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List of COs for UG courses under Anna University Regulation 2017

Department of Electrical and Electronics Engineering	
Semester : I **Course Code & Name** : HS8151 & Communicative English **Year of Study** : 2017 – 2018, 2018 – 2019	
COs No.	**Course Outcome**
C101.1	**Speak** and express their opinions clearly, initiate a discussion, negotiate, argue using appropriate communicative strategies
C101.2	**Write** effectively and persuasively and produce different types of writing as creative, critical, analytical and evaluative writing
C101.3	**Read** different genres of texts, infer implied meanings and critically analyze and evaluate them for ideas as well as for method of presentation
C101.4	**Realize** the essentiality of the informal conversation
C101.5	**Understand** the different qualities expected in the interviews and they realize the importance of GD
Semester : I **Course Code & Name** : MA8151 & Engineering Mathematics – I **Year of Study** : 2017 – 2018, 2018 – 2019	
COs No.	**Course Outcome**
C102.1	**Apply** the mathematical knowledge of rules of differentiation to differentiate one variable Function
C102.2	**Apply** and understand the knowledge of differentiation to solve value of the function
C102.3	**Classify** and able to Identify the substitution rules
C102.4	**Identify** the Basic knowledge and understanding in one field of area and volume of solid materials
C102.5	**Identify** a basic knowledge and understanding techniques in solving differential equations
Semester : I **Course Code & Name** : PH8151 & Engineering Physics **Year of Study** : 2017 – 2018, 2018 – 2019	
COs No.	**Course Outcome**
C103.1	**Analyze** the various elastic behavior of materials
C103.2	**Classify** the different types of lasers and optical fibers and its power losses
C103.3	**Explain** the different thermal properties of materials
C103.4	**Illustrate** the time dependent and time independent wave equations
C103.5	**Understand** the structures and properties of crystals
Semester : I **Course Code & Name** : CY8151 & Engineering Chemistry **Year of Study** : 2017 – 2018, 2018 – 2019	
COs No.	**Course Outcome**
C104.1	**Understand** the water parameters; requirements of boiler feed water and different water treatment techniques
C104.2	**Understand** the basic concept of adsorption, theories and its mechanism

C104.3	**Select** the appropriate eutectic mixtures of suitable alloys
C104.4	**Acquire** the knowledge about the manufacture of solid, liquid and gaseous fuel to meet environmental sustainability
C104.5	**Relate** the principle and generation of energy in battery, Nuclear reactor , Solar cells, Wind mill and fuel cell for future
Semester : I **Course Code & Name** : GE8151 & Problem Solving and Python Programming **Year of Study** : 2017 – 2018, 2018 – 2019	
COs No.	**Course Outcome**
C105.1	**Develop** algorithmic solutions to simple computational problems
C105.2	**Read, write, execute** by hand simple Python programs
C105.3	**Structure** Python programs with functions for solving problems
C105.4	**Represent** compound data using Python lists, tuples, dictionaries
C105.5	**Read and write** data from/to files in Python Programs
Semester : I **Course Code & Name** : GE8152 & Engineering Graphics **Year of Study** : 2017 – 2018, 2018 – 2019	
COs No.	**Course Outcome**
C106.1	Graphically **construct and understand** the importance of conical curves and orthographical projections in engineering applications
C106.2	**Draw** the basic views related to projections of Lines, Planes
C106.3	**Draw** the projections of solids
C106.4	**Sectioned and develop** the surface of geometrical objects
C106.5	**Interpret** Isometric and Perspective views of object
Semester : I **Course Code & Name** : GE8161 & Problem Solving and Python Programming Laboratory **Year of Study** : 2017 – 2018, 2018 – 2019	
COs No.	**Course Outcome**
C107.1	**Write, test, and debug** simple Python programs
C107.2	**Implement** Python programs with conditionals and loops
C107.3	**Develop** Python programs step-wise by defining functions and calling them
C107.4	**Use** Python lists, tuples, dictionaries for representing compound data
C107.5	**Read and write** data from/to files in Python
Semester : I **Course Code & Name** : BS8161 & Physics and Chemistry Laboratory **Year of Study** : 2017 – 2018, 2018 – 2019	
COs No.	**Course Outcome**
C108.1	**Determine** wavelength of mercury spectrum and velocity of sound
C108.2	**Determine** the Young's modulus of the materials, Band gap of the semiconductor materials
C108.3	**Estimate** the Hardness , chloride, alkalinity and dissolved oxygen in water samples
C108.4	**Determine** the amount of simple acid base, mixture of acids by Conductometric titration & Potentiometric titration
Semester : II **Course Code & Name** : HS8251 & Technical English **Year of Study** : 2017 – 2018, 2018 – 2019	
Cos No.	**Course Outcome**
C109.1	**Speak** and express their opinions clearly, initiate a discussion, negotiate, argue using appropriate communicative strategies
C109.2	**Write** effectively and persuasively and produce different types of writing as creative, critical, analytical and evaluative writing
C109.3	**Read** different genres of texts, infer implied meanings and critically analyze and evaluate them for ideas as well as for method of presentation
C109.4	**Realize** the essentiality of the informal conversation

C109.5	**Understand** the different qualities expected in the interviews and they realize the importance of GD
Semester : II **Course Code & Name** : MA8251 & Engineering Mathematics - II **Year of Study** : 2017 – 2018, 2018 – 2019	
COs No.	**Course Outcome**
C110.1	**Analyze** the Eigen values and Eigen vectors, Cauley Hamilton from matrix
C110.2	**Classify** the basic formula and solve problem related to vector and scalar point function
C110.3	**Identify** and find the analytic function satisfy Cauchy - Riemann equation
C110.4	**Apply** Cauchy - Riemann formula, Taylors and Laurents to solve complex integration
C110.5	**Acquire** the student with Laplace transforms techniques used in variety of situations
Semester : II **Course Code & Name** : PH8253 & Physics for Electronics Engineering **Year of Study** : 2017 – 2018, 2018 – 2019	
COs No.	**Course Outcome**
C111.1	Gain knowledge on classical and quantum electron theories and energy band theories
C111.2	Acquire knowledge on basics of semiconductor physics and its applications in various devices
C111.3	Get knowledge on magnetic and dielectric properties of materials
C111.4	Understand the functioning of optical materials for optoelectronics
C111.5	Apply the basics of quantum structures applications in Spintronics and carbon electronics
Semester : II **Course Code & Name** : BE8252 & Basic Civil and Mechanical Engineering **Year of Study** : 2017 – 2018, 2018 – 2019	
COs No.	**Course Outcome**
C112.1	**Explain** the working principles of various power plants and differentiate the pumps and turbines.
C112.2	**State** the functions of IC engine and classify the various types of boilers
C112.3	**Apply** the principles of vapor absorption and compression systems and Explain the Operation of air conditioner
C112.4	**Apply** the principles of surveying and use various measurements for surveying and study about various engineering materials and leveling instruments
C112.5	**Classify** the types of bridges, foundation, floorings, roofs, plasters and R.C.C structural members and state the purpose of dam
Semester : II **Course Code & Name** : EE8251 & Circuit Theory **Year of Study** : 2017 – 2018, 2018 – 2019	
COs No.	**Course Outcome**
C113.1	**Analyze** the electrical circuits using appropriate methods and laws
C113.2	**Apply** the circuit theorem to solve simple and complex circuits
C113.3	**Analyze** the transient response in RLC Circuits
C113.4	**Analyze** the three phase circuit in balanced and unbalanced load condition
C113.5	**Analyze** the resources in single and double tuned circuits
Semester : II **Course Code & Name** : GE8291 & Environmental Science and Engineering **Year of Study** : 2017 – 2018, 2018 – 2019	
COs No.	**Course Outcome**
C114.1	**Recall** the nature and facts about the environment
C114.2	**Apply** the scientific, technological, economic and political solutions to environmental pollutions

C114.3	**Discuss** the integrated themes of natural resources and its need for sustainable life style
C114.4	**Relate** the social issues, acquiring knowledge about the societal and legal responsibilities of individuals
C114.5	**Aware** about population growth, family welfare, human health and value education
Semester : II **Course Code & Name** : GE8261 & Engineering Practices Laboratory **Year of Study** : 2017 – 2018, 2018 – 2019	
COs No.	**Course Outcome**
C115.1	**Design and fabricate** various carpentry joints like tee, dovetail, cross-lap, mortise & Tenon joints; **Design** and carryout various plumbing works like pipe connections
C115.2	**Design and model** arc welding joints like butt, lap & tee joints; **Perform** machining operations like turning, taper turning, drilling, reaming and tapping; **Design and fabricate** sheet metal components like tray, funnel, cone
C115.3	**Design and fabricate** electrical circuits for basic domestic electrical works and appliances; **Measure** electrical parameters using measuring instruments
C115.4	**Describe** the basic electronic components and logic gates**; Measure** the ripple factor for HWR and FWR**; Elaborate** the soldering practices
Semester : II **Course Code & Name** : EE8261 & Electric Circuits Laboratory **Year of Study** : 2017 – 2018, 2018 – 2019	
COs No.	**Course Outcome**
C116.1	**Apply** and **Simulate** KCL, KVL and Network Theorems to Simple and Complex circuits
C116.2	**Demonstrate** the working of CRO and Determine the Time Constant of RC & RLC circuit
C116.3	**Determine** frequency response of RLC circuits and **simulate** series, parallel resonant circuit
C116.4	**Simulate** three phase balanced, unbalanced, star and delta circuits
C116.5	**Demonstrate** the working of digital storage CRO
Semester : III **Course Code & Name** : MA8353 & Transforms and Partial Differential Equations **Year of Study** : 2018 – 2019	
COs No.	**Course Outcome**
C201.1	**Solve** first, second order homogeneous and non-homogeneous PDE
C201.2	**Acquire** knowledge and find the Fourier series of a given function satisfying Dirichlet's condition
C201.3	**Apply** Fourier Series to solve one dimensional wave, one and two dimensional heat equations
C201.4	**Acquaint** the student with Fourier transform techniques used in wide variety of situations
C201.5	**Understand** the basics and solve problems related to Z transform techniques for discrete time systems
Semester : III **Course Code & Name** : EE8351 & Digital Logic Circuits **Year of Study** : 2018 – 2019	
COs No.	**Course Outcome**
C202.1	**Familiarize** in basics of Number systems and Digital logic families
C202.2	**Simplify** the Boolean function and design the combinational circuit
C202.3	**Analyze** and design the sequential circuit
C202.4	**Analyze** and design the asynchronous sequential circuit and PLDs
C202.5	**Develop** the VHDL coding for Combinational logic and Sequential circuits and digital **Simulation** for development of application oriented logic circuits

Semester	**:** III
Course Code & Name	**:** EE8391 & Electromagnetic Theory
Year of Study	**:** 2018 – 2019

COs No.	Course Outcome
C203.1	**Describe** various coordinate systems of electric fields using laws
C203.2	**Explain** the concepts of Electrostatic fields and its boundary conditions
C203.3	**Explain** the concepts of Magneto static fields and its boundary conditions
C203.4	**Apply** the Maxwell's equations for electromagnetic fields
C203.5	**Construct** Electromagnetic wave generation equations by applying Maxwell's equations

Semester	**:** III
Course Code & Name	**:** EE8301 & Electrical Machines – I
Year of Study	**:** 2018 – 2019

COs No.	Course Outcome
C204.1	**Describe** the fundamentals of magnetic-circuit and magnetic materials
C204.2	**Explain** the construction, operation, control and testing of Transformer
C204.3	**Explain** the electromagnetic energy conversion concepts in electrical machines
C204.4	**Describe** the construction, operation and characteristics of DC Generator
C204.5	**Describe** the construction, operation and characteristics of DC Motor

Semester	**:** III
Course Code & Name	**:** EC8353 & Electron Devices and Circuits
Year of Study	**:** 2018 – 2019

COs No.	Course Outcome
C205.1	**Describe** the structure and operation of basic electronic devices
C205.2	**Classify** the different types of transistors based on its structure, operation and characteristics
C205.3	**Choose** the required components to construct an amplifier circuit and **analyze** its frequency response characteristics
C205.4	**Explain** different amplifier circuits and draw frequency response characteristics
C205.5	**Design and analysis** of feedback amplifiers and oscillators

Semester	**:** III
Course Code & Name	**:** ME8792 & Power Plant Engineering
Year of Study	**:** 2018 – 2019

COs No.	Course Outcome
C206.1	**Understand** the functions, flow lines and issues related to coal based thermal power plants
C206.2	**Understand** the functions, flow lines and issues related to Diesel, Gas and combined power plants and analyze the performance of them
C206.3	**Compare** the performance of different types of nuclear reactors used in nuclear power plants
C206.4	**Identify** the alternative energy sources fossil fuels and explain the power generation from renewable energy sources
C206.5	**Analyze** and solve energy and economic related issues in power sectors

Semester	**:** III
Course Code & Name	**:** EC8311 & Electronics Laboratory
Year of Study	**:** 2018 – 2019

COs No.	Course Outcome
C207.1	**Analyze** the characteristics of PN Junction diode, Zener diode, Photo diode and transistor
C207.2	**Apply** the concept of PN Junction diode to design the rectifier system
C207.3	**Analyze** the characteristics of Transistors
C207.4	**Analyze** the frequency response of CE Amplifier and Oscillators
C207.5	**Demonstrate** the working of Passive Filter through CRO

Semester **:** III

Course Code & Name : EE8311 & Electrical Machines Laboratory - I **Year of Study** : 2018 – 2019	
COs No.	**Course Outcome**
C208.1	**Draw and Analyze** the DC shunt and DC Compound Generators
C208.2	**Find** the efficiency of DC motor under load test
C208.3	**Demonstrate** the speed control methods of DC Shunt Motor
C208.4	**Demonstrate** the Hopkinson's test on DC motor – generator set and pre determine the efficiency of DC motor using Swinburne's test
C208.5	**Find** the efficiency and losses of single phase and three phase transformers using appropriate test method
Semester : IV **Course Code & Name** : MA8491 & Numerical Methods **Year of Study** : 2018 – 2019	
COs No.	**Course Outcome**
C209.1	**Determine** the solution of algebraic and transcendental system of linear equations
C209.2	**Interpolate** the values of unknown functions using Newton's Formula
C209.3	**Estimate** the numerical values of the derivatives and integrals of unknown function
C209.4	**Solve** first and second order initial value problem
C209.5	**Solve** Numerically boundary value problem
Semester : IV **Course Code & Name** : EE8401 & Electrical Machines – II **Year of Study** : 2018 – 2019	
COs No.	**Course Outcome**
C210.1	**Explain** constructional details and performance of Salient and Non - Salient type Synchronous generators and to **analyze** its performance
C210.2	**Describe** the Principle of operation of Synchronous Motor and **analyze** its performance
C210.3	**Describe** the construction, principle of operation of Induction Motor and to **analyze** its performance
C210.4	**Explain** the starting and braking, speed control methods of three phase induction motor
C210.5	**Explain** the principle of operation Single Phase Induction Motor and special Electrical Machines
Semester : IV **Course Code & Name** : EE8402 & Transmission and Distribution **Year of Study** : 2018 – 2019	
COs No.	**Course Outcome**
C211.1	**Design** and analyze the parameters of transmission lines and **Explain** the structure of electric power system
C211.2	**Illustrate** the modeling and analyze the Performance of Transmission Lines
C211.3	**Find** the voltage distribution in insulators string and **explain** its testing, **design** of overhead lines in both Mechanical and electrical aspects using Sag calculation
C211.4	**Classify** the types and construction of underground cabilitys
C211.5	**Classify** the types of sub-stations and **Explain** the methods of grounding and FACTS devices
Semester : IV **Course Code & Name** : EE8403 & Measurements and Instrumentation **Year of Study** : 2018 – 2019	
COs No.	**Course Outcome**
C212.1	**Identify** the various functional blocks of an instrument and to select appropriate instruments for voltage and current measurement
C212.2	**Select** suitable type of instrument to measure electric and magnetic parameters
C212.3	**Classify** and differentiate the types of potentiometers & bridges
C212.4	**Select** the appropriate storage and display devices for a system
C212.5	**Apply** the knowledge of transducers in the field of Industrial Automation

Semester	**:** IV
Course Code & Name	**:** EE8451 & Linear Integrated Circuits and Applications
Year of Study	**:** 2018 – 2019

COs No.	Course Outcome
C213.1	**Classify** different types of IC's and its fabrication techniques
C213.2	**Analyze** the characteristics of Op-amp and perform basic arithmetic functions
C213.3	**Apply** Op-amp circuits to perform various applications and **choose** appropriate ADC & DAC for applications
C213.4	**Explain** the special function ICs and its application (IC555, IC566, VCO & IC565)
C213.5	**Design** the higher order applications of op-amp like VCO and function generator

Semester	**:** IV
Course Code & Name	**:** IC8451 & Control Systems
Year of Study	**:** 2018 – 2019

COs No.	Course Outcome
C214.1	**Explain** the control system components and describe the transfer function of physical system
C214.2	**Analyze** the time domain response of the system
C214.3	**Analyze** the open and closed loop frequency responses of systems
C214.4	**Design** the compensators and **Analyze** the stability of the system
C214.5	**Compare** state variables representation of physical systems and **comments** on the effect of stated back

Semester	**:** IV
Course Code & Name	**:** EE8411 & Electrical Machines Laboratory - II
Year of Study	**:** 2018 – 2019

COs No.	Course Outcome
C215.1	**Pre-determine** the regulation of both salient and non-salient pole Alternators by EMF, MMF and ZPF Methods
C215.2	**Analyze** the Characteristics of synchronous motor using V and inverted V curves
C215.3	**Determine** the efficiency and equivalent circuit parameter of Single and three phase induction motor and Analyze the losses of Induction Motor
C215.4	**Analyze** the response of speed variation in slip-ring Induction motor for change in rotor resistance
C215.5	Determine the efficiency and Analyze the losses of Single Phase Induction Motor

Semester	**:** IV
Course Code & Name	**:** EE8461 & Linear and Digital Integrated Circuits Laboratory
Year of Study	**:** 2018 – 2019

COs No.	Course Outcome
C216.1	**Design** Adder, comparator, differentiator, Integrator using Op-Amp and describe VCO, PLL characteristics
C216.2	**Apply** Boolean Functions To Implement Adder, Subtractor, Code Conversion Circuits
C216.3	**Design** Encoder, Decoder, Parity Generator, Checker Circuits
C216.4	**Design** multiplexer, demultiplexer circuit and demonstrate Monostable and Astable operation using 555 timer
C216.5	**Demonstrate** 4 bit synchronous, asynchronous counter and Shift registers

Semester	**:** IV
Course Code & Name	**:** EE8421 & Technical Seminar
Year of Study	**:** 2018 – 2019

COs No.	Course Outcome
C217.1	**Prepare** technical Power point presentation
C217.2	**Present** seminar on recent trends in technology
C217.3	**Communicate** the core knowledge of the technology to the audience