Course Code &Name: **C101 - Technical English - I**

REGULATION: R2013

YEAR/SEM: I/ I

COURSE OUTCOMES

C101.1	U	**Explain** and communicate with appropriate communicative strategies.
C101.2	AP	**Utilize** logical ideas and vocabulary to avoid grammatical errors
C101.3	AN	**Analyze** the flow charts and tables and elaborate them coherently
C101.4	AP	**Interpret** visual materials and respond to the questions
C101.5	C	**Develop** different rhetorical functions of technical English.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C101.1	-	-	-	-	-	-	-	-	2	3	-	2	-	-
C101.2	-	-	-	-	-	-	-	-	-	3	-	2	-	2
C101.3	-	-	-	2	-	-	-	-	-	3	-	2	-	2
C101.4	-	-	-	2	2	-	-	-	-	3	-	2	-	-
C101.5	-	-	-	-	-	-	-	-	2	3	-	2	-	-
C101	-	-	-	2	2	-	-	-	2	3	-	2	-	2

Course Code &Name: **C102 - Mathematics - 1**

REGULATION: R2013

YEAR/SEM: I/ I

COURSE OUTCOMES

C102.1	AP	**Apply** matrix algebra techniques for practical applications.
C102.2	AN	**Analyze** infinite series and their convergence.
C102.3	AP	**Apply** differential calculus in the field of Evolutes and Envelopes.
C102.4	AP	**Utilize** differentiation rules in Euler's and Jacobian theorems.
C102.5	AN	**Solve** the change of order of integration and double integrals using polar co-ordinates.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C102.1	**3**	**3**	**3**	**2**	**2**	**-**	**-**	**-**	**-**	**2**	**-**	**-**	**-**	**2**
C102.2	**3**	**3**	**1**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**
C102.3	**3**	**3**	**-**	**1**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**
C102.4	**3**	**3**	**1**	**2**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**
C102.5	**3**	**3**	**3**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**
C102	**3**	**3**	**2**	**1.8**	**2**	**-**	**-**	**-**	**-**	**2**	**-**	**-**	**-**	**2**

Course Code &Name: **C103 - Engineering Physics – 1**

REGULATION: R2013

YEAR/SEM: I/ I

COURSE OUTCOMES

C103.1	C	**Compare** the structures of various crystals and its synthesis techniques
C103.2	AN	**Outline** the properties of materials and its applications
C103.3	AP	**Utilize** the basic concepts of quantum theory in electron microscopes.
C103.4	AP	**Apply** the sound wave in various fields.
C103.5	C	**Develop** knowledge about photonics and fiber optic communication system.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C103.1	**3**	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**	**2**	**-**	**-**
C103.2	**3**	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**	**2**	**-**	**-**
C103.3	**3**	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**	**2**	**-**	**2**
C103.4	**3**	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**	**3**	**-**	**2**
C103.5	**3**	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**	**3**	**-**	**2**
C103	**3**	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**	**2.4**	**-**	**2**

Course Code &Name: **C104 -Engineering Chemistry – I**

REGULATION: R2013

YEAR/SEM: I/ I

COURSE OUTCOMES

C104.1	An	**Classify** polymerization techniques and explain its applications
C104.2	Ap	**Relate** thermodynamic concepts and feasibility of chemical reaction
C104.3	Ap	**Explain** spectroscopic techniques with instrumentation.
C104.4	U	**Illustrate** the phase transition of various component systems and alloys.
C104.5	C	**List** the characteristics and applications of nanomaterials.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C104.1	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**	**2**
C104.2	**3**	**3**	**-**	**-**	**-**	**-**	**-**	**2**	**-**	**-**	**-**	**2**	**-**	**2**
C104.3	**3**	**2**	**-**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**	**-**
C104.4	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**-**	**2**	**-**	**2**
C104.5	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**-**	**2**
C104	**3**	**2.25**	**-**	**-**	**2**	**-**	**-**	**2**	**-**	**3**	**-**	**2**	**-**	**2**

Course Code &Name: **C106 - Engineering Graphics**

REGULATION: R2013

YEAR/SEM: I/ I

COURSE OUTCOMES

C105.1	Ap	**Discuss** about the Digital Computer, Algorithm, Pseudo code and Flowchart.
C105.2	An	**Design** the 'C' program using the basic Operations.
C105.3	C	**Develop** the One and two dimensional array and String operations
C105.4	Ap	**Build the** Functions and Pointers using 'C'
C105.5	C	**Explain** about the concept of Structures and Unions

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C105.1	**2**	**3**	**3**	**-**	**3**	**2**	**-**	**1**	**-**	**1**	**2**	**-**	**2**	**1**
C105.2	**2**	**3**	**3**	**-**	**3**	**2**	**2**	**-**	**3**	**-**	**2**	**3**	**2**	**-**
C105.3	**3**	**2**	**3**	**2**	**3**	**3**	**3**	**1**	**2**	**-**	**1**	**-**	**3**	**-**
C105.4	**3**	**2**	**3**	**3**	**3**	**3**	**2**	**3**	**-**	**2**	**3**	**-**	**3**	**-**
C105.5	**2**	**2**	**3**	**-**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**2**
C105	**2.4**	**2.4**	**3**	**2.5**	**2.8**	**2.4**	**2.33**	**1.67**	**2.5**	**1.5**	**2**	**3**	**2.6**	**1.5**

Course Code &Name: **C106 - Engineering Graphics**

REGULATION: R2013

YEAR/SEM: I/ I

COURSE OUTCOMES

C106.1	An	**Construct** free hand sketching of orthographic views of basic geometrical constructions.
C106.2	Ap	**Compare** projection of points, lines and plane surfaces.
C106.3	Ap	**Analyze** the projection of solids with various methods.
C106.4	U	**Examine** the solids by cutting plane.
C106.5	C	**Create** isometric view of solids, frustum objects and develop perspective views of simple solids.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C106.1	**3**	**-**	**-**	**-**	**2**	**-**	**-**	**-**	**-**	**3**	**-**	**3**	**-**	**2**
C106.2	**3**	**-**	**-**	**-**	**2**	**-**	**2**	**-**	**-**	**3**	**-**	**3**	**-**	**1**
C106.3	**3**	**-**	**-**	**-**	**2**	**-**	**-**	**-**	**-**	**3**	**-**	**3**	**-**	**1**
C106.4	**3**	**-**	**-**	**-**	**2**	**-**	**-**	**-**	**-**	**3**	**-**	**3**	**-**	**1**
C106.5	**3**	**-**	**-**	**-**	**2**	**-**	**-**	**-**	**-**	**3**	**-**	**3**	**-**	**2**
C106	**3**	**-**	**-**	**-**	**2**	**-**	**2**	**-**	**-**	**3**	**-**	**3**	**-**	**1.4**

Course Code &Name: **C107 - Computer Practice Laboratory**

REGULATION: R2013

YEAR/SEM: I/ I

COURSE OUTCOMES

C107.1	**Ap**	**Build** the Office Software and 2D, 3D graphs and charts
C107.2	**Ap**	**Apply** the good programming design methods for program development
C107.3	**C**	**Create** the array, String , functions , Structures and Unions using 'C' Programs
C107.4	**C**	**Design** and Implement C Programs for simple applications
C107.5	**An**	**Develop** the recursive Programs and conversion from the given programs.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C107.1	3	3	3	3	1	-	-	1	2	-	-	2	-	1
C107.2	3	3	2	1	1	-	-	2	2	-	-	2	-	1
C107.3	3	3	3	2	2	-	-	2	-	-	-	3	-	2
C107.4	3	2	3	2	2	-	-	2	-	-	-	3	-	2
C107.5	3	3	3	-	2	-	-	-	-	-	-	3	-	2
C107	3	2.8	2.8	2	1.6	-	-	1.75	2	-	-	2.6	-	1.6

Course Code &Name: **C108 - Engineering Practice Laboratory**

REGULATION: R2013

YEAR/SEM: I/ I

COURSE OUTCOMES

C108.1	**An**	**Analyze** and construct the electrical wiring
C108.2	**An**	**Analyze** the different Electrical quantities with measuring equipments
C108.3	**Ap**	**Apply** the concept of electronic components and design logic circuits under study state.
C108.4	**C**	**Design** and generate the clock signal.
C108.5	**Ap**	**Apply** the concept of soldering and design the rectifiers.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C108.1	**3**	**-**	**-**	**1**	**3**	**2**	**2**	**-**	**-**	**-**	**-**	**1**	**3**	**2**
C108.2	**3**	**-**	**-**	**1**	**2**	**3**	**2**	**2**	**-**	**-**	**-**	**1**	**3**	**3**
C108.3	**3**	**-**	**-**	**-**	**-**	**2**	**3**	**3**	**-**	**-**	**-**	**1**	**3**	**3**
C108.4	**3**	**-**	**-**	**-**	**-**	**2**	**3**	**3**	**-**	**-**	**-**	**1**	**3**	**3**
C108.5	**3**	**-**	**-**	**-**	**-**	**3**	**3**	**3**	**-**	**-**	**-**	**1**	**3**	**3**
C108	**3**	**-**	**-**	**1**	**2.5**	**2.4**	**2.6**	**2.75**	**-**	**-**	**-**	**1**	**3**	**2.8**

Course Code &Name: **C109 - Physics and Chemistry Laboratory - I**

REGULATION: R2013

YEAR/SEM: I/ I

COURSE OUTCOMES

C109.1	**C**	**Find** the velocity of sound waves and wavelength of spectrum.
C109.2	**C**	**Determine** the thermal conductivity, strength of materials and resistance of the wire.
C109.3	**An**	**Analyze** the water quality parameters.
C109.4	**An**	**Measure** the pH and conductance of the given sample.
C109.5	**C**	**Determine** the molecular weight of polymers.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C109.1	**3**	**3**	**-**	**-**	**-**	**2**	**2**	**2**	**3**	**3**	**-**	**2**	**-**	**-**
C109.2	**3**	**3**	**-**	**-**	**-**	**3**	**3**	**2**	**3**	**3**	**-**	**2**	**-**	**-**
C109.3	**3**	**3**	**-**	**-**	**-**	**3**	**3**	**2**	**3**	**3**	**-**	**2**	**-**	**-**
C109.4	**3**	**3**	**-**	**-**	**-**	**2**	**3**	**2**	**3**	**3**	**-**	**2**	**-**	**-**
C109.5	**3**	**3**	**-**	**-**	**-**	**2**	**2**	**2**	**3**	**3**	**-**	**2**	**-**	**-**
C109	**3**	**3**	**-**	**-**	**-**	**2.4**	**2.6**	**2**	**3**	**3**	**-**	**2**	**-**	**-**

Course Code &Name: **C110 - Technical English - II**

REGULATION: R2013

YEAR/SEM: I/ II

COURSE OUTCOMES

C110.1	**An**	**Explain** general topics clearly; initiate a discussion and negotiation using appropriate communicative strategies.
C110.2	**AP**	**Discuss** various aspects of a film or a book and create different types of writing
C110.3	**AN**	**Analyze** different genres of texts and infer implies meaning
C110.4	**C**	**Develop** different types of conversation skills and participate in interviews.
C110.5	**C**	**Interpret** data for effective presentation and realize the importance of GD.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C110.1	-	-	-	-	-	-	-	-	**2**	**3**	-	**2**	-	**2**
C110.2	-	-	-	-	-	-	-	-	-	**3**	-	**2**	-	-
C110.3	-	-	-	-	-	-	-	-	-	**3**	-	**2**	-	-
C110.4	-	-	-	-	-	-	-	-	**2**	**3**	-	**2**	-	-
C110.5	-	-	-	**2**	-	-	-	-	**2**	**3**	-	**2**	-	**2**
C110	-	-	-	**2**	-	-	-	-	**2**	**3**	-	**2**	-	**2**

Course Code &Name: **C111 - Mathematics – II**

REGULATION: R2013

YEAR/SEM: I/ II

COURSE OUTCOMES

C111.1	**C**	**Explain** the gradient, divergence and curl of a vector point function and related identities.
C111.2	**AP**	**Solve** the higher order linear differential equation with constant co-efficient.
C111.3	**AP**	**Solve** the differential equation with constant co-efficient using Laplace transform.
C111.4	**AP**	**Apply** the line, surface and volume integrals in gauss, stokes, greens theorem.
C111.5	**AN**	**Analyze** the function and conformal mappings using complex integration.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C111.1	**3**	**3**	**2**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**2**
C111.2	**3**	**3**	**1**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**2**
C111.3	**3**	**3**	**3**	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**2**
C111.4	**3**	**2**	**2**	**2**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**2**
C111.5	**3**	**2**	**2**	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**2**
C111	**3**	**2.6**	**2**	**2.4**	**1.8**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2.6**	**2**

Course Code &Name: **C112 - Engineering Physics – II**

REGULATION: R2013

YEAR/SEM: I/ II

COURSE OUTCOMES

C112.1	**AP**	**Classify** the materials based on classical and quantum electron theory.
C112.2	**AN**	**Identify** the semiconductor types and its applications.
C112.3	**AN**	**Make** use of various magnetic and superconducting materials in electronic devices.
C112.4	**AN**	**Examine** the breakdown mechanism of dielectric materials.
C112.5	**AP**	**Compare** the newly developed materials in modern technology.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C112.1	**3**	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**	**2**	**-**	**2**
C112.2	**3**	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**	**2**	**-**	**2**
C112.3	**3**	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**	**2**	**-**	**2**
C112.4	**3**	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**	**2**	**-**	**2**
C112.5	**3**	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**	**2**	**-**	**-**
C112	**3**	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**	**2**	**-**	**2**

Course Code &Name: **C113 - Engineering Chemistry - II**

REGULATION: R2013

YEAR/SEM: I/ II

COURSE OUTCOMES

C113.1	**C**	**Identify** the hardness of water and suitable method of softening.
C113.2	**AP**	**Classify** the electrochemical reaction and its control methods.
C113.3	**AP**	**Explain** different energy sources and storage devices.
C113.4	**AP**	**List** out the properties and applications of engineering materials.
C113.5	**AN**	**Analyze** the combustion mechanism of various fuels.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C113.1	**3**	**2**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**	**-**
C113.2	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**	**2**
C113.3	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**	**2**
C113.4	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**	**2**
C113.5	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**	**-**
C113	**3**	**2**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**	**2**

Course Code &Name: **C114 - Basic Civil and Mechanical Engineering**

REGULATION: R2013

YEAR/SEM: I/ II

COURSE OUTCOMES

C114.1	**AP**	**Compare** the scope and overview of the mechanical and civil engineering.
C114.2	**AN**	**Discuss** the various surveying for various construction areas and various construction materials.
C114.3	**AP**	**Build** a various civil engineering structures and foundations.
C114.4	**AN**	**Design** and classify the internal combustion engine, power plant and pumps.
C114.5	**AP**	**Design** and compare the working principle of refrigeration and air-conditioning system.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C114.1	**2**	**3**	**-**	**-**	**3**	**2**	**-**	**1**	**-**	**1**	**2**	**-**	**-**	**1**
C114.2	**2**	**3**	**-**	**-**	**3**	**2**	**2**	**-**	**3**	**-**	**2**	**3**	**-**	**2**
C114.3	**3**	**2**	**-**	**1**	**3**	**3**	**3**	**1**	**2**	**-**	**1**	**-**	**-**	**3**
C114.4	**3**	**2**	**-**	**1**	**3**	**3**	**3**	**3**	**-**	**2**	**3**	**-**	**-**	**3**
C114.5	**2**	**2**	**-**	**-**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**
C114	**2.4**	**2.4**	**-**	**1**	**2.8**	**2.4**	**2.67**	**1.67**	**2.5**	**1.5**	**2**	**3**	**-**	**2.2**

Course Code &Name: **C115 - Circuit Theory**

REGULATION: R2013

YEAR/SEM: I/ II

COURSE OUTCOMES

C115.1	**C**	**Analyze** the electric circuits by Kirchhoff's law.
C115.2	**AP**	**Apply** circuit theorems to solve simple and complex circuits.
C115.3	**AP**	**Analyze** resonance circuit and performance of tuned circuits.
C115.4	**AP**	**Apply** Laplace transform and to Develop the Transient circuits and two port networks
C115.5	**AN**	**Construct** the phasor diagram and to analyze of three phase circuits

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C115.1	**3**	**3**	**1**	**1**	**3**	**-**	**-**	**-**	**-**	**3**	**3**	**2**	**3**	**3**
C115.2	**3**	**3**	**1**	**1**	**-**	**-**	**3**	**-**	**-**	**2**	**2**	**2**	**3**	**3**
C115.3	**3**	**3**	**1**	**1**	**3**	**-**	**3**	**-**	**-**	**2**	**2**	**2**	**3**	**3**
C115.4	**3**	**3**	**1**	**1**	**3**	**-**	**-**	**-**	**-**	**3**	**2**	**2**	**-**	**3**
C115.5	**3**	**3**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**2**	**2**	**-**	**3**
C115	**3**	**3**	**1**	**1**	**3**	**-**	**3**	**-**	**-**	**2.6**	**2.2**	**2**	**3**	**3**

Course Code &Name: **C116 - Physics and Chemistry Laboratory – I**

REGULATION: R2013

YEAR/SEM: I/ II

COURSE OUTCOMES

C116.1	**AP**	**Determine** the young's modulus and band gap of materials.
C116.2	**AN**	**Find** the dispersive power of a prism
C116.3	**U**	**Determine** the thickness of materials and viscosity of fluids.
C116.4	**AP**	**Analyze** the alkalinity of water sample.
C116.5	**AP**	**Determine** the hardness of water sample.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C116.1	**3**	**3**	**-**	**-**	**-**	**-**	**-**	**2**	**3**	**3**	**-**	**2**	**-**	**-**
C116.2	**3**	**3**	**-**	**-**	**-**	**-**	**-**	**2**	**3**	**3**	**-**	**2**	**-**	**-**
C116.3	**3**	**3**	**-**	**-**	**-**	**-**	**-**	**2**	**3**	**3**	**-**	**2**	**-**	**-**
C116.4	**3**	**3**	**-**	**-**	**-**	**2**	**-**	**2**	**3**	**3**	**-**	**2**	**-**	**-**
C116.5	**3**	**3**	**-**	**-**	**-**	**2**	**-**	**2**	**3**	**3**	**-**	**2**	**-**	**-**
C116	**3**	**3**	**-**	**-**	**-**	**2**	**-**	**2**	**3**	**3**	**-**	**2**	**-**	**-**

Course Code &Name: **C117 - Computer Programming Laboratory**

REGULATION: R2013

YEAR/SEM: I/ II

COURSE OUTCOMES

C117.1	**AP**	**Discuss** about the Digital Computer, Algorithm, Pseudo code and Flowchart.
C117.2	**AN**	**Design** the 'C' program using the basic Operations.
C117.3	**U**	**Develop** the One and two dimensional array and String operations
C117.4	**AP**	**Build** the Functions and Pointers using 'C'
C117.5	**AP**	**Explain** about the concept of Structures and Unions

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C117.1	**3**	**3**	**3**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**3**	**3**
C117.2	**3**	**3**	**2**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**3**	**2**
C117.3	**3**	**3**	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**3**	**2**
C117.4	**3**	**2**	**1**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**3**	**3**
C117.5	**3**	**3**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**3**	**3**
C117	**3**	**2.8**	**2.4**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2.6**	**3**	**2.6**

Course Code &Name: **C118 - Electric Circuits Laboratory**

REGULATION: R2013

YEAR/SEM: I/ II

COURSE OUTCOMES

C118.1	**AP**	**Understand** and verify all circuit theorem.
C118.2	**AN**	**Analyze** the mesh and nodal methods.
C118.3	**U**	**Analyze** the frequency response in AC circuits
C118.4	**AP**	**Analyze** the measurement of inductance of a coil.
C118.5	**AP**	**Determine** the transient responses of RL and RC circuits

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C118.1	**3**	**2**	**1**	**1**	**3**	**-**	**3**	**-**	**2**	**-**	**-**	**-**	**-**	**3**
C118.2	**3**	**2**	**-**	**-**	**3**	**-**	**3**	**-**	**3**	**-**	**-**	**-**	**-**	**2**
C118.3	**3**	**3**	**-**	**-**	**-**	**-**	**3**	**-**	**3**	**-**	**-**	**-**	**2**	**2**
C118.4	**3**	**3**	**-**	**-**	**-**	**-**	**3**	**-**	**3**	**-**	**-**	**-**	**3**	**3**
C118.5	**3**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**2**
C118	**3**	**2.6**	**1**	**1**	**3**	**-**	**3**	**-**	**2.75**	**-**	**-**	**-**	**2.67**	**2.4**

Course Code &Name: **C201 - Transforms and Partial Differential Equations**

REGULATION: R2013

YEAR/SEM: II/ III

COURSE OUTCOMES

C201.1	**U**	**Understand** the partial differential equations of homogeneous and non homogeneous equations.
C201.2	**AP**	**Solve** differential equations using Fourier series.
C201.3	**AL**	**Apply** Fourier series techniques to solve one and two dimensional heat flow and wave phenomena.
C201.4	**AL**	**Solve** the mathematical principles of Fourier transforms.
C201.5	**AP**	**Apply** Z-transform techniques in partial differential equations.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C201.1	**2**	**3**	**-**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**2**
C201.2	**3**	**3**	**2**	**2**	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**2**	**2**	**2**
C201.3	**2**	**2**	**-**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**3**
C201.4	**3**	**3**	**2**	**1**	**3**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**2**
C201.5	**3**	**2**	**3**	**2**	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**2**	**2**	**2**
C201	**2.6**	**2.6**	**2.33**	**1.67**	**2.6**	**1.67**	**-**	**-**	**-**	**-**	**-**	**2**	**2**	**2.2**

Course Code &Name: **C202 – Digital Logic Circuits**

REGULATION: R2013

YEAR/SEM: II/ III

COURSE OUTCOMES

C202.1	**AN**	**Analysis** of digital logic families with logical expressions
C202.2	**AP**	**Construct** and implementation of combinational logic circuits
C202.3	**AP**	**Construct** various synchronous Sequential circuits.
C202.4	**AP**	**Construct** various asynchronous Sequential circuits and PLCs.
C202.5	**AP**	**Develop** digital simulation for application oriented logic circuits.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C202.1	3	2	-	2	3	-	-	-	-	-	-	2	3	2
C202.2	3	2	-	2	3	-	-	-	-	-	-	2	3	2
C202.3	3	2	3	2	3	-	-	-	-	-	-	2	3	2
C202.4	3	2	3	2	3	-	-	-	-	-	-	2	3	2
C202.5	3	2	3	2	3	-	-	-	-	-	3	2	3	2
C202	3	2	3	2	3	-	-	-	-	-	3	2	3	2

Course Code &Name: **C203 – Electromagnetic Theory**

REGULATION: R2013

YEAR/SEM: II/ III

COURSE OUTCOMES

C203.1	**AP**	**Apply** the mathematical concepts in electromagnetic vector fields.
C203.2	**AN**	**Analyze** the concepts of electrostatics, electrical potential, energy density and their applications
C203.3	**U**	**Impart** knowledge on magneto statics, magnetic flux density and vector potential.
C203.4	**AP**	**Apply** and Analyze the Faraday's law and Maxwell's equations for electromagnetic fields
C203.5	**AP**	**Apply** the Pointing vector to analyze the electromagnetic waves.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C203.1	2	3	3	2	-	-	-	-	-	-	2	3	3	2
C203.2	3	3	2	2	-	-	-	-	-	-	2	3	3	2
C203.3	2	3	3	2	-	-	-	-	-	-	2	3	3	2
C203.4	3	3	2	2	-	-	-	-	-	2	2	3	3	2
C203.5	3	3	3	2	-	-	-	-	-	-	2	3	3	2
C203	2.6	3	2.6	2	-	-	-	-	-	2	2	3	3	2

Course Code &Name : C204 – Environmental Science and Engineering

REGULATION: R2013

YEAR/SEM: II/ III

COURSE OUTCOMES

C204.1	**C**	**Explain** the various ecosystem and biodiversity.
C204.2	**C**	**Classify** the environmental pollution, related problems and control methods.
C204.3	**AP**	**Identify** the natural resources and the effects of its over-exploitation.
C204.4	**AP**	**List** out the fundamental social issues and sustainable development of public.
C204.5	**AP**	**Illustrate** population, environmental health issues and its awareness.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C204.1	**3**	**3**	**2**	**-**	**-**	**2**	**2**	**3**	**-**	**-**	**-**	**3**	**-**	**2**
C204.2	**3**	**3**	**2**	**-**	**-**	**3**	**2**	**2**	**-**	**-**	**-**	**2**	**-**	**2**
C204.3	**3**	**3**	**2**	**-**	**-**	**3**	**2**	**3**	**-**	**-**	**-**	**1**	**-**	**2**
C204.4	**3**	**2**	**2**	**-**	**-**	**3**	**2**	**2**	**-**	**-**	**-**	**3**	**-**	**2**
C204.5	**3**	**2**	**2**	**-**	**-**	**2**	**2**	**3**	**-**	**-**	**-**	**2**	**-**	**2**
C204	**3**	**2.6**	**2**	**-**	**-**	**2.6**	**2**	**2.6**	**-**	**-**	**-**	**2.2**	**-**	**2**

Course Code &Name: **C205 –Electronics Devices and Circuits**

REGULATION: R2013

YEAR/SEM: II/ III

COURSE OUTCOMES

C205.1	**U**	**Interpret** the structure and characteristics of PN Junction Devices.
C205.2	**AN**	**Analyze** the performance characteristics of transistors and thyristors.
C205.3	**AP**	**Modeling** of small signal amplifiers and to analyze the high frequency signals.
C205.4	**AP**	**Explore** the characteristics of amplifier gain and frequency response.
C205.5	**C**	**Design** and analysis of feedback amplifiers and oscillators.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C205.1	3	2	-	-	2	-	-	-	-	2	-	-	3	2
C205.2	3	3	3	2	2	2	-	-	-	-	-	3	3	2
C205.3	3	3	3	2	-	-	-	-	-	-	-	-	3	2
C205.4	3	3	3	2	3	-	-	-	-	-	-	3	3	2
C205.5	3	3	3	2	3	-	-	-	-	-	-	3	3	2
C205	3	2.8	3	2	2.5	2	-	-	-	2	-	3	3	2

Course Code &Name: **C206 – Linear Integrated Circuits and Applications**

REGULATION: R2013

YEAR/SEM: II/ III

COURSE OUTCOMES

C206.1	**AP**	**Apply** the knowledge of the basic concept in IC fabrication
C206.2	**AN**	**Analyze** the characteristics of different types of operation amplifier
C206.3	**AN**	**Categorize** the applications of operation amplifier
C206.4	**AP**	**Construct** the special ICs of operation amplifier
C206.5	**AP**	**Construct** the application ICs of operation amplifier

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C206.1	3	-	-	-	2	-	-	-	-	-	-	-	3	2
C206.2	3	2	-	-	2	-	-	-	-	-	-	-	3	2
C206.3	3	-	3	3	2	-	-	-	-	-	-	-	3	2
C206.4	3	-	3	-	2	-	-	-	-	-	3	3	3	2
C206.5	3	-	3	-	2	-	-	-	-	-	3	3	3	2
C206	3	2	3	3	2	-	-	-	-	-	3	3	3	2

Course Code &Name: **C207 – Electronic Laboratory**

REGULATION: R2013

YEAR/SEM: II/ III

COURSE OUTCOMES

C207.1	**C**	**Design** the electronic circuits and analyze the characteristics of electronic switches
C207.2	**C**	**Design** and analyze the characteristics of amplifiers and oscillators
C207.3	**AP**	**Apply** the concept of rectifiers with filters
C207.4	**AN**	**Analyze** the CRO under study state
C207.5	**AP**	**Modeling** and design of multivibrators

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C207.1	**3**	**-**	**3**	**2**	**3**	**-**	**-**	**-**	**-**	**-**	**3**	**3**	**3**	**3**
C207.2	**3**	**3**	**3**	**2**	**3**	**-**	**-**	**-**	**-**	**-**	**3**	**3**	**3**	**2**
C207.3	**3**	**3**	**3**	**2**	**3**	**-**	**-**	**-**	**-**	**-**	**3**	**3**	**3**	**3**
C207.4	**3**	**3**	**3**	**3**	**3**	**-**	**-**	**-**	**-**	**-**	**3**	**3**	**3**	**2**
C207.5	**3**	**3**	**3**	**3**	**3**	**-**	**-**	**-**	**-**	**-**	**3**	**3**	**3**	**3**
C207	**3**	**3**	**3**	**2.4**	**3**	**-**	**-**	**-**	**-**	**-**	**3**	**3**	**3**	**2.6**

Course Code &Name: **C208 - Linear and Digital Integrated Circuits Laboratory**

REGULATION: R2013

YEAR/SEM: II/ III

COURSE OUTCOMES

C208.1	**C**	**Design** oscillators and amplifiers using operational amplifiers.
C208.2	**C**	**Design** filters using Op amp and perform experiment on frequency response.
C208.3	**AN**	**Analyze** the working of PLL and use PLL as frequency multiplier.
C208.4	**C**	**Design** DC power supply using ICs.
C208.5	**AN**	**Analyze** the performance of oscillators and multivibrators using SPICE

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C208.1	**2**	**3**	**2**	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**-**	**2**
C208.2	**3**	**2**	**3**	**2**	**3**	**-**	**-**	**3**	**-**	**-**	**-**	**3**	**3**	**-**
C208.3	**3**	**2**	**2**	**2**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**3**	**-**
C208.4	**2**	**3**	**3**	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**3**	**2**
C208.5	**3**	**2**	**3**	**3**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**3**	**2**
C208	**2.6**	**2.4**	**2.6**	**2.6**	**2.6**	**-**	**-**	**3**	**-**	**-**	**-**	**3**	**3**	**2**

Course Code &Name: **C209 – Numerical Methods**

REGULATION: R2013

YEAR/SEM: II/ IV

COURSE OUTCOMES

C209.1	**AP**	**Solve** a set of algebraic representing steady state models formed in engineering problems.
C209.2	**AP**	**Examine** the interpolation and approximation for the applications of finite elements analysis.
C209.3	**U**	**Explain** the discrete data set through numerical differentiation and summary information through numerical integration.
C209.4	**AP**	**Solve** the ODEs modeling in the system.
C209.5	**AP**	**Solve** PDE representing spatial and temporal variations in physical systems through numerical methods

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C209.1	**3**	**2**	**-**	**2**	**2**	**3**	**-**	**-**	**-**	**2**	**-**	**1**	**-**	**2**
C209.2	**3**	**2**	**-**	**2**	**2**	**3**	**-**	**-**	**-**	**2**	**-**	**1**	**-**	**2**
C209.3	**3**	**2**	**-**	**2**	**2**	**3**	**-**	**-**	**-**	**2**	**-**	**1**	**-**	**2**
C209.4	**3**	**2**	**-**	**2**	**2**	**3**	**-**	**-**	**-**	**2**	**-**	**1**	**-**	**2**
C209.5	**3**	**2**	**-**	**2**	**2**	**3**	**-**	**-**	**-**	**2**	**-**	**1**	**-**	**2**
C209	**3**	**2**	**-**	**2**	**2**	**3**	**-**	**-**	**-**	**2**	**-**	**1**	**-**	**2**

Course Code &Name: **C210 - Electrical Machines - I**

REGULATION: R2013

YEAR/SEM: II/ IV

COURSE OUTCOMES

C210.1	**AP**	**Analyze** the magnetic Circuits and magnetic materials.
C210.2	**U**	**Familiarize** the Construction and performance of transformers.
C210.3	**AP**	**Apply** the Concept of Electromechanical energy Conversion in Rotating machines.
C210.4	**AN**	**Demonstrate** the construction of DC Machines and to analyze the Performance Characteristics of DC generators.
C210.5	**AN**	**Evaluate** the Characteristics and testing of DC Motors.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C210.1	3	3	2	-	-	-	-	-	-	-	-	-	3	2
C210.2	3	3	2	2	-	-	-	-	-	2	-	-	3	2
C210.3	3	3	2	-	-	-	-	-	-	-	-	-	3	2
C210.4	3	3	2	2	-	-	-	-	-	2	-	-	3	2
C210.5	3	3	2	2	2	-	-	-	-	2	-	-	3	2
C210	3	3	2	2	2	-	-	-	-	2	-	-	3	2

Course Code &Name: **C211 - Object Oriented Programming**

REGULATION: R2013

YEAR/SEM: II/ IV

COURSE OUTCOMES

C211.1	**AP**	**Apply** the basic knowledge on Object Oriented Concepts
C211.2	**E**	**Explain** the concepts of characterizes of OOP like Data abstraction and Polymorphisms
C211.3	**C**	**Develop** the application using templates and STL
C211.4	**C**	**Develop** the OOPs concepts in Java using classes and objects
C211.5	**AP**	**Construct** different types of exception handling

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C211.1	3	3	2	2	-	-	-	-	-	-	-	2	-	2
C211.2	3	2	2	2	-	-	-	-	-	-	-	2	-	2
C211.3	3	3	3	3	-	-	-	-	-	-	-	2	-	2
C211.4	3	3	3	2	-	-	-	-	-	-	-	2	-	2
C211.5	3	3	3	-	-	-	-	-	-	-	-	2	-	2
C211	3	2.8	2.6	2.25	-	-	-	-	-	-	-	2	-	2

Course Code &Name: **C212 - Transmission and Distribution**

REGULATION: R2013

YEAR/SEM: II/ IV

COURSE OUTCOMES

C212.1	**AP**	**Apply** the basic concept in electric power transmission, distribution, EHVAC, FACTS devices and HVDC systems.
C212.2	**AN**	**Analyze** the line parameters of various transmission lines.
C212.3	**AP**	**Model** and Analyze the performance of transmission lines.
C212.4	**AN**	**Analyze** the voltage distribution in insulators, cables and methods to improve the same.
C212.5	**C**	**Design** of transmission lines, substations, and grounding systems.

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2
C212.1	**3**	**3**	**-**	**-**	**2**	**2**	**2**	**-**	**2**	**-**	**-**	**3**	**3**	**2**
C212.2	**3**	**3**	**2**	**3**	**3**	**2**	**2**	**-**	**-**	**-**	**-**	**3**	**3**	**2**
C212.3	**3**	**3**	**3**	**3**	**3**	**2**	**2**	**-**	**2**	**-**	**-**	**3**	**3**	**2**
C212.4	**3**	**3**	**-**	**-**	**2**	**3**	**3**	**-**	**-**	**-**	**-**	**3**	**3**	**2**
C212.5	**3**	**3**	**3**	**3**	**2**	**3**	**3**	**-**	**2**	**-**	**-**	**3**	**3**	**2**
C212	**3**	**3**	**2.67**	**3**	**2.4**	**2.4**	**2.4**	**-**	**2**	**-**	**-**	**3**	**3**	**2**

Course Code &Name: **C213 – Discrete Time Systems and Signal Processing**

REGULATION: R2013

YEAR/SEM: II/ IV

COURSE OUTCOMES

C213.1	**AN**	**Analyze** the signals and systems using continuous-discrete time signal
C213.2	**AP**	**Apply** z-transform and inverse Z transform and Analyze discrete time systems
C213.3	**AP**	**Apply** the various transformation techniques and the computation of Discrete Fourier Transform
C213.4	**AN**	**Analyze** and construct the filters for digital implementation.
C213.5	**U**	**Infer** the different types of digital signal processor & quantization effects.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C213.1	3	3	3	-	-	-	-	-	-	-	2	2	3	2
C213.2	3	3	2	2	2	-	-	-	-	-	2	2	3	2
C213.3	3	3	-	2	2	-	-	-	-	-	2	2	3	2
C213.4	3	3	-	2	2	-	-	-	-	-	2	2	3	2
C213.5	3	-	-	-	2	-	-	-	-	-	-	2	3	2
C213	3	3	2.5	2	2	-	-	-	-	-	2	2	3	2

Course Code &Name: **C214 – Measurements and Instrumentations**

REGULATION: R2013

YEAR/SEM: II/ IV

COURSE OUTCOMES

C214.1	**AP**	**Acquire** knowledge on functional elements of instrumentation.
C214.2	**AN**	**Analyze** the performance of electrical and electronic instruments.
C214.3	**C**	**Design** a Bridge circuit for the measurement of passive elements and comparative methods of measurement.
C214.4	**AP**	**Import** knowledge on storage and display devices.
C214.5	**AN**	**Analyze** the performance of transducers and Data Acquisition System for various applications.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C214.1	**3**	**2**	**-**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**2**	**2**	**3**	**2**
C214.2	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**2**	**3**	**2**
C214.3	**3**	**3**	**2**	**-**	**3**	**-**	**-**	**-**	**-**	**-**	**2**	**2**	**3**	**2**
C214.4	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**2**	**3**	**2**
C214.5	**3**	**2**	**-**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**2**	**2**	**3**	**2**
C214	**3**	**2.33**	**2**	**-**	**2.33**	**-**	**-**	**-**	**-**	**-**	**2**	**2**	**3**	**2**

Course Code &Name: **C215 – Object Oriented Programming Laboratory**

REGULATION: R2013

YEAR/SEM: II/ IV

COURSE OUTCOMES

C215.1	**C**	**Design** and implement the C++ program for manipulating functions and pointers
C215.2	**C**	**Develop** C++ programs for object oriented concepts using polymorphisms
C215.3	**C**	**Develop** C++ programs for file handling and exceptions handling.
C215.4	**AP**	**Apply** the OOPS concepts using java in packages and treading.
C215.5	**C**	**Design** and implement the exception handling mechanisms in java

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C215.1	**3**	**3**	**2**	**-**	**3**	**2**	**-**	**2**	**3**	**3**	**-**	**2**	**-**	**-**
C215.2	**3**	**3**	**3**	**-**	**2**	**2**	**-**	**2**	**2**	**3**	**-**	**2**	**-**	**-**
C215.3	**3**	**3**	**3**	**-**	**2**	**2**	**-**	**3**	**3**	**3**	**-**	**2**	**-**	**-**
C215.4	**3**	**3**	**3**	**-**	**3**	**3**	**-**	**3**	**3**	**3**	**-**	**2**	**-**	**-**
C215.5	**3**	**3**	**3**	**-**	**3**	**3**	**-**	**3**	**3**	**3**	**-**	**2**	**-**	**-**
C215	**3**	**3**	**2.8**	**-**	**2.6**	**2.4**	**-**	**2.6**	**2.8**	**3**	**-**	**2**	**-**	**-**

Course Code &Name: **C216 - Electrical Machines Laboratory – I**

REGULATION: R2013

YEAR/SEM: II/ IV

COURSE OUTCOMES

C216.1	**AP**	**Calculate** the critical speed and critical resistance in dc shunt generator also construct the load characteristics of generators
C216.2	**U**	**Demonstrate** the various relations characteristics of DC motors and analyze the efficiency of the DC motor by conducting load tests
C216.3	**AP**	**Calculate** the efficiency of the transformer by conduct direct and indirect load tests
C216.4	**AN**	**Analyze** the efficiency of the DC machines by conduct indirect tests
C216.5	**AN**	**Impart** types of dc motor starters and three phase transformer connections

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C216.1	3	3	3	-	2	-	-	-	-	-	-	3	3	2
C216.2	3	3	3	-	2	-	-	-	-	-	-	3	3	2
C216.3	3	3	3	-	2	-	-	-	-	-	-	3	3	2
C216.4	3	3	3	-	2	-	-	-	-	-	-	3	3	2
C216.5	3	3	3	-	2	-	-	-	-	-	-	3	3	2
C216	3	3	3	-	2	-	-	-	-	-	-	3	3	2

Course Code &Name: **C301 – Power System Analysis**

REGULATION: R2013

YEAR/SEM: III/ V

COURSE OUTCOMES

C301.1	**AN**	**Analyze** per phase, per unit and form bus matrix for power system
C301.2	**AP**	**Develop** the power flow equation using numerical methods
C301.3	**AP**	**Model** and analyze the transmission lines under symmetrical faulted conditions.
C301.4	**AP**	**Model** and analyze the transmission lines under unsymmetrical faulted conditions.
C301.5	**E**	**Evaluate** the transient stability of power system

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C301.1	**3**	**3**	**3**	**2**	**3**	**-**	**-**	**-**	**-**	**-**	**2**	**2**	**3**	**2**
C301.2	**3**	**3**	**3**	**2**	**3**	**-**	**-**	**-**	**-**	**-**	**2**	**2**	**3**	**2**
C301.3	**3**	**3**	**3**	**2**	**3**	**-**	**-**	**-**	**-**	**-**	**2**	**2**	**3**	**2**
C301.4	**3**	**3**	**3**	**2**	**3**	**-**	**-**	**-**	**-**	**-**	**2**	**2**	**3**	**2**
C301.5	**3**	**3**	**3**	**2**	**3**	**-**	**-**	**-**	**-**	**-**	**2**	**2**	**3**	**2**
C301	**3**	**3**	**3**	**2**	**3**	**-**	**-**	**-**	**-**	**-**	**2**	**2**	**3**	**2**

Course Code &Name: **C302 – Microprocessor and Microcontrollers**

REGULATION: R2013

YEAR/SEM: I/ I

COURSE OUTCOMES

C302.1	**U**	**Explain** the architecture and addressing modes of 8086.
C302.2	**U**	**Explain** the concept of system bus structure and different modes of 8086 processor.
C302.3	**AN**	**Analyze** the various I/O interfacing techniques of 8086 microprocessor.
C302.4	**U**	**Explain** the architecture and addressing modes of 8051.
C302.5	**AN**	**Analyze** the various interfacing techniques and applications of 8051 microprocessor.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C302.1	3	2	-	-	-	-	-	-	-	-	-	3	3	-
C302.2	-	2	3	3	3	-	-	3	-	-	-	3	-	2
C302.3	2	2	-	-	-	-	-	-	-	-	-	3	3	-
C302.4	3	2	3	2	3	-	-	-	-	-	-	3	3	2
C302.5	2	2	3	3	-	-	-	-	-	-	-	3	3	2
C302	2.5	2	3	2.67	3	-	-	3	-	-	-	3	3	2

Course Code &Name: **C303 – Power Plant Engineering**

REGULATION: R2013

YEAR/SEM: I/ I

COURSE OUTCOMES

C303.1	**AP**	**Apply** the concept of coal based thermal power plant
C303.2	**AN**	**Apply** the concept of diesel, gas turbine and combined cycle power plant
C303.3	**U**	**Infer** the functions and safety measures of nuclear power plant
C303.4	**AP**	**Analyze** the power from renewable energy
C303.5	**AP**	**Analyse** and solve energy and economic related issues in power sectors

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C303.1	3	3	2	-	-	-	-	-	-	-	-	-	3	2
C303.2	3	3	3	-	2	-	2	-	-	-	-	3	3	2
C303.3	3	3	2	-	-	-	-	-	-	-	-	-	3	2
C303.4	3	3	3	2	-	-	3	-	-	-	-	3	3	2
C303.5	3	2	2	3	2	-	3	-	-	-	-	3	3	2
C303	3	2.8	2.4	2.5	2	-	2.67	-	-	-	-	3	3	2

Course Code &Name: **C304 – Power Electronics**

REGULATION: R2013

YEAR/SEM: I/ I

COURSE OUTCOMES

C304.1	**U**	**Import** the switching characteristics of power semiconductor devices and to design driver and snubber circuit.
C304.2	**U**	**Analyze** the performance parameters of phase controlled converters.
C304.3	**AN**	**Design** of DC to DC converter and to apply controlled strategies.
C304.4	**U**	**Interpret** the various modulation techniques for PWM Inverters.
C304.5	**AN**	**Explore** the operation of AC to AC converter for various configurations.

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PS O2
C304.1	**3**	**3**	**3**	**2**	**3**	**-**	**-**	**-**	**-**	**-**	**3**	**3**	**3**	**2**
C304.2	**3**	**3**	**3**	**2**	**3**	**-**	**-**	**-**	**-**	**-**	**3**	**3**	**3**	**2**
C304.3	**3**	**3**	**3**	**2**	**3**	**-**	**-**	**-**	**-**	**-**	**3**	**3**	**3**	**2**
C304.4	**3**	**3**	**3**	**3**	**3**	**-**	**-**	**-**	**-**	**-**	**3**	**3**	**3**	**2**
C304.5	**3**	**3**	**3**	**3**	**3**	**-**	**-**	**-**	**-**	**-**	**3**	**3**	**3**	**2**
C304	**3**	**3**	**3**	**2.4**	**3**	**-**	**-**	**-**	**-**	**-**	**3**	**3**	**3**	**2**

Course Code &Name: **C305 - Electrical Machines – II**

REGULATION: R2013

YEAR/SEM: I/ I

COURSE OUTCOMES

C305.1	**U**	**Illustrate** the Constructional details and performance of Characteristics for synchronous generators.
C305.2	**U**	**Infer** the principle of operation and explain performance for synchronous motor.
C305.3	**AN**	**Analyze** the construction, principle of operation and evaluate performance for induction machines.
C305.4	**AN**	**Analyze** the starting methods and describe speed control for three phase induction motors.
C305.5	**AN**	**Analyze** the performance of single phase induction motor and special machines.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C305.1	**3**	**3**	**3**	**-**	**-**	**-**	**2**	**-**	**2**	**-**	**2**	**2**	**3**	**-**
C305.2	**3**	**3**	**3**	**-**	**-**	**-**	**3**	**-**	**2**	**-**	**3**	**3**	**3**	**2**
C305.3	**3**	**3**	**2**	**-**	**-**	**-**	**3**	**-**	**2**	**-**	**3**	**3**	**3**	**2**
C305.4	**3**	**3**	**2**	**-**	**-**	**-**	**3**	**-**	**2**	**-**	**3**	**3**	**3**	**-**
C305.5	**3**	**3**	**2**	**-**	**-**	**-**	**3**	**-**	**2**	**-**	**3**	**3**	**3**	**2**
C305	**3**	**3**	**2.4**	**-**	**-**	**-**	**2.8**	**-**	**2**	**-**	**2.8**	**2.8**	**3**	**2**

Course Code &Name: **C306 – Control Systems**

REGULATION: R2013

YEAR/SEM: I/ I

COURSE OUTCOMES

C306.1	**AN**	**Analyze** the transfer functions of electro-mechanical systems.
C306.2	**C**	**Design** the controllers and analyze the time response and root locus of the system.
C306.3	**AN**	**Analyze** the performance of the open-loop and closed-loop frequency responses of systems.
C306.4	**AP**	**Explore** the stability analysis and to design the compensators.
C306.5	**AP**	**Apply** the concept of state variable to analyze the state model

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C306.1	3	3	2	2	2	-	-	-	-	-	2	2	2	-
C306.2	3	3	2	2	3	-	-	-	-	-	2	2	3	2
C306.3	3	3	3	2	3	-	-	-	-	-	3	3	3	2
C306.4	3	3	2	3	3	-	-	-	-	-	3	3	3	2
C306.5	3	3	3	2	3	-	-	-	-	-	2	3	3	2
C306	3	3	2.4	2.2	2.8	-	-	-	-	-	2.4	2.6	2.8	2

Course Code &Name: **C307 - Control and Instrumentation Laboratory**

REGULATION: R2013

YEAR/SEM: I/ I

COURSE OUTCOMES

C307.1	**AN**	**Analyze** the characteristics of P, PI and PID controllers and the stability of the control system using MATLAB
C307.2	**AP**	**Draw** and design the modeling of transfer function for machines and compensators
C307.3	**AP**	**Draw** the transient response Characteristics of Position Control system
C307.4	**AN**	**Analyze** the characteristics of AC and DC Bridges to determine electrical parameters and Dynamics of Sensors and Transducers
C307.5	**AN**	**Analyze** the Signal Conditioning units and Examine the Power and Energy for single phase systems with various loads

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C307.1	3	3	2	-	2	2	-	-	-	-	2	-	3	2
C307.2	3	3	2	-	2	2	-	-	-	-	2	-	3	2
C307.3	3	3	2	-	2	2	-	-	-	-	2	-	3	2
C307.4	3	3	2	-	-	2	-	-	-	-	2	-	3	2
C307.5	3	3	2	-	-	2	-	-	-	-	2	-	3	2
C307	3	3	2	-	2	2	-	-	-	-	2	-	3	2

Course Code &Name: **C308 – Communication and Soft Skills Laboratory**

REGULATION: R2013

YEAR/SEM: I/ I

COURSE OUTCOMES

C308.1	**AP**	**Develop** communicative competence in English with specific reference to listening and speaking.
C308.2	**C**	**Evaluate** learners' ability in reading and writing to communicate effectively.
C308.3	**AP**	**Improve** the prospects of the learners for success in competitive examinations.
C308.4	**C**	**Examine** the learners' ability clearly to shine in the interviews.
C308.5	**C**	**Improve** soft skills, creative thinking, team work and sustainability in workplace.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C308.1	-	-	-	-	-	-	-	-	3	3	-	-	-	2
C308.2	-	-	-	-	-	-	-	-	-	3	-	-	-	2
C308.3	-	-	-	-	-	-	-	-	-	3	-	-	-	2
C308.4	-	-	-	-	-	-	-	-	-	3	-	-	-	2
C308.5	-	-	-	-	-	-	-	-	3	3	-	-	-	2
C308	-	-	-	-	-	-	-	-	3	3	-	-	-	2

Course Code &Name: **C309 - Electrical Machines Laboratory - II**

REGULATION: R2013

YEAR/SEM: I/ I

COURSE OUTCOMES

C309.1	**U**	**Demonstrate** the importance of voltage regulation of AC generator.
C309.2	**AN**	**Analyze** the performance characteristic, losses and efficiency of AC motors under various load conditions.
C309.3	**AN**	**Analyze** the performance of synchronous motors.
C309.4	**AP**	**Compute** the equivalent circuit model of induction motors.
C309.5	**U**	**Demonstrate** the importance of induction motor starters.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C309.1	3	3	3	-	2	-	-	-	2	-	-	3	3	2
C309.2	3	3	3	-	2	-	-	-	2	-	-	3	3	2
C309.3	3	3	3	-	2	-	-	-	2	-	-	3	3	2
C309.4	3	3	3	-	2	-	-	-	2	-	-	3	3	2
C309.5	3	3	3	-	2	-	-	-	2	-	-	3	3	2
C309	3	3	3	-	2	-	-	-	2	-	-	3	3	2

Course Code &Name: **C310 – Communication Engineering**

REGULATION: R2013

YEAR/SEM: I/ I

COURSE OUTCOMES

C310.1	**AP**	**Explain** the operation of Amplitude modulation Draw the frequency spectrum and vector Representation of AM
C310.2	**AN**	**Compare** the Different Techniques of Digital Communication
C310.3	**U**	**Analyze** how the transmitted information will receive using coding techniques
C310.4	**AP**	**Discuss** about the various types of multiple access techniques
C310.5	**AP**	**Distinguish** between INTELSAT and INSAT

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C310.1	3	-	2	-	-	-	-	-	-	-	-	-	3	2
C310.2	3	-	2	-	-	-	-	-	-	-	-	-	3	2
C310.3	3	2	2	2	2	-	-	-	-	-	-	3	3	2
C310.4	3	-	2	-	-	-	-	-	-	-	-	-	3	2
C310.5	3	-	2	-	2	-	-	-	-	-	-	3	3	2
C310	3	2	2	2	2	-	-	-	-	-	-	3	3	2

Course Code &Name: **C311 – Solid State Drives**

REGULATION: R2013

YEAR/SEM: I/ I

COURSE OUTCOMES

C311.1	**AN**	**Analyze** the steady state operation and the transient dynamics of motor load system.
C311.2	**C**	**Design** the converters for various applications.
C311.3	**AN**	**Analyze** the performance of induction motor drives by various control strategies
C311.4	**AP**	**Acquire** knowledge of synchronous motor drives.
C311.5	**AN**	**Analyze** and design the various controllers for closed loop DC drive.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C311.1	3	3	3	-	-	-	-	-	-	-	2	3	3	-
C311.2	3	3	3	-	2	-	-	-	-	-	2	3	3	2
C311.3	3	3	3	2	2	-	-	-	-	-	2	3	3	2
C311.4	3	3	3	2	2	-	-	-	-	-	2	3	3	2
C311.5	3	3	3	2	2	-	-	-	-	-	2	3	3	2
C311	3	3	3	2	2	-	-	-	-	-	2	3	3	2

Course Code &Name: **C312 – Embedded Systems**

REGULATION: R2013

YEAR/SEM: I/ I

COURSE OUTCOMES

C312.1	**E**	**Interpret** the concept of the Building Blocks of Embedded Systems
C312.2	**AP**	**Impart** the knowledge on Embedded networking.
C312.3	**AP**	**Acquire** the knowledge of embedded firmware development.
C312.4	**C**	**Design** an embedded system using real time operating systems.
C312.5	**C**	**Develop** the embedded systems concept for various applications.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C312.1	3	3	-	-	-	-	-	-	-	-	-	3	3	2
C312.2	3	3	-	-	3	-	-	-	-	-	2	3	3	2
C312.3	3	3	-	-	3	-	-	-	-	-	2	3	3	2
C312.4	3	3	3	-	3	-	-	-	-	-	2	3	3	2
C312.5	3	3	3	-	3	-	-	-	-	-	2	3	3	2
C312	3	3	3	-	3	-	-	-	-	-	2	3	3	2

Course Code &Name: **C313 – Power System Operation and Control**

REGULATION: R2013

YEAR/SEM: I/ I

COURSE OUTCOMES

C313.1	**AP**	**Analyze** the load curve characteristics and importance of load forecasting in the power system
C313.2	**AN**	**Modeling** of static and dynamic analysis of frequency controller for single and multi area system
C313.3	**U**	**Modeling** of Automatic voltage regulator and function of FACTS devices
C313.4	**AP**	**Analyze** the unit commitment and economic dispatch in the power system q
C313.5	**AP**	**Apply** SCADA tools and to analyze the electrical parameters in Power System.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C313.1	**3**	**3**	**2**	**-**	**2**	**2**	**2**	**-**	**-**	**-**	**-**	**2**	**3**	**2**
C313.2	**3**	**3**	**3**	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**2**
C313.3	**3**	**3**	**3**	**3**	**2**	**2**	**2**	**-**	**-**	**-**	**-**	**3**	**3**	**2**
C313.4	**3**	**3**	**2**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**2**
C313.5	**3**	**3**	**2**	**-**	**3**	**2**	**2**	**-**	**-**	**-**	**-**	**3**	**3**	**2**
C313	**3**	**3**	**2.4**	**3**	**2.2**	**2**	**2**	**-**	**-**	**-**	**-**	**2.67**	**3**	**2**

Course Code &Name: **C314 - Design of Electrical Machines**

REGULATION: R2013

YEAR/SEM: I/ I

COURSE OUTCOMES

C314.1	**E**	**Interpret** electrical engineering materials, heat dissipation, insulating materials and standard specifications.
C314.2	**AN**	**Analyze** the armature and field systems for DC machines.
C314.3	**U**	**Inference** the core, yoke, winding and cooling system of transformers.
C314.4	**AN**	**Analyze** the stator and rotor of induction machines.
C314.5	**U**	**Inference** the stator and rotor of synchronous machine analyze their turbo alternators.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C314.1	3	3	3	3	-	2	2	-	-	-	2	3	3	2
C314.2	3	3	3	3	-	2	2	-	-	-	2	3	3	2
C314.3	3	3	3	3	-	2	2	-	-	-	2	3	3	2
C314.4	3	3	3	3	-	2	2	-	-	-	2	3	3	2
C314.5	3	3	3	3	-	2	2	-	-	-	2	3	3	2
C314	3	3	3	3	-	2	2	-	-	-	2	3	3	2

Course Code &Name: **C315 – Power System Transients**

REGULATION: R2013

YEAR/SEM: I/ I

COURSE OUTCOMES

C315.1	**AP**	**Interpret** the concept of transients and Compute the solution.
C315.2	**AN**	**Apply** the importance of switching transients.
C315.3	**AN**	**Analyze** the Mechanism of lighting strokes and the production of lighting surges.
C315.4	**AP**	**Apply** the concept of Propagation, reflection and refraction of travelling waves.
C315.5	**E**	**Infer** the concept of transients in integrated power system.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C315.1	3	3	2	-	-	2	2	-	-	-	-	3	3	-
C315.2	3	3	3	-	-	2	2	-	-	-	2	3	3	2
C315.3	3	3	2	-	-	2	2	-	-	-	2	3	3	2
C315.4	3	3	2	-	2	2	2	-	-	-	-	3	3	-
C315.5	3	3	3	-	2	2	2	-	-	-	2	3	3	-
C315	3	3	2.4	-	2	2	2	-	-	-	2	3	3	2

Course Code &Name: **C316 – Power Electronics and Drives Laboratory**

REGULATION: R2013

YEAR/SEM: I/ I

COURSE OUTCOMES

C316.1	**AN**	**Analyze** the VI characteristics of SCR and TRIAC
C316.2	**AN**	**Analyze** the characteristics of MOSFET and IGBT
C316.3	**AP**	**Construct** single phase AC to DC half and fully controlled converter
C316.4	**AN**	**Analyze** the output response of step down chopper and step up MOSFET and draw the output waveform of single phase IGBT based PWM inverter.
C316.5	**U**	**Observe** the response of IGBT based three phase PWM inverter and resonant DC-DC converter.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C316.1	3	2	3	-	3	-	-	-	-	-	3	-	3	2
C316.2	3	2	3	-	3	-	-	-	-	-	3	-	3	2
C316.3	3	2	3	-	3	-	-	-	-	-	3	-	3	2
C316.4	3	2	3	-	3	-	-	-	-	-	3	-	3	2
C316.5	3	2	3	-	3	-	-	-	-	-	3	-	3	2
C316	3	2	3	-	3	-	-	-	-	-	3	-	3	2

Course Code &Name: **C317 – Microprocessors and Microcontrollers lab**

REGULATION: R2013

YEAR/SEM: I/ I

COURSE OUTCOMES

C317.1	**U**	**Demonstrate** the ALP programs in 8086.
C317.2	**AP**	**Apply** the Arithmetic & logical operations in 8086 microprocessor.
C317.3	**AP**	**Experiment** with A/D & D/A, stepper motor, traffic light Interfacing with 8086 Microprocessor.
C317.4	**U**	**Demonstrate** the ALP Programs in 8051.
C317.5	**C**	**Compile** the programs using MASM Software

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C317.1	3	-	-	-	-	-	-	3	-	-	-	3	3	2
C317.2	2	2	-	-	-	-	-	3	-	-	-	3	3	2
C317.3	3	3	3	3	-	-	-	3	-	-	3	3	3	2
C317.4	3	-	-	-	-	-	-	3	-	-	-	3	3	2
C317.5	2	-	-	2	3	-	-	3	-	-	-	3	3	2
C317	2.6	2.5	3	2.5	3	-	-	3	-	-	3	3	3	2

Course Code &Name: **C18-Presentation Skills and Technical Seminar**

REGULATION: R2013

YEAR/SEM: I/ I

COURSE OUTCOMES

C318.1	AP	**Prepare** and present the seminar in the field of electrical and electronics engineering
C318.2	AN	**Analyze** objective type questions in the field of electrical and electronics engineering
C318.3	C	**Apply** the knowledge to present the seminar
C318.4	E	**Review**, prepare and present technological developments
C318.5	C	**Prepare** and attend the technical placement interview effectively

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C318.1	3	2	-	-	-	-	-	-	2	2	-	2	3	2
C318.2	3	2	-	-	-	-	-	2	2	2	-	2	3	2
C318.3	3	2	-	-	-	-	-	2	-	3	-	2	-	2
C318.4	2	2	-	-	-	-	-	2	-	3	-	2	-	2
C318.5	3	2	-	-	-	-	-	-	2	3	1	2	-	2
C318	2.8	2	-	-	-	-	-	2	2	2.6	1	2	3	2

Course Code &Name: **C401 – High Voltage Engineering**

REGULATION: R2013

YEAR/SEM: I/ I

COURSE OUTCOMES

C401.1	**E**	**Interpret** the causes of over voltage in power system and protection methods
C401.2	**AN**	**Classify** the breakdown Mechanisms in Solid, Liquid, gases and Composite dielectrics
C401.3	**AN**	**Analyze** the different type of impulse voltages and currents Generation
C401.4	**U**	**compute** the over voltages and currents in power system
C401.5	**AN**	**Analyze** the power apparatus and insulation coordination

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C401.1	**3**	**2**	**2**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**3**	**3**	**3**	**3**
C401.2	**3**	**2**	**2**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**3**	**2**	**3**	**3**
C401.3	**3**	**2**	**2**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**3**	**3**	**3**	**3**
C401.4	**3**	**2**	**2**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**3**	**2**	**3**	**3**
C401.5	**3**	**2**	**2**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**3**	**2**	**3**	**3**
C401	**3**	**2**	**2**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**3**	**2.4**	**3**	**3**

Course Code &Name: **C402 - Protection and Switchgear**

REGULATION: R2013

YEAR/SEM: I/ I

COURSE OUTCOMES

C402.1	**AN**	**Analyze** the effect of fault current and importance of protection in power system.
C402.2	**AN**	**Analyze** the performance of electromagnetic relays.
C402.3	**E**	**Categorize** the protection schemes for apparatus.
C402.4	**AN**	**Analyze** the function of static and numerical relays
C402.5	**AP**	**Impart** knowledge on rating and testing of various circuit breakers

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C402.1	**3**	**3**	**2**	**-**	**-**	**3**	**3**	**-**	**-**	**-**	**-**	**-**	**3**	**2**
C402.2	**3**	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**2**
C402.3	**3**	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**3**	**2**
C402.4	**3**	**3**	**2**	**3**	**3**	**3**	**3**	**-**	**-**	**-**	**-**	**3**	**3**	**2**
C402.5	**3**	**3**	**2**	**3**	**2**	**3**	**3**	**2**	**-**	**-**	**-**	**3**	**3**	**2**
C402	**3**	**3**	**2**	**3**	**2.5**	**3**	**3**	**2**	**-**	**-**	**-**	**2.67**	**3**	**2**

Course Code &Name: **C403 – Special Electrical Machines**

REGULATION: R2013

YEAR/SEM: I/ I

COURSE OUTCOMES

C403.1	**U**	**Infer** the Construction, principle of operation and performance of synchronous reluctance motors.
C403.2	**AN**	**Analyze** the Construction, principle of operation, control and performance of stepping motors.
C403.3	**AP**	**Apply** the Construction, principle of operation, control and performance of switched reluctance motors.
C403.4	**AP**	**Apply** the Construction, principle of operation, control and performance of permanent magnet brushless D.C. motors
C403.5	**R**	**Draw** the Construction, principle of operation and performance of permanent magnet synchronous motors.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C403.1	**3**	**3**	**2**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**2**
C403.2	**3**	**3**	**2**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**2**	**-**	**3**	**2**
C403.3	**3**	**3**	**2**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**2**
C403.4	**3**	**3**	**2**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**2**	**-**	**3**	**2**
C403.5	**3**	**3**	**2**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**2**
C403	**3**	**3**	**2**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**2**	**-**	**3**	**2**

Course Code &Name: **C404 – Principles of Management**

REGULATION: R2013

YEAR/SEM: I/ I

COURSE OUTCOMES

C404.1	**AP**	To **integrate** management principles into management practices.
C404.2	**AP**	To **apply** the concepts of decision making in a business situation.
C404.3	**U**	To **explain** the key factors of motivation and leadership skills.
C404.4	**AP**	To **asses** managerial practices and choices relative to ethical principles and standards.
C404.5	**U**	To **understand** the role of technology in the future of management

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C404.1	-	-	-	-	-	-	-	-	-	-	**3**	-	-	-
C404.2	-	-	-	-	-	-	-	**3**	-	-	-	-	-	-
C404.3	-	-	-	-	-	-	-	**3**	-	-	-	-	-	-
C404.4	-	-	-	-	-	-	-	-	**2**	**3**	-	-	-	-
C404.5	-	-	-	-	-	-	-	-	-	-	-	**3**	**3**	**2**
4304	-	-	-	-	-	-	-	**3**	**2**	**3**	**3**	**3**	**3**	**2**

Course Code &Name: **C405 – Biomedical Instrumentation**

REGULATION: R2013

YEAR/SEM: I/ I

COURSE OUTCOMES

C405.1	**U**	**Interpret** the Knowledge of the philosophy of heart, lungs, blood circulation and respiration system.
C405.2	**C**	**Discuss** the internal circuitry of medical instruments and its maintenance.
C405.3	**R**	**Recognize** the technical concepts of electrode, amplifier and operation of medical Instrumentation.
C405.4	**U**	**Explain** the concept of medical imaging techniques.
C405.5	**C**	**Discuss** the assisting and therapeutic equipments.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C405.1	**3**	**3**	**2**	**-**	**-**	**3**	**-**	**-**	**-**	**-**	**-**	**2**	**3**	**2**
C405.2	**3**	**2**	**2**	**-**	**-**	**3**	**-**	**-**	**-**	**-**	**-**	**2**	**2**	**2**
C405.3	**3**	**2**	**2**	**2**	**-**	**3**	**3**	**-**	**-**	**3**	**-**	**2**	**3**	**2**
C405.4	**3**	**3**	**2**	**3**	**-**	**3**	**3**	**-**	**-**	**3**	**-**	**2**	**3**	**2**
C405.5	**3**	**3**	**2**	**3**	**-**	**3**	**-**	**-**	**-**	**3**	**-**	**2**	**2**	**2**
C405	**3**	**2.6**	**2**	**2.67**	**-**	**3**	**3**	**-**	**-**	**3**	**-**	**2**	**2.6**	**2**

Course Code &Name: **C406 – Microcontroller Based System Design**

REGULATION: R2013

YEAR/SEM: I/ I

COURSE OUTCOMES

C406.1	**U**	**Illustrate** the Architecture of PIC microcontroller
C406.2	**AP**	**Acquire** the knowledge of interrupts and timer
C406.3	**U**	**Interpret** the knowledge of Peripheral devices for data communication and basics of sensor interfacing
C406.4	**U**	**Illustrate** the Architecture of ARM processor
C406.5	**C**	**Develop** simple applications using ARM processor

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C406.1	**3**	**-**	**3**	**2**	**2**	**-**	**2**	**-**	**-**	**-**	**-**	**2**	**3**	**2**
C406.2	**3**	**-**	**3**	**2**	**2**	**-**	**2**	**-**	**-**	**-**	**2**	**2**	**3**	**2**
C406.3	**3**	**-**	**3**	**2**	**2**	**-**	**2**	**-**	**-**	**2**	**2**	**2**	**3**	**2**
C406.4	**3**	**-**	**3**	**2**	**2**	**-**	**2**	**-**	**-**	**2**	**-**	**2**	**3**	**2**
C406.5	**3**	**-**	**-**	**2**	**2**	**-**	**2**	**-**	**-**	**2**	**-**	**2**	**3**	**2**
C406	**3**	**-**	**3**	**2**	**2**	**-**	**2**	**-**	**-**	**2**	**2**	**2**	**3**	**2**

Course Code &Name: **C407 – Power System Simulation Laboratory**

\REGULATION: R2013

YEAR/SEM: I/ I

COURSE OUTCOMES

C407.1	**AP**	**Apply** the concept of Transmission Lines parameters and design the networks
C407.2	**AN**	**Analyze** the different methods of power flow using Simulink
C407.3	**AN**	**Analyze** the fault and transients stability of power system
C407.4	**U**	**Interpret** the economic dispatch and analyze the weighted least square estimation system
C407.5	**AN**	**Analyze** the electromagnetic transients for power system

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C407.1	**3**	**3**	**3**	**3**	**3**	**-**	**-**	**-**	**-**	**2**	**2**	**2**	**3**	**2**
C407.2	**3**	**3**	**3**	**3**	**3**	**-**	**-**	**-**	**-**	**2**	**2**	**2**	**3**	**2**
C407.3	**3**	**3**	**3**	**3**	**3**	**-**	**-**	**-**	**-**	**2**	**2**	**2**	**3**	**2**
C407.4	**3**	**3**	**3**	**3**	**3**	**-**	**-**	**-**	**-**	**2**	**2**	**2**	**2**	**2**
C407.5	**3**	**3**	**3**	**3**	**3**	**-**	**-**	**-**	**-**	**2**	**2**	**2**	**3**	**2**
C407	**3**	**3**	**3**	**3**	**3**	**-**	**-**	**-**	**-**	**2**	**2**	**2**	**2.8**	**2**

Course Code &Name: **C408 – Comprehension**

REGULATION: R2013

YEAR/SEM: I/ I

COURSE OUTCOMES

C408.1	**U**	**Describe** the basic concepts in the field of electrical Engineering
C408.2	**AP**	**Solve** the objective type questions in the field of electrical and electronics engineering
C408.3	**U**	**Review**, prepare and present technological electrical and electronics developments
C408.4	**AN**	Analyze the modern trends in the field of electrical engineering.
C408.5	**U**	Communicate effectively during technical interviews and group discussions.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C408.1	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**3**	**-**	**2**	**-**	**2**
C408.2	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**3**	**-**	**2**	**-**	**2**
C408.3	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**3**	**-**	**-**	**-**	**2**
C408.4	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**3**	**-**	**-**	**-**	**2**
C408.5	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**3**	**-**	**-**	**-**	**2**
C408	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**3**	**-**	**2**	**-**	**2**

Course Code &Name: **C409 – Electric Energy Generation, Utilization and Conservation**

REGULATION: R2013

YEAR/SEM: I/ I

COURSE OUTCOMES

C409.1	**AN**	Analyze the characteristics of electric drives and traction systems.
C409.2	**AP**	Familiarize the energy saving concept and design of varies illumination systems.
C409.3	**U**	**Interpret** the different methods of electric heating and welding.
C409.4	**AN**	**Analyze** the performance of Solar Radiation, Solar Energy Collectors and design of solar PV systems.
C409.5	**AP**	**Modeling** of wind turbine and its conversion systems.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C409.1	**3**	**3**	**-**	**-**	**-**	**2**	**2**	**-**	**-**	**-**	**-**	**3**	**3**	**2**
C409.2	**3**	**3**	**3**	**-**	**-**	**2**	**2**	**-**	**-**	**-**	**-**	**3**	**3**	**2**
C409.3	**3**	**3**	**-**	**-**	**-**	**2**	**2**	**-**	**-**	**-**	**-**	**3**	**3**	**2**
C409.4	**3**	**3**	**3**	**3**	**2**	**2**	**2**	**-**	**-**	**-**	**2**	**3**	**3**	**2**
C409.5	**3**	**3**	**3**	**3**	**2**	**2**	**2**	**-**	**-**	**-**	**2**	**3**	**3**	**2**
C409	**3**	**3**	**3**	**3**	**2**	**2**	**2**	**-**	**-**	**-**	**2**	**3**	**3**	**2**

Course Code &Name: **C410 – High Voltage Direct Current Transmission**

REGULATION: R2013

YEAR/SEM: I/ I

COURSE OUTCOMES

C410.1	**U**	**Interpret** of DC and AC power transmission
C410.2	**AN**	**Analyze** of HVDC converters with different topologies
C410.3	**U**	**Interpret** the HVDC system control.
C410.4	**AN**	**Analyze** the harmonics and designs of filters
C410.5	**AN**	**Analyze** the DC systems under study state.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C410.1	**3**	**3**	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**3**	**3**	**3**
C410.2	**3**	**3**	**3**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**3**	**3**	**3**
C410.3	**3**	**3**	**3**	**3**	**3**	**-**	**-**	**-**	**-**	**-**	**2**	**3**	**3**	**3**
C410.4	**3**	**3**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**3**	**3**	**3**
C410.5	**3**	**3**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**3**	**3**	**3**
C410	**3**	**3**	**3**	**2.67**	**3**	**-**	**-**	**-**	**-**	**-**	**2.4**	**3**	**3**	**3**

Course Code &Name: **C411 – Professional Ethics in Engineering**

REGULATION: R2013

YEAR/SEM: I/ I

COURSE OUTCOMES

C411.1	**AN**	To **Study** about the Ethics and Values for Engineers and understand about the values of human being.
C411.2	**U**	To **Understand** about the senses of Engineering Ethics and overview of professional roles.
C411.3	**AN**	To **Analyze** the human experimentation and code of ethics for engineers in society.
C411.4	**AP**	To **Know** about the safety, risk, credence and also the employees right and values in organizations.
C411.5	**AP**	To **Identify** the level of MNC Corporations and Global issues.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C411.1	**-**	**-**	**-**	**-**	**-**	**3**	**3**	**3**	**3**	**-**	**-**	**3**	**3**	**2**
C411.2	**-**	**-**	**2**	**-**	**-**	**3**	**3**	**-**	**2**	**2**	**-**	**3**	**-**	**2**
C311.3	**-**	**-**	**3**	**-**	**-**	**2**	**2**	**-**	**-**	**-**	**-**	**3**	**-**	**2**
C411.4	**-**	**-**	**-**	**-**	**-**	**2**	**3**	**-**	**-**	**-**	**-**	**2**	**-**	**2**
C411.5	**-**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**	**2**
C411	**-**	**-**	**2.33**	**-**	**-**	**2.5**	**2.75**	**3**	**2.5**	**2**	**-**	**2.6**	**3**	**2**

Course Code &Name: C412 – Project Work

REGULATION: R2013

YEAR/SEM: I/ I

COURSE OUTCOMES

C412.1	**AP**	**Apply** the fundamentals of mathematics, science and engineering knowledge to identify, formulate the design and investigate complex engineering problem of electrical and electronics engineering and allied applications.
C412.2	**AP**	**Apply** appropriate techniques and modern engineering hardware and software tools in electrical and electronics engineering and allied applications.
C412.3	**AP**	**Apply** reasoning informed by the contextual knowledge to asses societal, health, safety, legal and cultural issues with societal and environmental context, applying ethical principles in the field of electrical and electronics engineering and allied application.
C412.4	**AN**	**Analyze** the Function effectively as an individual and as a member or leader in diverse teams in multidisciplinary settings and make effective presentation, and communicate effectively.
C412.5	**U**	**Demonstrate** the understanding of the engineering and management principles in multidisciplinary environments to engage in lifelong learning in the broadest context of technological change.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C412.1	3	3	2	3	3	2	3	2	2	2	3	3	3	3
C412.2	3	3	2	3	3	2	3	2	2	2	3	3	3	3
C412.3	3	3	2	3	3	2	3	2	2	2	3	3	3	3
C412.4	3	3	2	3	3	2	3	3	3	3	3	3	3	3
C412.5	3	3	2	3	3	2	3	3	3	3	3	3	3	3
C412	3	3	2	3	3	2	3	2.4	2.4	2.4	3	3	3	3

PRINCIPAL
GNANAMANI COLLEGE OF TECHNOLOGY,
NH-7, A.K. Samuthiram,
Pachal (Po), Namakkal-637 018

Course Code &Name: **C101 - Applied Mathematics for Electrical Engineers**

REGULATION: R2017

YEAR/SEM: I/ I

COURSE OUTCOMES

C101.1	**AP**	Apply various methods in matrix theory to solve system of linear equations
C101.2	**AP**	Analyze Maximizing and minimizing functional that occur in electrical engineering
C101.3	**AN**	Computation of probability and moments, standard distributions of discrete and continuous random variables
C101.4	**AN**	Develop fundamental understanding of linear programming models. Apply simplex method for solving linear programming problems
C101.5	**AN**	Analysis Fourier series and uses in representing the power signals

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C101.1	3	2	3	2	-	-	-	-	-	-	2	2	2	
C101.2	3	2	3	2	-	-	-	-	-	-	2	2	2	
C101.3	3	2	2	2	-	-	-	-	-	-	2	2	2	
C101.4	3	2	2	2	-	-	-	-	-	-	2	2	2	
C101.5	3	2	-	2	-	-	-	-	-	-	-	2	2	
C101	3	2	2.5	2	-	-	-	-	-	-	2	2	2	

Course Code &Name: **C102 – Advanced Digital Principle and Design**

REGULATION: R2017

YEAR/SEM: I/ I

COURSE OUTCOMES

C102.1	**AN**	Analyze and design sequential digital circuits
C102.2	**AN**	Analyze the fundamentals of Asynchronous circuits.
C102.3	**C**	Design and analyze on fault identification in digital switching circuits.
C102.4	**C**	Design and use programming tools for implementing digital circuits of industry standards
C102.5	**AP**	Acquire knowledge about HDL programming.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C102.1	3	3	3	2	-	-	-	-	-	2	2	3	3	2
C102.2	3	3	3	2	-	-	-	-	-	2	2	3	3	2
C102.3	3	3	3	2	-	-	-	-	-	2	2	3	3	2
C102.4	3	2	3	2	2	-	-	-	2	2	2	3	3	2
C102.5	3	2	3	-	2	-	-	-	2	2	2	3	3	2
C102	3	2.6	3	2	2	-	-	-	2	2	2	3	3	2

Course Code &Name: **C103 – Microcontroller Based System Design**

REGULATION: R2017

YEAR/SEM: I/ I

COURSE OUTCOMES

C103.1	**U**	Describe the architecture, instruction sets and peripherals of the 8051 microcontroller.
C103.2	**AP**	Write programs for 8051 microcontroller to interfacing the peripheral devices.
C103.3	**U**	Describe the architecture, instruction sets and peripherals of the PIC microcontroller.
C103.4	**AP**	Write programs for PIC microcontroller to interfacing the I/O devices.
C103.5	**U**	Distinguish and summarize the various components in system design using microcontroller.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C103.1	3	-	-	-	-	-	-	-	-	2	2	3	2	2
C103.2	3	2	2	-	2	-	-	-	-	-	2	3	2	2
C103.3	3	-	-	-	-	-	-	-	-	2	2	3	2	2
C103.4	3	2	2	-	2	-	-	-	-	-	2	3	2	2
C103.5	3	2	-	2	2	-	-	-	-	2	2	3	2	2
C103	3	2	2	2	2	-	-	-	-	2	2	3	2	2

Course Code &Name: **C104 – Design of Embedded Systems**

REGULATION: R2017

YEAR/SEM: I/ I

COURSE OUTCOMES

C104.1	**U**	An ability to design a system, component or process to meet desired need within realistic constrains such as safety, manufacturability and sustainability.
C104.2	**AP**	Describe the differences between the general computing system and the embedded system, recognize the classification of embedded systems.
C104.3	**E**	Design real time embedded systems using the concepts of RTOS
C104.4	**U**	Foster ability to understand the role of embedded systems in industry.
C104.5	**AP**	Describe the difference between the general computing system and the embedded system, also recognize the classifications of embedded systems.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C104.1	3	3	2	2	-	-	-	-	-	2	2	3	3	2
C104.2	3	3	2	2	-	-	-	-	-	2	2	3	3	2
C104.3	3	3	3	2	3	-	-	-	-	2	2	3	3	2
C104.4	3	3	2	2	-	-	-	-	-	2	2	3	3	2
C104.5	3	3	2	2	-	-	-	-	-	2	2	3	3	2
C104	3	3	2.2	2	3	-	-	-	-	2	2	3	3	2

Course Code &Name: **C105 – Software for Embedded Systems**

REGULATION: R2017

YEAR/SEM: I/ I

COURSE OUTCOMES

C105.1	**U**	Understand elements of C Programming language.
C105.2	**AP**	Ability to use GNU C to develop embedded software.
C105.3	**U**	Able to familiarize embedded system software and hardware development tools.
C105.4	**AN**	Design paradigms, architectures, possibilities and challenges with respect to hardware and software.
C105.5	**U**	Apply the knowledge of Python programming.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C105.1	3	2	3	2	2	-	-	-	-	2	2	3	3	2
C105.2	3	2	3	2	2	-	-	-	-	2	2	3	3	2
C105.3	3	2	3	2	2	-	-	-	-	2	2	3	3	2
C105.4	3	2	3	2	2	-	-	-	-	2	2	3	3	2
C105.5	3	2	3	2	2	-	-	-	-	2	2	3	3	2
C105	3	2	3	2	2	-	-	-	-	2	2	3	3	2

Course Code &Name: **C106 - Advanced Computer Architecture and Parallel Processing**

REGULATION: R2017

YEAR/SEM: I/ I

COURSE OUTCOMES

C106.1	**AP**	Explore the fundamentals of parallel processing.
C106.2	**U**	Understand the operations of various interconnections, multiprocessor and multicomputer systems
C106.3	**U**	Describe the operation of various advanced processor technology, pipelining and scalable architectures.
C106.4	**U**	Understand the principles of multi threading, multithread architecture and dynamic data flow
C106.5	**U**	Introduce the features of OS for multi programmed computer

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C106.1	3	2	2	2	-	-	-	-	-	2	2	3	3	2
C106.2	3	2	2	2	-	-	-	-	-	2	2	3	3	2
C106.3	3	2	2	2	-	-	-	-	-	2	2	3	3	2
C106.4	3	2	2	-	-	-	-	-	-	2	2	3	3	2
C106.5	3	2	2	2	-	-	-	-	-	2	2	3	3	2
C106	3	2	2	2	-	-	-	-	-	2	2	3	3	2

Course Code &Name: **C107 – Embedded System Lab I**

REGULATION: R2017

YEAR/SEM: I/ I

COURSE OUTCOMES

C107.1	**AP**	Write basic I/O programming for 8051 and PIC microcontrollers.
C107.2	**AP**	Write interrupt and Time programs for 8051 and PIC microcontrollers.
C107.3	**E**	Design an embedded system by interfacing peripherals like ADC, LCD, Keypad, Switches, timer and Counter applications.
C107.4	**AP**	Write simple code snippets for Arduino development boards.
C107.5	**E**	Design a basic application using Arduino development boards.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C107.1	3	3	2	2	3	-	-	-	2	3	2	3	3	2
C107.2	3	3	2	2	3	-	-	-	2	3	2	3	3	2
C107.3	3	3	3	2	3	-	-	-	2	3	2	3	3	2
C107.4	3	3	2	2	3	-	-	-	2	3	2	3	3	2
C107.5	3	3	2	2	3	-	-	-	2	3	2	3	3	2
C107	3	3	2.2	2	3	-	-	-	2	3	2	3	3	2

Course Code &Name: **C108 – Real Time Operating Systems**

REGULATION: R2017

YEAR/SEM: I/ II

COURSE OUTCOMES

C108.1	**U**	Familiarize with key Real time operating system terms and concepts.
C108.2	**AP**	Comprehend and use tools to build embedded real time systems.
C108.3	**C**	Design and implement simple embedded systems.
C108.4	**U**	Understand the concepts of various RTOS for embedded system
C108.5	**AP**	Apply RTOS concepts to design for real time applications.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C108.1	3	2	2	-	-	-	-	-	-	2	2	3	3	2
C108.2	3	2	2	2	-	-	-	-	-	2	2	3	3	2
C108.3	3	2	2	-	-	-	-	-	-	2	2	3	3	2
C108.4	3	2	2	-	-	-	-	-	-	2	2	3	3	2
C108.5	3	2	2	2	-	-	-	-	-	2	2	3	3	2
C108	3	2	2	2	-	-	-	-	-	2	2	3	3	2

Course Code &Name: **C109 – Pervasive Devices and Technologies**

REGULATION: R2017

YEAR/SEM: I/ II

COURSE OUTCOMES

C109.1	**AP**	Expose the fundamentals of wireless sensors technology and its classifications.
C109.2	**E**	Develop a framework for pervasive computing.
C109.3	**E**	Discuss the commercial wireless technology. Identify distinguishing features of the different mobile device categories, namely, Pocket PCs, Personal Digital Assistants (PDAs), and wireless phones.
C109.4	**U**	Describe the building of sensor networks, communication in zigbee network and sensor networks protocols.
C109.5	**C**	Design and develop a pervasive computing device for a specific need.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C109.1	3	2	2	2	-	-	-	-	-	2	2	3	3	2
C109.2	3	2	2	2	3	-	-	-	-	2	2	3	3	2
C109.3	3	2	2	2	3	-	-	-	-	2	2	3	3	2
C109.4	3	2	2	2	-	-	-	-	-	2	2	3	3	2
C109.5	3	2	2	2	-	-	-	-	-	2	2	3	3	2
C109	3	2	2	2	3	-	-	-	-	2	2	3	3	2

Course Code &Name: **C110 - RISC PROCESSOR ARCHITECTURE AND PROGRAMMING**

REGULATION: R2017

YEAR/SEM: I/ II

COURSE OUTCOMES

C110.1	**U**	Describe the architecture of AVR processor.
C110.2	**U**	Understanding on the concepts ARM Architecture, programming and application development.
C110.3	**U**	Discuss the application development in RISC processor.
C110.4	**AN**	Identify the architectural support of ARM for operating system and analyze the function of memory Management unit of ARM.
C110.5	**AP**	Design and develop programming for different applications.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C110.1	3	2	2	2	-	-	-	-	2	3	2	3	3	2
C110.2	3	2	2	2	2	-	-	-	2	3	2	3	3	2
C110.3	3	2	2	2	2	-	-	-	2	3	2	3	3	2
C110.4	3	2	2	2	2	-	-	-	2	3	2	3	3	2
C110.5	3	2	2	2	-	-	-	-	2	3	2	3	3	2
C110	3	2	2	2	2	-	-	-	2	3	2	3	3	2

Course Code &Name: **C111 - INTERNET OF THINGS**

REGULATION: R2017

YEAR/SEM: I/ II

COURSE OUTCOMES

C111.1	**U**	Understanding the basic concepts of IOT and its present developments.
C111.2	**U**	Describe the IOT architecture and its role in real time applications.
C111.3	**AP**	Acquire knowledge about different platforms and Infrastructure for IOT.
C111.4	**AP**	Implementing data analysis of IOT for smart applications and control
C111.5	**AP**	Familiarize the different platforms and attributes for IOT.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C111.1	3	2	2	2	3	-	-	-	-	2	2	3	3	2
C111.2	3	2	2	2	3	-	-	-	-	2	2	3	3	2
C111.3	3	2	2	2	3	-	-	-	-	2	2	3	3	2
C111.4	3	2	2	-	3	-	-	-	-	2	2	3	3	2
C111.5	3	2	2	2	3	-	-	-	-	2	2	3	3	2
C111	3	2	2	2	3	-	-	-	-	2	2	3	3	2

Course Code &Name: **C112 - ADVANCED DIGITAL SIGNAL PROCESSING**

REGULATION: R2017

YEAR/SEM: I/I I

COURSE OUTCOMES

C112.1	**U**	Expose the fundamental of digital processing in frequency domain and its application
C112.2	**U**	Comprehend the DFTs and FFTs, design and Analyze the digital filters, comprehend the Finite word length effects in Fixed point DSP Systems.
C112.3	**C**	Discuss the various adaptive filters and its applications.
C112.4	**AN**	Comparison on commercial available DSP system design through processor interface.
C112.5	**AN**	Design and analyses of interfacing of I/O peripherals for DSP based applications

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C112.1	3	2	2	-	-	-	-	-	-	3	2	3	3	2
C112.2	3	2	2	2	-	-	-	-	-	3	2	3	3	2
C112.3	3	2	2	2	-	-	-	-	-	3	2	3	3	2
C112.4	3	2	2	2	-	-	-	-	-	3	2	3	3	2
C112.5	3	2	2	-	-	-	-	-	-	3	2	3	3	2
C112	3	2	2	2	-	-	-	-	-	3	2	3	3	2

Course Code &Name: **C113 - AUTOMOTIVE EMBEDDED SYSTEM**

REGULATION: R2017

YEAR/SEM: I/I I

COURSE OUTCOMES

C113.1	**AP**	Expose the fundamentals and building of Electronic engine control systems.
C113.2	**U**	Describe the properties of fuel cell for vehicles and study their characteristics.
C113.3	**U**	Discuss on the programmable controllers, EMS and PMS for vehicles.
C113.4	**C**	Design logics of automation and commercial techniques for vehicle communications.
C113.5	**AN**	Analyze the system diagnostics standards and regulation requirements for vehicles.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C113.1	3	2	2	2	-	-	-	-	-	2	2	3	3	2
C113.2	3	2	2	2	-	-	-	-	-	2	2	3	3	2
C113.3	3	2	2	2	3	-	-	-	-	2	2	3	3	2
C113.4	3	2	2	2	-	-	-	-	-	2	2	3	3	2
C113.5	3	2	2	2	-	-	-	-	-	2	2	3	3	2
C113	3	2	2	2	3	-	-	-	-	2	2	3	3	2

Course Code &Name: **C114 - EMBEDDED SYSTEM LAB II**

REGULATION: R2017

YEAR/SEM: I/ II

COURSE OUTCOMES

C114.1	**C**	Design and Write basic I/O programming the program with ARM processor and DSP processor.
C114.2	**C**	Design a basic application program using Rasberry Pi microcontroller boards.
C114.3	**C**	Design a programming and simulation in GUI simulator .
C114.4	**C**	Design a programming and simulation in Python simulator and freeware software.
C114.5	**AP**	Write the program with wired and wireless communication protocol using network simulator.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C114.1	3	2	2	2	3	-	-	-	2	2	2	3	3	2
C114.2	3	2	2	2	3	-	-	-	2	2	2	3	3	2
C114.3	3	2	2	2	3	-	-	-	2	2	2	3	3	2
C114.4	3	2	2	2	3	-	-	-	2	2	2	3	3	2
C114.5	3	2	2	2	3	-	-	-	2	2	2	3	3	2
C114	3	2	2	2	3	-	-	-	2	2	2	3	3	2

Course Code &Name: **C201 – WIRELESS AND MOBILECOMMUNICATIONS**

REGULATION: R2017

YEAR/SEM: II / III

COURSE OUTCOMES

C201.1	**AP**	Expose the fundamentals of Wireless communication technologies.
C201.2	**AP**	Describe the fundamentals of wireless mobile network protocols
C201.3	**AP**	Discuss the operation of wireless network topologies.
C201.4	**AP**	Describe the operation of network routing protocols.
C201.5	**AN**	Analysis of architecture and write programming in transport and application layers.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C201.1	3	2	2	-	3	-	-	-	-	2	2	3	3	2
C201.2	3	2	2	3	-	-	-	-	-	2	2	3	3	2
C201.3	3	2	2	3	3	-	-	-	-	2	2	3	3	2
C201.4	3	2	2	3	3	-	-	-	-	2	2	3	3	2
C201.5	3	2	2	-	3	-	-	-	-	2	2	3	3	2
C201	3	2	2	3	3	-	-	-	-	2	2	3	3	2

Course Code &Name: **C201 - CRYPTOGRAPHY AND NETWORK SECURITY**
REGULATION: R2017

YEAR/SEM: I/ III

COURSE OUTCOMES

C201.1	**AP**	Identify the major types of threats to security and the associated attacks.
C201.2	**AP**	Describe the major types of cryptographic algorithms and typical applications, write code to encrypt and decrypt information using standard algorithms
C201.3	**AP**	Exposed to original research in network security and master information security governance, and related legal and regulatory issues.
C201.4	**AP**	Discuss the fundamentals of secured system operation.
C201.5	**AP**	Describe the fundamentals of security in data and wireless communications.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C201.1	3	2	2	3	-	-	-	-	-	2	2	3	3	2
C201.2	3	2	2	-	2	-	-	-	-	2	2	3	3	2
C201.3	3	2	2	3	2	-	-	-	-	2	2	3	3	2
C201.4	3	2	2	3	-	-	-	-	-	2	2	3	3	2
C201.5	3	2	2	-	2	-	-	-	-	2	2	3	3	2
C201	3	2	2	3	2	-	-	-	-	2	2	3	3	2

Course Code &Name: **C203 - ROBOTICS AND CONTROL**

REGULATION: R2017

YEAR/SEM: II / III

COURSE OUTCOMES

C203.1	**U**	Understand the components and basic terminology of Robotics
C203.2	**U**	Describe the direct and inverse kinematic relations.
C203.3	**AN**	Model the motion of Robots and analyze the workspace and trajectory panning of robots
C203.4	**E**	Educate on the dynamic modeling of robots.
C203.5	**U**	Describe the different robot control techniques.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C203.1	3	2	2	2	3	-	-	-	-	2	2	3	3	2
C203.2	3	2	2	-	-	-	-	-	-	2	2	3	3	2
C203.3	3	2	2	2	3	-	-	-	-	2	2	3	3	2
C203.4	3	2	2	2	-	-	-	-	-	2	2	3	3	2
C203.5	3	2	2	-	3	-	-	-	-	2	2	3	3	2
C203	3	2	2	2	3	-	-	-	-	2	2	3	3	2

Course Code &Name: **C204 - PROJECT WORK PHASE I**

REGULATION: R2017

YEAR/SEM: II/ III

COURSE OUTCOMES

C204.1	**AN**	Analyze various aspects of topics, review quality of literature survey, synthesizes knowledge and novelty in the problem.
C204.2	**AP**	Assess clarity of problem definition and feasibility of problem solution.
C204.3	**AN**	Validate the relevance to the specialization.
C204.4	**AP**	Acquire knowledge on the clarity of objective and scope.
C204.5	**C**	Develop effective communication skills to present and defend their research work to a panel experts.

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
C204.1	**3**	**2**	**3**	**2**	**3**	**2**	**2**	**2**	**2**	**3**	**2**	**3**	**3**	**2**
C204.2	**3**	**2**	**3**	**2**	**3**	**2**	**2**	**2**	**2**	**3**	**2**	**3**	**3**	**2**
C204.3	**3**	**2**	**3**	**2**	**3**	**2**	**2**	**2**	**2**	**3**	**2**	**3**	**3**	**2**
C204.4	**3**	**2**	**3**	**2**	**3**	**2**	**2**	**2**	**2**	**3**	**2**	**3**	**3**	**2**
C204.5	**3**	**2**	**3**	**2**	**3**	**2**	**2**	**2**	**2**	**3**	**2**	**3**	**3**	**2**
C204	**3**	**2**	**3**	**2**	**3**	**2**	**2**	**2**	**2**	**3**	**2**	**3**	**3**	**2**

Course Code &Name: **C205 – TECHNICAL SEMINAR**

REGULATION: R2017

YEAR/SEM: II/ III

COURSE OUTCOMES

C205.1	**AP**	**Prepare** and present the technical topics in the field of Embedded systems
C205.2	**AN**	**Analyze** objective type questions in the field of Embedded systems
C205.3	**AP**	**Apply** the knowledge to present the topic.
C205.4	**U**	**Review**, prepare and present technological developments
C205.5	**AP**	**Prepare** and attend the technical placement interview effectively

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C205.1	3	2	-	-	-	-	-	-	2	2	-	2	3	2
C205.2	3	2	-	-	-	-	-	2	2	2	-	2	3	2
C205.3	3	2	-	-	-	-	-	2	-	3	-	2	-	2
C205.4	2	2	-	-	-	-	-	2	-	3	-	2	-	2
C205.5	3	2	-	-	-	-	-	-	2	3	1	2	-	2
C205	2.8	2	-	-	-	-	-	2	2	2.6	1	2	3	2

Course Code &Name: C206 - PROJECT WORK PHASE II

REGULATION: R2017

YEAR/SEM: II / IV

COURSE OUTCOMES

C206.1	**AN**	Identify the real time applications in Embedded system problem.
C206.2	**AN**	Analyze and design component or process to meet desire needs within realistic constrain and implement solutions methodologies
C206.3	**AP**	Apply modern engineering tools for solutions.
C206.4	**U**	Write technical reports following professional ethics.
C206.5	**C**	Develop effective communication skills to present and defend their research work to a panel of experts.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C206.1	3	2	3	2	2	2	2	2	2	3	2	3	3	2
C206.2	3	2	3	2	2	2	2	2	2	3	2	3	3	2
C206.3	3	2	3	2	2	2	2	2	2	3	2	3	3	2
C206.4	3	2	3	2	2	2	2	2	2	3	2	3	3	2
C206.5	3	2	3	2	2	2	2	2	2	3	2	3	3	2
C206	3	2	3	2	2	2	2	2	2	3	2	3	3	2

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