PRATHUYSHA ENGINEERING COLLEGE
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
COURSES WITH COURSE OUTCOMES

REGULATION 2013

Course Name	Course Outcomes
SEMESTER – I	
HS6151 Technical English – I	CO1: Apply the collaborative and social aspects of research and writing processes. CO2 : 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. CO3:Use appropriate technologies to organize, present and communicate information to address a range of audiences, purposes and genres. CO4: Explain the relationships among language, knowledge and power including social, cultural, historical and economic issues related to information, writing and technology. CO5: Demonstrate the role of a variety of technologies/ media in accessing, retrieving, managing and communicating information.
MA6151 Mathematics – I	CO1:Find the eigen values and eigen vectors to diagonalise and reduce a matrix to quadratic form. CO2:Check the converges, diverges of infinite series. CO3:Obtain the evaluate and envelopes of a given curves by means of radius and centre of curvature. CO4:Calculate the maxima and minima value functions of two variables CO5:Find the area of plain curves and volume of solid using double and triple integrals.
PH6151 Engineering Physics – I	CO1:Classify the Bravais lattices and different types of crystal structures and growth technique CO2:Demonstrate the properties of elasticity and heat transfer through objects. CO3:Explain black body radiation, properties of matter waves and Schrodinger wave equations. CO4:Illustrate the acoustic requirements, production and application of ultrasonics CO5:Examine the characteristics of laser and optical fiber.
CY6151 Engineering Chemistry – I	CO1:Classify the polymers and their utility in the industries and describe the techniques of polymerization & properties of polymers. CO2:Relate various thermodynamic functions such as enthalpy, entropy, free energy and their importance and equilibrium constant and its significance. CO3:Characterize the photophysical processes such as fluorescence and phosphorescence and various components of UV & IR spectrophotometer. CO4:Analyze the phase transitions of one component and two component systems and the types of alloys and their application in industries. CO5: Describe the synthesis, characteristics and the applications of nano materials.

Course Name	Course Outcomes
GE6151 Computer Programming	CO 1:Develop and manage simple application in C using basic construct CO 2:Design and implement application to work with array and string CO 3:Develop and implement application related to good modular design with in the framework of function pointer CO 4:Develop application in C using structure CO5: Ability to write the C programs to solve the problems.
GE6152 Engineering Graphics	CO1:Sketch the conic sections, special curves, and draw orthographic views from pictorial views and models. CO2:Apply the principles of orthographic projections of points in all quadrants, lines and planes in first quadrant. CO3:Sketch the projections of simple solids like prisms, pyramids, cylinder and cone and obtain the traces of plane figures CO4:Practice the sectional views of solids like cube, prisms, pyramids, cylinders & cones and extend its lateral surfaces CO5:Sketch the perspective projection of simple solids, truncated prisms, pyramids, cone and cylinders and sketch the isometric projection of simple machine parts.
GE6161 - Computer Practices Laboratory	CO 1: Prepare data using MS office for Presentation and Visualization. CO 2: Analyze the Problems and design using Flow-chart. CO 3: Solve Problems using decision making and looping Statements. CO4 : Use Arrays, Structures & Unions in problem solving. CO5: Solve Problems using Recursive Functions.
GE6162 - Engineering Practices Laboratory	CO 1:Fabricate carpentry components and pipe connections including plumbing works. CO 2: Use welding equipments to join the structures. CO 3:Carry out the basic machining operations Make the models using sheet metal works. CO 4:Illustrate on centrifugal pump, Air conditioner, operations of smithy, foundary and fittings. CO 5:Carry out basic home electrical works and appliances Measure the electrical quantities.
GE6163 - Physics and Chemistry Laboratory - I	CO1: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. CO2:Appraise the velocity of sound and compressibility of the liquid using ultrasonic interferometer and thermal conductivity for bad conductors using Lee's disc apparatus. CO3:Determine the DO content in water sample by winkler's method and molecular weight of polymer by Ostwald viscometer CO4:Find the strength of an acid using pH meter and conductometer. CO5:Estimate the amount of weak and strong acids in a mixture by conductometer.

Course Name	Course Outcomes
SEMESTER – II	
HS6251 Technical English – II	CO 1:Speak convincingly, express their opinions clearly, initiate a discussion, negotiate, argue using appropriate communicative strategies. CO 2:Write effectively and persuasively and produce different types of writing such as narration, description, exposition and argument as well as creative, critical, analytical and evaluative writing. CO 3:Read different genres of texts, infer implied meanings and critically analyse and evaluate them for ideas as well as for method of presentation. CO 4:Listen/view and comprehend different spoken excerpts critically and infer unspoken and implied meanings. CO5: Listen/view and comprehend different spoken discourses/excerpts in different accents
MA6251 Mathematics – II	CO1:Find solenoidal, irrotational vectors and explain the concepts of Green's,Gauss divergence , Stokes theorem to evaluate, single double and triple integrals CO2:Obtain the P.I. of Cauchy and Legendre Equation , explain the method of variation of parameters and solve simultaneous linear equations CO3:Evaluate Laplace Transforms of periodic functions and solve the ODE using Inverse Laplace Transform CO4:Recall the properties of analytic functions for verifying C-R equations and determine Bilinear Transformation CO5:Expand functions of two variables as Taylor's and Laurent's series and evaluate Contour integrals using Cauchy's Integral formula
PH6251 Engineering Physics – II	CO1:Illustrate classical and quantum free electron theory and calculate carrier concentration in metals. CO2:Describe the carrier concentration in semi conductors and identify the p-type and n-type semi conductor using hall effect. CO3:Classify the different types of magnetic and super conducting materials. CO4:Explain the dielectrics, types of polarization, losses and breakdown. CO5:Discuss the properties, preparation and applications of metallic alloys, SMA, nano materials, NLO, Bio-materials.
CY6251 Engineering Chemistry – II	CO1:Explain the problems of using hard water in boilers and the methods oftreatment of water for boiler use. CO2:Design the electrochemical cells and to identify the types of corrosion and the methods of preventing. CO3:Illustrate the methods of harnessing energy from non-conventional energy sources. CO4:Classify various engineering materials and their importance. CO5: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.

Course Name	Course Outcomes
CS6201 Digital Principles and System Design	CO 1:Perform arithmetic operations in any number system. CO 2:Simplify the Boolean expression using K-Map and Tabulation techniques. CO 3:Useboolean simplification techniques to design a combinational hardware circuit. CO 4:Design and Analysis of a given digital circuit – combinational and sequential. CO 5:Design a digital circuit using PLD.
CS6202 Programming and Data Structures I	CO 1:Use the control structures of C appropriately for problems. CO 2:Implement abstract data types for linear data structures. CO 3:Apply the different linear data structures to problem solutions. CO4:Apply and analyze the different approaches to solve the problems algorithmically CO 5: Critically analyze the various Sorting and Searching algorithms.
CS6211 - Digital Laboratory	CO 1:Useboolean simplification techniques to design a combinational hardware circuit. CO 2:Design and Implement combinational and sequential circuits. CO 3:Analyze a given digital circuit – combinational and sequential. CO 4:Design the different functional units in a digital computer system. CO 5:Design and Implement a simple digital system.
GE6262 - Physics and Chemistry Laboratory - II	CO1:Appraise the Young's modulus of the beam by uniform and non uniform bending method, the moment of inertia and Rigidity Modulus for thinwire using Torsion Pendulum CO2:Use Poiseuille's method for determining the coefficient of viscosity of the liquid. CO3:Evaluate the refractive index of spectral lines for determining the dispersive power of a prism. CO4:Determine the type, amount of alkalinity , hardness in a given water sample and evaluate the amount of copper using EDTA method CO5:Examine the potentiometric redox titration and Conductometric precipitation titration.
CS6212 - Programming and Data Structures Laboratory I	CO 1:Design and implement C programs for implementing stacks, queues, linked lists. CO 2:Apply good programming design methods for program development. CO 3:Apply the different data structures for implementing solutions to practical problems. CO 4: Apply and analyze the different approaches to solve the problems algorithmically CO 5: Develop searching and sorting programs.

Course Name	Course Outcomes
SEMESTER – III	
MA6351 Transforms and Partial Differential Equations	CO 1:Be capable of mathematically formulating certain practical problems in terms of partial differential equations, solve them and physically interpret the results. CO 2:Have gained a well founded knowledge of Fourier series, their different possible forms and the frequently needed practical harmonic analysis that an engineer may have to make from discrete data. CO 3:Have obtained capacity to formulate and identify certain boundary value problems encountered in engineering practices, decide on applicability of the Fourier series method of solution, solve them and interpret the results. CO 4:Have grasped the concept of expression of a function, under certain conditions, as a double integral leading to identification of transform pair, and specialization on Fourier transform pair, their properties, the possible special cases with attention to their applications. CO 5: Analyse and to solve the problem of analytic function, conformal mapping and bilinear transformations.
CS6301 Programming and Data Structure II	CO1: Apply Object Oriented Techniques to solve computing problems CO2: Apply the concepts of data abstraction, encapsulation, polymorphism and inheritance for problem solutions. CO3: Apply generic programming and Standard Template Library functions for simplifying program complexity CO4: Critically analyze the various algorithms for Tree datastructures CO5: Apply, design and analyze various Graph concepts to give solutions for some real time applications like finding shortest path in route map, building computer networks using minimum spanning tree.
CS6302 Database Management Systems	CO 1:Design Databases for applications. CO 2:Use the Relational model, ER diagrams. CO 3:Apply concurrency control and recovery mechanisms for practical problems. CO 4:Design the Query Processor and Transaction Processor. CO 5:Apply security concepts to databases.
CS6303 Computer Architecture Engineering	CO1:Illustrate the basic structure and operation of Digital computer CO2: Design Arithmetic and Logical Unit CO3: Design and analyze pipelined control units. CO4: Illustrate parallel processing architectures. CO5: Evaluate performace of memory system.
CS6304 Analog and Digital Communication	CO 1: Students obtain the knowledge on how to apply analog and digital communication technique. CO 2: Students learn the design and use of data and pulse communication techniques. CO 3: Students learn the basics of analyze Source and Error control coding. CO 4: Students learn the basics of utilize multi-user radio communication. CO 5: Apply spread spectrum modulation techniques and multiple access system to enable..

Course Name	Course Outcomes
GE6351 -Environmental Science and	CO1:Analyze the concept of an ecosystem and biodiversity to protect the environment CO2:Design the environmental friendly process in engineering to protect environment from various pollutions CO3:Evaluate the techniques which require optimum use of natural resources in future CO4:Demonstrate the need for sustainable development and to create awareness of important act and laws in respect to environment. CO5:Estimate the population and economic growth,energy requirement and demand.
CS6311 - Programming and Data Structure Laboratory II	CO 1:Design and implement C++ programs for manipulating stacks, queues, linked lists, trees, and graphs. CO 2:Apply good programming design methods for program development. CO 3:Apply the different data structures for implementing solutions to practical problems. CO 4:Develop recursive programs using trees and graphs. CO 5: Apply appropriate hash functions that result in a collision free scenario for data storage and retrieval
CS6312 - Database Management Systems Laboratory	CO 1:Design and implement a database schema for a given problem-domain CO 2:Use the Relational model, ER diagrams. CO 3:Apply concurrency control and recovery mechanisms for practical problems. CO 4:Design the Query Processor and Transaction Processor. CO 5:Apply security concepts to databases.
SEMESTER – IV	
MA6453 Probability and Queueing Theory	CO 1:Understand the fundamental knowledge of the concepts of probability and have knowledge of standard distributions which can describe real life phenomenon. CO 2:Understand the basic concepts of one and two dimensional random variables and apply in engineering applications. CO 3:Apply the concept of random processes in engineering disciplines. CO 4:Acquire skills in analyzing queueing models. CO 5:Understand and characterize phenomenon which evolve with respect to time in a probabilistic manner
CS6551 Computer Networks	CO 1: Understand the basic layer and its funcntions in computer networks CO 2: Evaluvate and analysis the performance of network CO 3: Analyze the data flow from one Host to another host CO 4: Analyze and design the various functions and in the network CO5: Create a node to node connectivity network for data sharing
CS6401 Operating Systems	CO1 :Explain the basic concepts and functions of Operating Systems CO2 :Outline various threading models, process synchronization and deadlocks CO3 : Compare and contrast various memory management scheme. CO4 : Design And implement a prototype file system. CO5 :Model Linux multifunction server and utilize local network services.

Course Name	Course Outcomes
CS6402 Design and Analysis of Algorithms	CO 1:Design algorithms for various computing problems. CO 2:Analyze the time and space complexity of algorithms. CO 3:Critically analyze the different algorithm design techniques for a given problem. CO 4:Modify existing algorithms to improve efficiency. CO5: Outline the limitation of Algorithmic power
EC8506 Microprocessors and Microcontroller	CO 1:Design and execute progams based on 8086 microprocessor CO 2:Design memory interfacing circuits CO 3:Design and interface microprocessors with supporting CO 4:Design and analyze the architecture of 8051 microcontroller CO 5:Design and analyze the microcontroller based system
CS6403 Software Engineering	CO 1:Identify the key activities in managing a software project. CO 2:Compare different process models. CO 3:Concepts of requirements engineering and Analysis Modeling. CO 4:Apply systematic procedure for software design and deployment. CO 5:Compare and contrast the various testing and maintenance.
CS6411 - Networks Laboratory	CO 1:Implement various protocols using TCP and UDP. CO 2:Compare the performance of different transport layer protocols. CO 3:Use simulation tools to analyze the performance of various network protocols. CO 4:Analyze various routing algorithms. CO 5:Implement error correction codes.
CS6412 – Microprocessors and Microcontroller Lab	CO 1:Write ALP Programmes for fixed and Floating Point and Arithmetic CO 2:Interface different I/Os with processor CO 3:Generate waveforms using Microprocessors CO 4:Execute Programs in 8051 CO 5:Explain the difference between simulator and Emulator
CS6413 – Operating Systems Laboratory	CO1 :Experiment with Unix commands and shell programming CO2 :Build 'C' program for process and file system management using system calls CO3 :Choose the best CPU scheduling algorithm for a given problem instance CO4 :Identify the performance of various page replacement algorithms CO5 :Develop algorithm for deadlock avoidance, detection and file allocation strategies
	SEMESTER V
MA 6566 Discrete Mathematics	CO1:To identify the structures on many levels and apply the concepts needed to test the logic of the programs CO2:Have an understanding of a class of functions which transform a finite set which relates to input and output functions in computer science. CO3:Analyze the various graph models. CO4:Understand the concepts and properties of algebraic structures. CO5:Apply the Boolean functions in computer science.

Course Name	Course Outcomes
CS6501 Internet Programming	CO 1: Design and Develop Java Based Standalone Application and Web Application CO 2:Create a basic website using HTML and Cascading Style Sheets. Construct basic Website using HTML and CSS CO 3: Design and implement dynamic web page with validation using JavaScript objects and by applying different event handling mechanisms. CO 4: Design and implement server side programs using Servlets and JSP on Java server pages technology. CO 5; Design and implement simple web page in PHP, and to present data in XML format.
CS6502 Object Oriented Analysis and Design	CO 1:Design and implement projects using OO concepts. CO 2: Make use of the design diagrams and Analyse CO 3: Have knowledge to apply appropriate patterns CO 4: Demonstrate code from Design CO 5: Compare various testing techniques
CS6503 Theory of Computation	CO 1:Construct automata, regular expression for any pattern. CO 2:Write Context free grammar for any construct. CO 3:Design Turing machines for any language. CO 4:Propose computation solutions using Turing machines. CO 5:Derive whether a problem is decidable or not.
CS6504 Computer Graphics	CO 1:Design two dimensional graphics. CO 2:Apply two dimensional transformations. CO 3:Design three dimensional graphics and tranformation. CO 4:Apply Illumination,Clipping techniques and color models. CO 5:Apply clipping techniques to graphics.
CS6511 - Case Tools Laboratory	CO 1:Design and implement projects using OO concepts. CO 2:Use the UML analysis and design diagrams. CO 3:Apply appropriate design patterns. CO 4:Create code from design. CO 5:Compare and contrast various testing techniques
CS6512 - Internet Programming Laboratory	CO 1:Design Web pages using HTML/XML and style sheets CO 2:Create user interfaces using Java frames and applets. CO 3:Create dynamic web pages using server side scripting. CO 4:Use the frameworks JSP Strut, Hibernate, Spring CO 5:Create applications with AJAX
CS6513 - Computer Graphics Laboratory	CO 1: Knowledge on various algorithms to scan, convert the basic geometrical primitives, transformations, Area filling, clipping. CO 2: Implement various algorithms to scan, convert the basic geometrical primitives, transformations, Area filling, clipping. CO 3: Create 3D graphical scenes using open graphics library suits CO 4:Implement image manipulation and enhancement CO 5:Create 2D animations using tools.

Course Name	Course Outcomes
SEMESTER VI	
CS6601 Distributed Systems	CO 1:Elucidate the foundations and issues of distributed systems CO 2:Understand the various synchronization issues and global state for distributed systems. CO 3:Understand the Mutual Exclusion and Deadlock detection algorithms in distributed systems CO 4:Describe the agreement protocols and fault tolerance mechanisms in distributed systems. CO 5:Describe the features of peer-to-peer and distributed shared memory system
IT6601 Mobile Computing	CO1: Illustrate the basics concepts of Mobile Computing. CO2: Choose the required functionality at each layer for given application. CO3: Illustrate the basics of mobile telecommunication system. CO4: Design an Adhoc network such as MANET and VANET. CO5: Apply the knowledge about different Mobile platforms for developing mobile application.
CS6660 Compiler Design	CO 1:Understand the different phases of compiler. CO 2:Design a lexical analyzer for a sample language. CO 3:Apply different parsing algorithms to develop the parsers for a given grammar. CO 4:Understand syntax-directed translation and run-time environment. CO 5:Learn to implement code optimization techniques and a simple code Generator
IT6502 Digital Signal Processing	CO1:To understand the importance of signals and systems and their mathematical representation CO2:To analyze the z-transform techniques & their computation CO3:To apply DFT for the analysis of different signals and systems CO4:Design of IIR filters and their implementation and design of FIR filters & their implementation CO5:To acquire knowledge on digital signal processors
CS6659 Artificial Intelligence	CO 1:Identify problems that are amenable to solution by AI methods. CO 2:Identify appropriate AI methods to solve a given problem. CO 3:Formalise a given problem in the language/framework of different AI methods. CO 4:Implement basic AI algorithms. CO 5:Design and carry out an empirical evaluation of different algorithms on a problem formalisation, and state the conclusions that the evaluation supports.

Course Name	Course Outcomes
CS6654 – Datamining and Datawarehousing	CO1:Identify the scope and necessity of Data Mining & Warehousing for the society CO2:Describe the designing of Data Warehousing so that it can be able to solve the root problems. CO3:To understand various tools of Data Mining and their techniques to solve the real time problems. CO4:To develop ability to design various algorithms based on data mining tools CO5:To develop further interest in research and design of new Data Mining techniques.
CS 6611 – Mobile Application Development Laboratory	CO 1:Develop mobile applications using GUI and Layouts. CO 2:Develop mobile applications using Event Listener. CO 3:Develop mobile applications using Databases. CO 4:Develop mobile applications using RSS Feed, Internal/External Storage, SMS, Multi-threading and GPS. CO 5:Analyze and discover own mobile app for simple needs.
CS6612 - Compiler Laboratory	CO 1:Implement the different Phases of compiler using tools CO 2:Analyze the control flow and data flow of a typical program CO 3:Optimize a given program CO 4:Generate an assembly language program equivalent to a source language program CO 5: Design and implement a scanner and a parser using LEX and YACC tools.
GE6674 - Communication and Soft Skills - Lab	CO1: Read technical texts and write read specific texts effortlessly. CO2: Listen and comprehend lectures and talks in their area of specialisation successfully. CO3: Speak appropriately and effectively in varied formal and informal contexts. CO4: Write reports and winning job applications. CO 5: Develop awareness of appropriate communication strategies.
SEMESTER VII	
CS6701 Cryptography and Network Security	CO 1:Understand the fundamentals of networks security, security architecture, threats and vulnerabilities CO2:Apply the different cryptographic operations of symmetric cryptographic algorithms CO 3:Apply the different cryptogrphic operations of public key cryptography CO 4:Apply the various Authentic tion schemes to simulate different applications. CO 5:Understand various Security practices and System security standards
CS6702 Graph Theory and Applications	CO 1:Write precise and accurate mathematical definitions of objects in graph theory. CO 2: Identify and construct examples. CO 3: Validate and critically assess a mathematical proof. CO 4: Apply creative investigation of questions in graph theory. CO 5: construct mathematical proofs.

Course Name	Course Outcomes
CS6703 Grid and Cloud Computing	CO 1:Articulate the main concepts, key technologies, strengths and limitations of cloud computing. CO 2:Learn the key and enabling technologies that help in the development of cloud. CO 3:Develop the ability to understand and use the architecture of compute and storage cloud, service and delivery models. CO 4:Explain the core issues of cloud computing such as resource management and security. CO 5:Evaluate and choose the appropriate technologies, algorithms and approaches for implementation and use of cloud.
CS6704 Resource Management Techniques	CO1:Understand the Linearing Programming problems of Graphical and simplex methods CO2:Apply the Transportation and Assingment model in industrial field CO3:Apply integer programming and linear Programming to solve real-life applications. CO4:Analyze the Jacobi and Lagrange Methods in Optimisation theory CO5:Creative the PERT and CPM Network diagram in Project Management
IT6801 Service Oriented Architecture	CO1:Understand XML technologies CO2:Understand service orientation, benefits of SOA CO3:Understand web services and WS standards CO4:Use web services extensions to develop solution CO5:Understand and apply service modeling, service oriented analysis and design for application development
IT6007 Information Retrieval	CO 1:Apply information retrieval models. CO 2:Design Web Search Engine. CO 3:Use Link Analysis. CO 4:Use Hadoop and Map Reduce. CO 5:Apply document text mining techniques.
CS6711 - Security Laboratory	CO 1:Develop code for classical Encryption Techniques to solve the problems. CO 2:Build cryptosystems by applying symmetric and public key encryption algorithms. CO 3:Construct code for authentication algorithms. CO 4:Develop a signature scheme using Digital signature standard. CO 5:Demonstrate the network security system using open source tools
CS6712 - Grid and Cloud Computing Laboratory	CO 1:Configure various virtualization tools such as Virtual Box, VMware workstation. CO 2:Design and deploy a web application in a PaaS environment. CO 3:Learn how to simulate cloud environment to implement new schedulers. CO 4:Install and use a generic cloud environment that can be used as a private cloud. CO 5:Manipulate large data sets in a parallel environment.

Course Name	Course Outcomes
	SEMESTER VIII
CS6801 Multicore Architecture	CO1:Describe multicore architectures and identify their characteristics and challenges. CO2:Identify the issues in programming Parallel Processors. CO3:Write programs using OpenMP and MPI. CO4:Design parallel programming solutions to common problem CO5:Compare and contrast programming for serial processors and programming for parallel processors.
CS6008 Human Computer Interaction	CO1:Analyse the Effective dialog for HCI CO2:Designing of specific HCI for Individual with disabilities CO3:Access the Importance of User Feedback CO4:Design of Multimedia and E commerce CO5:Develop Meaningful interfaces
GE6075 Professional Ethics	CO1: Construct a basic perception on various moral, human values and ethics. CO2:Identify and analyze profession, professional ethics, moral issues and the role of ethical theories in engineering field CO3: Identify an insight of social responsibilities and the code of ethics to be followed by an engineer. CO4: Identify the professional rights and responsibilities of an engineer for safety and risk benefit analysis. CO5:Apply ethical principles to resolve situations that arise in their professional lives
CS6811 - Project Work	CO 1: The ability to make links across different areas of domain knowledge and to generate, develop and evaluate ideas and information so as to apply these skills to the project task. CO2 : Acquire the skills to communicate effectively and to present ideas clearly and coherently to specific audience in both the written and oral forms. CO3 : Acquire collaborative skills through working in a team to achieve common goals. CO 4: Acquire collaborative skills through working in a team to achieve common goals. CO 5: Demonstrate and build the project successfully by hardware requirements, coding, emulating and testing.