3	2	-	-	-	-	-	-	-	-	-	-	-		-
CO2 [K6]	3	3	3	-	-	-	-	-	-	-	-	-	-	-		-
CO3 [K5]	-	3	2	-	-	-	-	-	-	-	-	3	-	-		-
CO4 [K4]	-	2	1	-	-	-	-	-	-	-	-	-	-	-		-
CO5 [K5]	-	3	2	-	-	-	-	-	-	-	-	3	-	-		-
CO6 [K5]	3	3	2	-	-	-	-	-	-	-	-	3	-	-		-

Program Name: IV. B.Tech **Faculty Name: Kum.N. Mounika**

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	IV-I	**OC**	**RT4104A**	18-06-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
85 Hrs	5	-	3 Hrs	30	70	3

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

- The student will be introduced to the functionality of each of the components that comprise a fibre-optic communication system
- The properties of optical fibre that affect the performance of a communication link and types of fibre materials with their properties and the losses occur in fibbers.
- The principles of single and multi-mode optical fibbers and their characteristics
- Working of semiconductor lasers, and differentiate between direct modulation and external electro-optic modulation.
- Analyze the operation of LEDs, laser diodes, and PIN photo detectors (spectral properties, bandwidth, and circuits) and apply in optical systems.

- Analyze and design optical communication and fibre optic sensor systems.
- The models of analog and digital receivers.

Course Outcomes:

CO1: Analyze the properties of optical fiber that affect the performance of a communication link.(K4)
CO2: Discuss various fiber materials, different losses and dispersions that occur in optical fibers. (K6)
CO3: Estimate the functionality of fiber connectors and splices. (K5)
CO4: Analyze the operation of various optical sources and detectors. (K4)
CO5: Discuss Source to fiber power launching and Optical receiver operation. (K6)
CO6: Analyze optical communication by measuring Attenuation and Dispersion. (K4)

POs' / COs'	PO1 [k3]	PO2 [k4]	PO3 [k5]	PO4 [K5]	PO5 [K3]	PO6 [K3]	PO7 [K3]	PO8 [K3]	PO9 [K6]	PO10 [K2]	PO11 [K6]	PO12 [K1]	PSO1 [K3]	PSO2 [K3]	PSO3 [K3]	PSO4 [K2]
CO1 [K4]	3	2	-	-	-	-	-	-	-	3	-	-	-	-	3	-
CO2 [K6]	3	3	-	-	-	-	-	-	-	3	-	-	-	-	3	-
CO3 [K5]	3	3	-	-	-	-	-	-	-	3	-	-	-	-	3	-
CO4 [K4]	3	2	-	-	-	-	3	-	-	3	-	-	-	-	3	-
CO5 [K6]	3	3	-	-	-	-	3	-	-	3	-	-	-	-	3	-
CO6 [K4]	3	2	1	-	-	-	3	-	-	3	-	-	-	-	3	-

Program Name: IV. B.Tech **Faculty Name: Smt. G. M. G. Madhuri**

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	IV-I	**VLSI**	**RT41041**	18-06-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
66 Hrs	4	-	3 Hrs	30	70	3

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

The student will be introduced to

- Use mathematical methods and circuit analysis models in analysis of CMOS digital electronics circuits, including logic components and their interconnects.
- Learn the various fabrication steps of IC and come across basic electrical properties of MOSFET.
- Apply CMOS technology-specific layout rules in the placement and routing of transistors and interconnect and to verify the functionality, timing, power and parasitic effects.
- The concepts and techniques of modern integrated circuit design and testing (CMOS VLSI).
- Design static CMOS combinational and sequential logic at the transistor level, including mask layout.

Course Outcomes:

Student able to:

CO1: Demonstrate the fundamentals of IC technology such as various MOS fabrication technologies and IC production steps and electrical properties of MOS circuits.(K2)
CO2: Apply the Concept of NMOS and CMOS design rules to the layout of a circuit . (K3)
CO3: Explain basic circuit concepts and how it impacts scaling and performance. (K2)
CO4: Illustrate the considerations of subsystem design processes and Architectural issues. (K2)
CO5: Explain the concepts of VLSI design issues and current trends in semiconductor technology. (K2)
CO6: Explain FPGA architecture, configuration, configuration modes and step-by-step approach of FPGA design process. (K2)

POs' / COs'	PO1 [k3]	PO2 [k4]	PO3 [k5]	PO4 [K5]	PO5 [K3]	PO6 [K3]	PO7 [K3]	PO8 [K3]	PO9 [K6]	PO10 [K2]	PO11 [K6]	PO12 [K1]	PSO1 [K3]	PSO2 [K3]	PSO3 [K3]	PSO4 [K2]
CO1 [K2]	1	1	-	-	-	-	-	-	-	-	-	3	1	1	-	-
CO2 [K3]	-	1	-	-	-	-	-	-	-	-	-	3	2	2	-	-
CO3 [K2]	-	1	1	-	-	-	-	-	-	-	-	3	1	1	-	-
CO4 [K2]	-	1	-	-	-	-	-	-	-	-	-	3	1	1	-	-
CO5 [K2]	1	-	1	-	-	-	-	-	-	-	-	3	1	1	-	-
CO6 [K2]	1	-	-	-	-	-	-	-	-	-	-	3	1	1	-	-

Program Name: IV. B.Tech **Faculty Name:D.Suresh Babu/B. Praveen Kitti**

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	IV-I	**MWE LAB**	**RT4104M**	18-06-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
45 Hrs		3	3 Hrs	25	50	2

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

The main objectives of the course is to impart

- To gain the practical hands-on-experience of various microwave sources& devices.
- To understand the concepts and principles of microwave engineering.
- To calculate scattering parameters of different microwave devices.
- To calculate different parameters of optical fiber link
- To differentiate the characteristics of LED and LASER

Course Outcomes:

Student able to:

CO1: Experiment simple microwave circuits and devices.(K3)

CO2: Demonstrate microwave equipment confidently and perform measurements.(K2)

CO3: Evaluate the performance of optical devices: light sources, fibres and detectors.(K5)

CO4: Compare the structural characteristics of different optical fibres with reference to losses.(K2)

POs' / COs'	PO1 [k3]	PO2 [k4]	PO3 [k5]	PO4 [K5]	PO5 [K3]	PO6 [K3]	PO7 [K3]	PO8 [K3]	PO9 [K6]	PO10 [K2]	PO11 [K6]	PO12 [K1]	PSO1 [K3]	PSO2 [K3]	PSO3 [K3]	PSO4 [K2]
CO1 [K3]	2	1	-	1	-	-	-	-	-	-	-	-	-	-	2	3
CO2 [K2]	1	1	1	1	1	-	-	-	-	-	1	3	-	-	1	2
CO3 [K5]	3	3	-	-	-	-	-	-	-	-	-	3	-	-	3	3
CO4 [K2]	1	1	1	1	1	1	-	-	-	-	1	3	-	-	1	2

Program Name: IV. B.Tech **Faculty Name: Smt. G.M.G. Madhuri/A.Ramesh**

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	IV-I	**VLSI LAB**	**RT4104L**	18-06-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
45 Hrs		3	3 Hrs	25	50	2

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

Student able to

- Use mathematical methods and circuit analysis models in analysis of CMOS digital electronics circuits, including logic components and their interconnects.
- Apply CMOS technology-specific layout rules in the placement and routing of transistors and interconnect and to verify the functionality, timing, power and parasitic effects.
- Design static CMOS combinational and sequential logic at the transistor level, including mask layout.

Course Outcomes:

CO1: Design Inverter, Universal gates ,Full adder and Full subtractorusing130nm CMOS technology with EDA Tools.(K6)

CO2: Design RS – latch, D-latch and Asynchronous counterUsing130nm CMOS Technology with EDA Tools. (K6)

CO3: Design Static RAM Using130nm CMOS Technology with EDA Tools. (K6)

CO4: Design Differential Amplifier and Ring oscillatorUsing130nm CMOS Technology with EDA Tools. (K6)

POs' / COs'	PO1 [k3]	PO2 [k4]	PO3 [k5]	PO4 [K5]	PO5 [K3]	PO6 [K3]	PO7 [K3]	PO8 [K3]	PO9 [K6]	PO10 [K2]	PO11 [K6]	PO12 [K1]	PSO1 [K3]	PSO2 [K3]	PSO3 [K3]	PSO4 [K2]
CO1 [K6]	1	1	1	-	-	-	-	-	-	-	-	1	-	3	-	-
CO2 [K6]	-	1	1	-	-	-	-	-	-	-	-	-	3	3	-	-
CO3 [K6]	1	1	1	-	-	-	-	-	-	-	-	1	3	-	-	-
CO4 [K6]	-	1	-	-	-	-	-	-	-	-	-	1	-	3	-	-

Program Name: IV. B.Tech **Faculty Name:** **Kum.N.Mounika**

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	IV-II	**CMC**	**RT42041**	19-11-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
70 Hrs	4	-	3 Hrs	30	70	3

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

The student will be introduced to:

- Understand the basic cellular concepts like frequency reuse, cell splitting, cell sectoring etc., and various cellular systems.
- Understand the different types of interference s influencing cellular and mobile communications.
- Understand the frequency management, channel assignment and various propagation effects in cellular environment.
- Understand the different types antennas used at cell site and mobile.
- Understand the concepts of handoff and types of handoffs.
- Understand the architectures of GSM and 3G cellular systems.

Course Outcomes:

Student able to:

CO1: Infer the fundamentals of cellular radio system design, coverage capacity and can measure the C/I ratio.(K2)

CO2: Measure the path loss and co-channel interference. (K5)

CO3: Infer the antenna system design. (K2)

CO4: Explain about frequency management and channel assignment. (K5)

CO5: Explain about handoff mechanism. (K5)

CO6: Explain about GSM Architecture. (K5)

POs' / COs'	PO1 [k3]	PO2 [k4]	PO3 [k5]	PO4 [K5]	PO5 [K3]	PO6 [K3]	PO7 [K3]	PO8 [K3]	PO9 [K6]	PO10 [K2]	PO11 [K6]	PO12 [K1]	PSO1 [K3]	PSO2 [K3]	PSO3 [K3]	PSO4 [K2]
CO1 [K2]	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-
CO2 [K5]	3	1	3	2	2	-	-	-	-	-	-	-	-	-	-	-
CO3 [K2]	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-
CO4 [K5]	3	1	3	2	2	-	-	-	-	-	-	-	-	-	-	-
CO5 [K5]	1	1	3	2	2	-	-	-	-	-	-	-	-	-	-	-
CO6 [K5]	3	1	3	2	2	-	-	-	-	-	-	-	-	-	-	-

Program Name: IV. B.Tech **Faculty Name:** G. V. Ramanaiah

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	IV-II	EMI	RT42042	19-11-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
66 Hrs	4	-	3 Hrs	30	70	3

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

The student will be able to

- Select the instrument to be used based on the requirements.
- Understand and analyze different signal generators and analyzers.
- Understand the design of oscilloscopes for different applications.
- Design different transducers for measurement of different parameters.

Course Outcomes:

CO1: Illustrate the performance characteristics of various instruments.(K2)
CO2: Analyze the parameters of signals using different signal generators and recorders.(K4)
CO3: Illustrate the operation and applications of CRO (normal and storage).(K2)
CO4: Analyze various AC bridges for the measurements of various physical quantities.(K4)
CO5: Select appropriate passive or active transducers for measurement of physical phenomenon.(K3)
CO6: Illustrate basics of data acquisition process and how different physical parameters like Pressure, velocity etc. can be measured.(K2)

POs' / COs'	PO1 [k3]	PO2 [k4]	PO3 [k5]	PO4 [K5]	PO5 [K3]	PO6 [K3]	PO7 [K3]	PO8 [K3]	PO9 [K6]	PO10 [K2]	PO11 [K6]	PO12 [K1]	PSO1 [K3]	PSO2 [K3]	PSO3 [K3]	PSO4 [K2]
CO1 [K2]	1	-	-		1	-		-	-	-	-	-	-	-	1	-
CO2 [K4]	3	2	-	1	3	-		-	-	-	-	-	-	-	3	-
CO3 [K2]	1	1	-	1	1	-	1	-	-	-	-	3	-	-	1	-
CO4 [K4]	3	2	-	1	3	-	3	-	-	-	-	3	-	-	3	-
CO5 [K3]	2	1	-	1	2	-	2	-	-	-	-	-	-	-	2	-
CO6 [K2]	1	1	-	1	1	-	1	-	-	-	-	-	-	-	1	-

Program Name: IV. B.Tech **Faculty Name: G.M.G.Madhuri**

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	IV-II	**LPIC**	**RT42044C**	19-11-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
66 Hrs	4	-	3 Hrs	30	70	3

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

Student able to

- The student will be able to understand the Fundamentals of Low Power VLSI Design.
- In this course, students can study low-Power Design Approaches, Power estimation and analysis.
- Another main object of this course is to motivate the graduate students to study and to analyze the Low-Voltage Low-Power Adders, Multipliers.
- The concepts of Low-Voltage Low-Power Memories and Future
- Trend and Development of DRAM.

Course Outcomes:

CO1: Explain the fundamentals of Low Power VLSI Design.(K2)

CO2: Explain the low power design approaches through Voltage scaling and through Switched capacitance minimization approaches. (K2)

CO3: Demonstrate the concepts of SPICE circuit simulators, Gate level Logic simulation and capacitive power estimation. (K2)

CO4: Design different Full adders circuits. (K6)

CO5: Design different multiplier circuits. (K6)

CO6: Explain SRAM , DRAM architectures, Sense Amplifiers. (K2)

POs' / COs'	PO1 [k3]	PO2 [k4]	PO3 [k5]	PO4 [K5]	PO5 [K3]	PO6 [K3]	PO7 [K3]	PO8 [K3]	PO9 [K6]	PO10 [K2]	PO11 [K6]	PO12 [K1]	PSO1 [K3]	PSO2 [K3]	PSO3 [K3]	PSO4 [K2]
CO1 [K2]	1	1	1	1	-	-	-	-	1	-	1	-	1	-	-	-
CO2 [K2]	1	1	1	1	-	-	-	-	1	-	1	-	1	-	-	-
CO3 [K2]	1	1	1	1	-	-	-	-	1	-	-	-	1	-	-	-
CO4 [K6]	-	3	3	3	-	-	-	-	2	-	2	-	3	-	-	-
CO5 [K6]	-	1	1	1	-	-	-	-	1	-	1	-	1	-	-	-
CO6 [K2]	-	1	1	1	-	-	-	-	1	-	1	-	1	-	-	-

Program Name: IV. B.Tech **Faculty Name:** **Smt. Ch. Amala**

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	IV-II	**SATTLITE COMMUNICATIONS**	**RT42043A**	19-11-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
72	4	-	3 Hrs	30	70	3

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

The student will be introduced to:

1. Understand the basic concepts, applications, frequencies used and types of satellite communications.
2. Understand the concept of look angles, launches and launch vehicles and orbital effects in satellite communications.
3. Understand the various satellite subsystems and its functionality.
4. Understand the concepts of satellite link design and calculation of C/N ratio.
5. Understand the concepts of multiple access and various types of multiple access techniques in satellite systems.

6. Understand the concepts of satellite navigation, architecture and applications of GPS. **Course**

Outcomes:

Student able to:

CO1: Illustrate the basic concepts of satellite communication.(K2)
CO2: Learn various orbital effects on the communication system.(K1)
CO3: Illustrate the satellite sub system. (K2)
CO4: Develop various satellite links for specified C/N ratio. (K6)
CO5: explain the satellite equipment and LEO,MEO & GEO. (K2)
CO6: Illustrate the GPS system operation. (K2)

POs' / COs'	PO1 [k3]	PO2 [k4]	PO3 [k5]	PO4 [K5]	PO5 [K3]	PO6 [K3]	PO7 [K3]	PO8 [K3]	PO9 [K6]	PO10 [K2]	PO11 [K6]	PO12 [K1]	PSO1 [K3]	PSO2 [K3]	PSO3 [K3]	PSO4 [K2]
CO1 [K2]	1	1	1	-	-	-	-	-	-	-	-	-	-	-	1	-
CO2 [K1]	1	1	1	-	-	-	-	-	-	-	-	-	-	-	1	-
CO3 [K2]	1	1	1	-	-	-	-	-	-	-	-	-	-	-	1	-
CO4 [K6]	3	3	3	-	-	-	-	-	-	-	-	-	-	-	3	-
CO5 [K2]	1	1	1	-	-	-	-	-	-	-	-	-	-	-	1	-
CO6 [K2]	1	1	1	-	-	-	-	-	-	-	-	-	-	-	1	-

Program Name: IV. B.Tech **Faculty Name:** **Smt. G.M.G. Madhuri**

Class	Semester	Title of The Paper	Paper Code	W.E.F
ECE	IV-II	**PROJECT**	**RT42045**	19-11-2018

.Total No.of Hours	Hours / Week		End Examination	Max Marks		Credits
	Theory	Practical		Internal	External	
180 Hrs	-	18	3 Hrs	60	140	3

Programme Outcomes:

PO1: Engineering knowledge:

Apply the knowledge of mathematics, science, engineering fundamentals, and concepts of Electronics & Communication Engineering to the solution of complex engineering problems.

PO2: Problem analysis:

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using mathematics, natural sciences, and electronics and communication engineering principles.

PO3: Design/development of solutions:

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems:

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage:

Create, select, and apply appropriate techniques, resources, and Electronics Design Automation tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society:

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability:

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for the sustainable development.

PO8: Ethics:

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work:

Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication:

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions**.**

PO11: Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes:

PSO1: The ECE Graduates will be Equipped with knowledge of complete design flow from specification to silicon in areas of both digital and analog VLSI Design and will be able to work in IC Design companies.

PSO2: The ECE Graduates will be trained with microprocessor and microcontroller based system design skills and can work as design and verification engineers in the area of Embedded Systems Design.

PSO3: The ECE Graduates will be able to apply engineering knowledge for design and implementation of projects pertaining to signal processing and Communications.

PSO4: The ECE Graduates will be incorporated with necessary soft skills, aptitude and technical skills to work in IT & Public sector.

Course Objectives:

Student able to

- To produce competent, creative and imaginative engineers.
- To promote a spirit of free and objective enquiry in different fields of knowledge.
- To create an intellectual reservoir to meet the growing demands of the nation.

Course Outcomes:

Student able to:

CO1: Identify the problem in the existing methodology for project work.(K3)
CO2: Discuss the technical and practical considerations of chosen problem in presentation.(K6)
CO3: Design the prescribed methodology in software or hardware. (K6)
CO4: Plan the project report as per recommended format. (K6)
CO5: Apply the possibility of publishing papers in peer reviewed journals/conference proceedings. (K3)

POs' / COs'	PO1 [k3]	PO2 [k4]	PO3 [k5]	PO4 [K5]	PO5 [K3]	PO6 [K3]	PO7 [K3]	PO8 [K3]	PO9 [K6]	PO10 [K2]	PO11 [K6]	PO12 [K1]	PSO1 [K3]	PSO2 [K3]	PSO3 [K3]	PSO4 [K2]
CO1 [K3]	2	1	1	1	2	2	2	2	1	3	1	-	2	2	2	3
CO2 [K6]	3	2	3	3	3	3	3	3	2	3	2	-	3	3	3	3
CO3 [K6]	3	3	3	3	3	3	3	3	2	3	2	-	3	3	3	3
CO4 [K6]	3	3	3	-	3	3	3	3	2	3	2	-	3	3	3	3
CO5 [K3]	2	1	1	-	2	2	2	2	1	3	1	-	2	2	2	3