K.L.N. COLLEGE OF ENGINEERING, POTTAPALAYAM
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Year / I   **Regulation 2013**

C101//HS6151/ Technical English - I

C101.1	**Apply the collaborative and social aspects of research and writing processes.**
C101.2	**Comprehend that research and writing is a series of tasks, including accessing, retrieving, evaluating, analyzing and synthesizing appropriate data and information from sources that vary in content, format, structure and scope.**
C101.3	**Use appropriate technologies to organize, present and communicate information to address a range of audiences, purposes and genres.**
C101.4	**Explain the relationships among language, knowledge and power including social, cultural, historical and economic issues related to information, writing and technology.**
C101.5	**Demonstrate the role of a variety of technologies/ media in accessing, retrieving, managing and communicating information.**

C102/MA6151 / Mathematics - I

C102.1	**Find the eigen values and eigen vectors to diagonalise and reduce a matrix to quadratic form**
C102.2	**Check the converges, diverges of infinite series**
C102.3	**Obtain the evaluate and envelopes of a given curves by means of radius and centre of curvature**
C102.4	**Calculate the maxima and minima value functions of two variables**
C102.5	**Find the area of plain curves and volume of solid using double and triple integrals**

C103/PH6151-Engineering Physics-I

C103.1	**Classify the Bravais lattices and different types of crystal structures and growth technique.**
C103.2	**Demonstrate the properties of elasticity and heat transfer through objects**
C103.3	**Explain black body radiation, properties of matter waves and Schrodinger wave equations.**
C103.4	**Illustrate the acoustic requirements, production and application of ultrasonics.**
C103.5	**Examine the characteristics of laser and optical fiber.**

C104/CY6151 -Engineering Chemistry – I

C104.1	Classify the polymers and their utility in the industries and describe the techniques of polymerization & properties of polymers.
C104.2	Relate various thermodynamic functions such as enthalpy, entropy, free energy and their importance and equilibrium constant and its significance
C104.3	Characterize the photophysical processes such as fluorescence and phosphorescence and various components of UV & IR spectrophotometer.
C104.4	Analyze the phase transitions of one component and two component systems and the types of alloys and their application in industries.
C104.5	Describe the synthesis, characteristics and the applications of nano materials

C105/ GE6151-Computer Programming

C105.1	Explain the basic organization of computers, the number systems and write the pseudo code for algorithms and flow chart..
C105.2	Develop 'C' programming fundamentals, looping statements and solve problems.
C105.3	Design 'C' programs for arrays and strings.
C105.4	Use functions with pass by value and reference, pointers in programs.
C105.5	Develop coding in 'C' for structures and unions with storage classes and preprocessor.

C106/ GE6152- Engineering Graphics

C106.1	Construct the conic sections and special curves and outline their practical applications and sketch the orthographic views from pictorial views and models
C106.2	Apply the principles of orthographic projections of points in all quadrants, lines and planes in first quadrant.
C106.3	Draw the projections of simple solids like prisms, pyramids, cylinder and cone and obtain the traces of plane figures
C106.4	Design the sectional views of solids like cube, prisms, pyramids, cylinders & cones and Development of its lateral surfaces
C106.5	Apply the principles of isometric projection and perspective projection of simple solids and truncated prisms, pyramids, cone and cylinders

C107/ GE6161 – Computer Practices Laboratory

C107.1	Prepare data using MS-word & Excel to visualize graphs, charts in MS-Excel.
C107.2	Outline the given problem using flowchart and to program using Switch case & Control structures.
C107.3	Develop the code using decision making & looping statements.
C107.4	Apply passing parameters using Arrays & Functions.
C107.5	Use structure and Union for a given database and to bring out the importance of Unions over structure.

C108/ GE6162 – Engineering Practices Laboratory

C108.1	Demonstrate wiring for a simple residential house, identify the ratings of various appliances like Fluorescent tube, incandescent lamp, etc.
C108.2	Calculate the different Electrical quantities, measure the energy consumption using single phase energy meter.
C108.3	Measure the resistance to earth of an electrical equipment, analyze AC signal parameters using CRO.
C108.4	Verify the Truth tables of Logic gates AND, OR, EOR and NOT, generate clock signal using suitable gates.
C108.5	Develop soldering in a PCB, measure ripple factor of Half Wave Rectifier and Full Wave Rectifier.

C109/ GE6163 - Physics and Chemistry Laboratory – I

C109.1	Evaluate the wavelength of spectral lines using spectrometer, the wavelength of laser, particle size, acceptance angle of an optical fiber using semiconductor diode laser and the thickness of a thin wire through interference fringes using Air wedge apparatus.
C109.2	Appraise the velocity of sound and compressibility of the liquid using ultrasonic interferometer and thermal conductivity for bad conductors using Lee's disc apparatus.
C109.3	Determine the DO content in water sample by Winkler's method and molecular weight of polymer by Ostwald viscometer.
C109.4	Find the strength of an acid using pH meter and conductometer.
C109.5	Estimate the amount of weak and strong acids in a mixture by conductometer.

C110/ HS6251-Technical English-II

C110.1	speak clearly, confidently, comprehensibly, and communicate with one or many listeners using appropriate communicative strategies
C110.2	Write cohesively and coherently and flawlessly avoiding grammatical errors, using a wide vocabulary range, organizing their ideas logically on a topic.
C110.3	Read different genres of texts adopting various reading strategies.
C110.4	listen/view and comprehend different spoken discourses/excerpts in different accents
C110.5	Recognize, understand, and analyze the context within which language, information, and knowledge are produced, managed, organized, and disseminated.

C111/ MA6251-Mathematics-II

C111.1	Find solenoidal, irrotational vectors and explain the concepts of Green's, Gauss divergence , Stokes theorem to evaluate, single double and triple integrals
C111.2	Obtain the P.I. of Cauchy and Legendre Equation , explain the method of variation of parameters and solve simultaneous linear equations
C111.3	evaluate Laplace Transforms of periodic functions and solve the ODE using Inverse Laplace Transform
C111.4	Recall the properties of analytic functions for verifying C-R equations and determine Bilinear Transformation
C111.5	Expand functions of two variables as Taylor's and Laurent's series and evaluate Contour integrals using Cauchy's Integral formula

C112/ PH6251 – Engineering Physics–II

C112.1	Illustrate classical and quantum free electron theory and calculate carrier concentration in metals.
C112.2	Describe the carrier concentration in semi conductors and identify the p-type and n-type semi conductor using hall effect.
C112.3	Classify the different types of magnetic and super conducting materials
C112.4	Explain the dielectrics, types of polarization, losses and breakdown.
C112.5	Discuss the properties, preparation and applications of metallic alloys, SMA, nano materials, NLO, Bio-materials.

C113/ CY6251 – Engineering Chemistry –II

C113.1	Explain the problems of using hard water in boilers and the methods of treatment of water for boiler use.
C113.2	Design the electrochemical cells and to identify the types of corrosion and the methods of preventing..
C113.3	Illustrate the methods of harnessing energy from non-conventional energy sources.
C113.4	Classify various engineering materials and their importance.
C113.5	Relate the significance of solid, liquid and gaseous fuels and to calculate the calorific values of fuels and the requirement of air for combustion in furnaces.

C116/ GE6262 - Physics and Chemistry Laboratory – II

C116.1	Explain the problems of using hard water in boilers and the methods of treatment of water for boiler use.
C116.2	Design the electrochemical cells and to identify the types of corrosion and the methods of preventing..
C116.3	Illustrate the methods of harnessing energy from non-conventional energy sources.
C116.4	Classify various engineering materials and their importance.
C116.5	Relate the significance of solid, liquid and gaseous fuels and to calculate the calorific values of fuels and the requirement of air for combustion in furnaces.

C201/MA6351- Transforms and Partial differential equations

C201.1	Find the Fourier series of a given function satisfying Dirchlet's condition
C201.2	Determine Fourier transform for a given function and use them to evaluate certain definite Integrals.
C201.3	Solve First, Second order homogeneous and non homogeneous partial differential equations.
C201.4	Apply Fourier series to solve one dimensional way, one and two dimensional heat equations.
C201.5	Determine z transforms of standard functions and use them to solve difference equations

C202-CS6301-Programming and Data Structure II

C202.1	Explain the fundamentals of Object Oriented Programming
C202.2	Demonstrate the concepts of data abstraction, encapsulation and inheritance
C202.3	Outline the concepts of Exception handling and templates
C202.4	Summarize about tree preliminaries and other tree structures
C202.5	Demonstrate different graph data structure algorithms

C203- CS6302- Database Management Systems

C203.1	Illustrate the database design for applications.
C203.2	Make use of ER diagram and normalization techniques in database application
C203.3	Apply concurrency control & recovery mechanism for database problems.
C203.4	Apply the various concepts in query processing.
C203.5	Compare various storage techniques in data mining.

C204-CS6303- Computer Architecture

C204.1	Explain the computer organization components, instructions and addressing modes
C204.2	Demonstrate arithmetic operations
C204.3	Interpret the basic of MIPS implementation and pipelining
C204.4	Outline the concept of parallelism and multi-core processor
C204.5	Classify the memory technologies and I/O systems

C205- CS6304- Analog and Digital Communication

C205.1	Illustrate analog communication techniques
C205.2	Explain digital communication techniques
C205.3	Illustrate data and pulse communication techniques
C205.4	Make use of various error control coding techniques to identify/correct errors
C205.5	Outline multi-user radio communication

C206- GE6351- Environmental Science and Engineering

C206.1	Understand the values, threats and conservation of biodiversity and classify various Ecosystems.
C206.2	Identify and implement technological and economical solution to environmental pollution
C206.3	Develop the knowledge on various natural resources, their causes and their effects.
C206.4	Explain various environmental acts and disaster management
C206.5	Relate population and environment and the role of IT in environment and human health..

C207- CS6311- Programming and Data Structure Laboratory II

C207.1	Select good programming design methods for program development.
C207.2	Develop C++ programs for object oriented concepts.
C207.3	Develop C++ programs for handling exceptions.
C207.4	Develop C++ programs for practical problems using non-linear data structures.
C207.5	Develop recursive programs using trees and graphs.

C208-CS6312- Database Management Systems Lab

C208.1	Infer database language commands to create simple database
C208.2	Analyze the database using queries to retrieve records
C208.3	Applying PL/SQL for processing database
C208.4	Analyze front end tools to design forms, reports and menus
C208.5	Develop solutions using database concepts for real time requirements.

C209/ MA6453- Probability and Queuing Theory

C209.1	Apply the concept of Random variables to find moments and moment generating function
C209.2	Find marginal conditional distribution, statistical average for the standard probability functions
C209.3	Classify the random process and apply the properties of Markov chain to evaluate conditional Probability.
C209.4	Identify the different queueing model and use them to solve real life problem.
C209.5	Apply non Markovian queues to open and closed networks.

C210- CS6551 Computer Networks

C210.1	Explain the components requirement of networks and link layer service
C210.2	Classify the Media Access Control Protocols and different Internetworking
C210.3	Demonstrate various types of routing techniques
C210.4	Outline the mechanisms involved in transport layer
C210.5	Experiment with different application layer protocols

C211-CS6401 Operating Systems

C211.1	Explain the basic concepts and functions of Operating Systems
C211.2	Outline various threading models, process synchronization and deadlocks
C211.3	Compare the performance of various CPU scheduling algorithms
C211.4	Compare and contrast various memory management schemes
C211.5	Explain I/O management and file systems
C211.6	Model Linux multifunction server and utilize local network services

C212- CS6402 Design and Analysis of Algorithms

C212.1	Interpret the fundamental needs of algorithms in problem solving
C212.2	Classify the different algorithm design techniques for problem solving
C212.3	Develop algorithms for various computing problems
C212.4	Analyze the time and space complexity of various algorithms
C212.5	Identify the limitations of algorithms in problem solving

C213-EC6504 Microprocessor and Microcontroller

C213.1	Explain about the architecture of 8086 microprocessor.
C213.2	Demonstrate the programs on 8086 microprocessor & Multiprocessor Concepts.
C213.3	Illustrate the design aspects of I/O and memory interfacing circuits.
C213.4	Explain about the architecture of 8051 microcontroller.
C213.5	Develop a simple microcontroller based systems.

C214- CS6403 Software Engineering

C214.1	Explain the software engineering process and project management
C214.2	Demonstrate software requirements and analysis
C214.3	Outline the software design process and user interface
C214.4	Compare and contrast various software testing
C214.5	Discuss about the software integration and project management

C215 - CS6411 Networks Laboratory

C215.1	Demonstrate the socket program using TCP & UDP
C215.2	Develop simple applications using TCP & UDP
C215.3	Develop the code for Data link layer protocol simulation
C215.4	Examine the performances of Routing protocol
C215.5	Experiment with congestion control algorithm using network simulator

C216- CS6412 Microprocessor and Microcontroller LAB

C216.1	Develop ALP for fixed and Floating Point and Arithmetic operations using 8086 microprocessor.
C216.2	Make use of different I/O interfacing with 8086 microprocessor
C216.3	Construct different waveforms using 8086 microprocessor
C216.4	Model serial and parallel interfacing of 8086 microprocessor
C216.5	Develop assembly language programs for various applications using 8051 microcontroller

C217- CS6413 Operating Systems Laboratory

C217.1	Experiment with Unix commands and shell programming
C217.2	Build 'C' program for process and file system management using system calls
C217.3	Choose the best CPU scheduling algorithm for a given problem instance
C217.4	Identify the performance of various page replacement algorithms
C217.5	Develop algorithm for deadlock avoidance, detection and file allocation strategies

C301/ MA6566- Discrete Mathematics

C301.1	Identify propositional logic and predicates, quantifiers with rules of inference
C301.2	Solve recurrence relation by applying generating function
C301.3	Determine the special types of graphs
C301.4	Describe the algebraic properties of groups rings and fields
C301.5	Explain the different types of lattices and its property

C302- CS6501- Internet Programming

C302.1	Explain the concepts of Control Statements, I/O Applet and Threading
C302.2	Develop a basic website using HTML and Cascading Style Sheets
C302.3	Compare and contrast the Java Script programming for client and server along with its event handling mechanisms
C302.4	Build a simple web page in PHP with XML data format
C302.5	Explain web services and client presentation using AJAX

C303- CS6502- Object Oriented Analysis and Design

C303.1	Explain OOAD concepts and various UML diagrams
C303.2	Select an appropriate design pattern
C303.3	Illustrate about domain models and conceptual classes
C303.4	Compare and contrast various testing techniques
C303.5	Construct projects using UML diagrams

C304- CS6503- Theory of Computation

C304.1	Outline the concept of Finite Automata and Regular Expression
C304.2	Illustrate the design of Context Free Grammar for any language set
C304.3	Demonstrate the push down automaton model for the given language
C304.4	Make use of Turing machine concept to solve the simple problems
C304.5	Explain decidability or undecidability of various problems

C305- CS6504- Computer Graphics

C305.1	Explain the various output primitives and graphics systems.
C305.2	Discuss various 2D transformations, viewing and clipping techniques.
C305.3	Explain the 3D objects and projections.
C305.4	Explain basic illumination and colour models.
C305.5	Discuss various animation sequences and graphics realism.

C306-CS6511-Case Tools Laboratory

C306.1	Outline the problem statement for a given problem
C306.2	Construct USE CASE model to identify the classes and functionality of the system
C306.3	Show the objects interaction for all the system functionality
C306.4	Develop code from system design
C306.5	Examine the developed code using testing strategies

C307- CS6512- Internet Programming Laboratory

C307.1	Illustrate web pages using HTML/XML and style sheets
C307.2	Analyze user interfaces using Java frames and applets
C307.3	Compare and contrast dynamic web pages using server side scripting
C307.4	Develop a Client Server application and use the frameworks JSP Strut, Spring
C307.5	Build the applications using AJAX

C308- CS6513-Computer Graphics Laboratory

C308.1	Make use of algorithms to draw 2D and 3D objects
C308.2	Show transformations and projections for 2D and 3D objects
C308.3	Manipulate a graphical object using clipping algorithms and viewing technique
C308.4	Use an image editing tool for image manipulation and enhancement
C308.5	Utilize the authoring tool to develop a 3D scene and to perform 2D animation

C309- CS6601 Distributed Systems

C309.1	Explain the basic concepts of distributed systems.
C309.2	Outline the inter process communication in distributed systems.
C309.3	Explain the file accessing model and various services in distributed system.
C309.4	Demonstrate concurrency control and properties of transaction in Distributed systems.
C309.5	Discuss resource and process management in distributed system

C310- IT6601 Mobile Computing

C310.1	Explain the basics of mobile Computing
C310.2	Describe the functionality of Mobile IP and Transport Layer
C310.3	Classify different types of mobile telecommunication systems
C310.4	Demonstrate the Adhoc networks concepts and its routing protocols
C310.5	Make use of mobile operating systems in developing mobile applications

C311- CS6660 Compiler Design

C311.1	Explain the phases of a Compiler
C311.2	Illustrate the translation of regular expression into parse tree using syntax analyzer
C311.3	Construct the intermediate representation considering the type systems
C311.4	Apply the optimization techniques for the generated code
C311.5	Use the different compiler construction tools to develop a simple compiler

C312- IT6502 Digital Signal Processing

C312.1	Demonstrate the analytical representation of discrete-time signals
C312.2	Illustrate the properties of systems and signals
C312.3	Make use of the Transform domain concepts in computational complexity problems
C312.4	Construct IIR and FIR filters for the given specifications.
C312.5	Explain finite word length effects in digital filters

C313- CS6659 Artificial Intelligence

C313.1	Identify problems that are amenable to solution by AI methods.
C313.2	Recognize appropriate AI methods to solve a given problem.
C313.3	Discuss a given problem in the language/framework of different AI methods.
C313.4	Develop basic AI algorithms.
C313.5	Model an empirical evaluation of different algorithms on a problem for mail sation, and state the conclusions that the evaluation supports.

C315- CS6611 Mobile Application Development Lab

C315.1	Build a native application using GUI components and Mobile application development framework
C315.2	Develop an application using basic graphical primitives and databases
C315.3	Construct an application using multi threading and RSS feed
C315.4	Make use of location identification using GPS in an application
C315.5	Model new applications to hand held devices

C316- CS6612 Compiler Laboratory

C316.1	Apply different compiler writing tools to implement the different Phases
C316.2	Analyze the data flow and control flow
C316.3	Construct the intermediate representation
C316.4	Design the back end of a compiler for 8086 assembler
C316.5	Compare various code optimization techniques

C317-GE2321 Communication Skills Lab

C317.1	Apply Appropriate Communication skills across setting,purpose and audiences.
C317.2	Demonstrate Knowledge of communication theory and application.
C317.3	Practice critical thinking to develop innovative and well-foundes prespectives related to the student's emphases . Build and maintain healthy and effective relationships.
C317.4	Use technology to communicate effectively in various settings and contexts.
C317.5	Demonstrate appropriate and professional ethical behavior.

ELECITEVS

CE314 & GE6757 Total Quality Management

CE314.1	Outline the Dimensions and Barriers regarding with Quality.
CE314.2	Illustrate the TQM Principles.
CE314.3	Demonstrate Tools utilization for Quality improvement.
CE314.4	Explain the various types of Techniques are used to measure Quality.
CE314.5	Apply various Quality Systems and Auditing on implementation of TQM.

CE314 & IT6004 Software Testing

CE314.1	Outline the software testing criteria for developing test cases
CE314.2	Build the test cases for software development
CE314.3	Explain the various level of testing
CE314.4	Discuss about the test metrics, measurements and Management process
CE314.5	Make use of the latest test tool for functional and performance testing

C401//CS6701/ Cryptography and Network Security

C401.1	Explain the basics of number theory and compare various encryption techniques.
C401.2	Summarize the functionality of public key cryptography.
C401.3	Apply various message authentication functions and secure algorithms.
C401.4	Demonstrate different types of security systems and applications.
C401.5	Discuss different levels of security and services.

C402//CS6702/ Graph Theory and Applications

C402.1	Classify precise and accurate mathematical definitions of objects in graph theory.
C402.2	Illustrate fundamentals of circuits ,cutsets, network flows & graph .
C402.3	Discuss about chromatic characteristics and directed graph.
C402.4	Outline Permutations and Combinations with generating function.
C402.5	Make use of theoretical knowledge and independent mathematical thinking in graph theory questions' investigation.

C403//CS6703/ Grid and Cloud Computing

C403.1	Outline the concept of Grid and Cloud Architectures.
C403.2	Illustrate the data intensive grid service models and grid computing techniques
C403.3	Demonstrate the concept of virtualization in cloud.
C403.4	Experiment with the programming model for Hadoop and globus toolkit.
C403.5	Interpret the security models in the grid and cloud environment.

C404//CS6704/ Resource Management Techniques

C404.1	Make use of simplex method to solve optimization problems.
C404.2	Demonstrate the concept of duality to solve Shortest route problem
C404.3	Explain integer programming method.
C404.4	Demonstrate the types of constraints and optimization methods.
C404.5	Utilize PERT and CPM in project management.

C407/ CS6711/ Security Laboratory

C407.1	Apply the cryptographic algorithms for data communication
C407.2	Compare the performance of various security algorithms
C407.3	Apply the Digital signature for secure data transmission
C407.4	Utilize the different open source tools for network security and analysis
C407.5	Demonstrate intrusion detection system using network security tool.

C408/ CS6712/ Grid and Cloud Computing Laboratory

C408.1	Make use of the Grid Toolkit.
C408.2	Design and Implement new Grid applications Grid.
C408.3	Make use of the Cloud Toolkit.
C408.4	Build cloud applications on Cloud.
C408.5	Construct the applications according to the services.

CS6801 Multi Core Architectures and Programming

C409.1	Discuss evolution of Multi-core Architectures.
C409.2	Examine the parallel program perfomances with basic primitives.
C409.3	Apply shared memory programming concepts using OpenMP.
C409.4	Analyze the distributed memory programming concepts using MPI.
C409.5	Compare and contrast parallel programming languages.

C412-CS6811 Project Work

C412.1	Identify the problem by applying acquired knowledge.
C412.2	Analyze and categorize executable project modules after considering risks.
C412.3	Choose efficient tools for designing project modules.
C412.4	Combine all the modules through effective team work after efficient testing.
C412.5	Elaborate the completed task and compile the project report.

ELECTIVES

CE405 & CS6003 Ad hoc and Sensor Networks

CE405.1	Explain the basic concepts of WIRELESS networks and challenges of adhoc and sensor networks
CE405.2	Classify the design issues and different categories of MAC protocols
CE405.3	Explain the various adhoc routing protocols and transport layer mechanisms
CE405.4	Discuss the sensor characteristics and wsn layer protocols
CE405.5	Illustrate the issues of routing in wsn and QoS related performance measurements

CE406 & CS6007 Information Retrieval

CE406.1	Explain about the IR components and Web Search Engine Framework
CE406.2	Interpret various information retrieval models
CE406.3	Explain the Web Search Engine architecture and optimization
CE406.4	Discuss about Web Link Analysis algorithms and advanced search
CE406.5	Demonstrate document text mining techniques and clustering Algorithms

CE410 & CS6008 Human Computer Interaction

CE410.1	Interpret the computer devices and HCI models.
CE410.2	Demonstrate the interactive design basics and HCI software process
CE410.3	Identify the stake holders requirements and choose the appropriate models.
CE410.4	Develop mobile HCI using mobile elements and tools by considering mobile eco system.
CE410.5	Design meaningful user interface.

CE411 & MG6088 Software Project Management

CE411.1	Explain the need for Software Project Management and control
CE411.2	Classify the various activities of project scheduling and evaluation
CE411.3	Outline the risk assessment and management process
CE411.4	Demonstrate different models of software process and network planning
CE411.5	Summarize organizational behaviors and management