DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING(2017 REGULATION)

COURSE OUTCOMES (SEM I – II) _ Regulation– 2017 – UG

YEAR/SEMESTER : I/II	
C101/ HS8151 Communicative English	
C101.1	Speak clearly, confidently, comprehensibly, and communicate with one or manylisteners using appropriate communicative strategies.
C101.2	Write cohesively and coherently and flawlessly avoiding grammatical errors, using awide vocabulary range, organizing their ideas logically on a topic.
C101.3	Read different genres of texts adopting various reading strategies.
C101.4	Listen/view and comprehend different spoken discourses/excepts in different accents.
C101.5	Gaining capacity, skills enabling the students to write personal letters, official letters and E-mails in English effectively. Enabling students to enhance their conversationalskills in spoken and written forms.

C102/ MA8151 Engineering Mathematics - I	
C102.1	Have basic knowledge and understanding in one field of materials, integral anddifferential calculus.
C102.2	Utilize methods of integration to compute volumes of objects with circular shaped aspects, and compute lengths of curves.
C102.3	Read and understand problem descriptions, then be able to formulate equations modelling the problem usually by applying geometric or physical principles.
C102.4	Use integration to compute problems important in physics and engineering.
C102.5	Find the area of plane curves and volume of solids using double and triple integrals.

C103/ PH8151 Engineering Physics	
C103.1	Have knowledge on the basics of physics related to properties of matter, optics, andacoustics.
C103.2	Apply these fundamental principles to solve practical problems related to materialsused for engineering applications.
C103.3	Understand working principle of a LASER, components and working of different lasersystem and their engineering applications
C103.4	Understand the principle and working of particle detectors

C103.5	Examine the characteristics of laser and optical fiber.

C104/ CY8151 Engineering Chemistry	
C104.1	Apply this knowledge to the analysis and design of batteries.
C104.2	Phase rule concept is used to know the heat treatment process of alloy.
C104.3	Know the properties of Lubricants.
C104.4	The knowledge gained on polymer chemistry, thermodynamics, Spectroscopy, phase rule and nano materials will provide a strong platform to understand the concepts on these subjects for further learning.
C104.5	Outline the synthesis, characteristics and the applications of nano materials.

C105/GE8151 PROBLEM SOLVING AND PYTHON PROGRAMMING	
C105.1	Develop algorithmic solutions to simple computational problems.
C105.2	Read, write, execute by hand simple Python programs.
C105.3	Structure simple Python programs for solving problems.
C105.4	Decompose a Python program into functions.
C105.5	Represent compound data using Python lists, tuples, dictionaries. Read and write datafrom/to files in Python Programs.

C106/GE8152-ENGINEERING GRAPHICS	
C106.1	Perform free hand sketching of basic geometrical constructions and multiple views ofobjects.
C106.2	Do orthographic projection of lines and plane surfaces.
C106.3	Draw projections and solids and development of surfaces.
C106.4	Prepare isometric and perspective sections of simple solids.
C106.5	Demonstrate computer aided drafting.

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C108/BS8161-Chemistry Laboratory	
C108.1	The students will be outfitted with hands-on knowledge in the quantitative chemicalanalysis of water quality related to parameters.
C108.2	To determine the amount of metal ions through volumetric and spectroscopictechniques
C108.3	To analyse and determine the composition of alloys
C108.4	To quantitively analyse the impurities in solution by electoanalytical techniques

C109/BS8161 - PHYSICS AND CHEMISTRY LABORATORY	
C109.1	Apply principles of elasticity, optics and thermal properties for Engineering applications
C109.2	Determine the Modulus of elasticity of materials and Coefficient of Viscosity of liquidsand to determine the Thermal Conductivity of bad conductor using Lee's disc method
C109.3	Measure the wavelength of prominent spectral lines of Mercury Spectrum and particle size of powder using diffraction phenomenon and thickness of thin materials using interference phenomenon, Determine the band gap energy of a semiconductor
C109.4	Calculate water quality parameters such as hardness, alkalinity of the given water sample, Estimate the amount of the given acids using conductometric titrations.
C109.5	Estimate the amount of the given acids using pH titrations, Determine the amount of iron content in the given substance using potentiometric titration, Determine the amount of chloride content in the given water sample.

YEAR/SEMESTER : I/II	
C201/HS8251-TECHNICAL ENGLISH	
C201.1	Speak convincingly, express their opinions clearly, initiate a discussion, negotiate, andargue using appropriate communicative strategies.
C201.2	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.
C201.3	Read different genres of texts, infer implied meanings and critically analyse and evaluate them for ideas as well as for method of presentation.

C201.4	Listen/view and comprehend different spoken excerpts critically and infer unspokenand implied meanings.
C201.5	Enhancing student's skills in report writing, job application, paragraph writing and other

C2O2/MA8251-ENGINEERING MATHEMATICS – II	
C2O2.1	Develop the fundamentals and basic concepts in vector calculus, ODE, Laplacetransform and complex functions.
C2O2.2	Solve problems related to engineering applications by using these techniques.
C2O2.3	To have an ability of mathematical modelling of systems using differential equationsand ability to solve the differential equations.
C2O2.4	Use Green's theorem to evaluate line integrals along simple closed contours on the plane and use Stokes' theorem to give a physical interpretation of the curl of a vectorfield.
C2O2.5	Expand functions of two variables as Taylor's and Laurent's series and evaluateContour integrals using Cauchy's formula.

C203/PH8253-Physics For Electronics Engineering	
C203.1	Knowledge on classical and quantum electron theories, and energy band structures
C203.2	Knowledge on basics of semiconductor physics and its applications in various devices
C203.3	Knowledge on magnetic and dielectric properties of materials
C203.4	Understanding on the functioning of optical materials for optoelectronics
C203.5	Understanding on the functioning of Nano electronic devices

C204/BE8254/BASIC ELECTRICAL AND INSTRUMENTATION ENGINEERING	
C204.1	Fundamentals of semiconductor and basic theorems used in Electrical circuits
C204.2	Design amplifier circuits under CB, CE, CC Configurations.
C204.3	Design the Adders – Flip-Flops – Registers and Counters with logic gates.
C204.4	Discuss the Principles of Amplitude and Frequency Modulations and various blockscommunication Systems
C204.5	Demonstrate the working of Television systems, FAX machines and micro wavesystems.

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C205/C113 /EC8251/CIRCUIT ANALYSIS	
C205.1	Develop the capacity to analyze electrical circuits, apply the circuit theorems in real time
C205.2	Design and understand and evaluate the AC and DC circuits.
C205.3	Practical implications of the fundamentals of Ohm"s law, Kirchhoff"s current and voltage laws
C205.4	Accurate measurement of voltage, current, power and impedance of any circuit
C205.5	DC analysis, Transient analysis and Frequency analysis of a given circuit depending on types of elements
C205.6	Practical implementation of the fundamental electrical theorems and modeling of simple electrical systems

C206/C114/ EC8252/ELECTRONIC DEVICES	
C206.1	Describe the principle and characteristics of semiconductor diode
C206.2	Analyze various transistor configurations
C206.3	Construct large signal modeling and small signal modeling of a transistor
C206.4	Describe the principle of operation and characteristics of special Semiconductor diodes
C206.5	Discuss the operation of various semiconductor photo devices and power electronic devices

C207/ EC8261/CIRCUITS AND DEVICES LABORATORY	
C207.1	Identify the basic devices and its configurations
C207.2	Analyze the resistive circuits with different sources
C207.3	Obtain the resonance for different configurations of RLC
C207.4	Explain the response of RLC circuit with different inputs
C207.5	Understand the operation of basic solid state devices

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C208 / GE8261/ ENGINEERING PRACTICES LABORATORY	
C208.1	Gets exposure regarding Joining operations in engineering materials.
C208.2	Carry out the basic machining operations in engineering materials.
C208.3	Carry out basic home electrical works and appliances
C208.4	Measure the electrical quantities
C208.5	Understand basic electronic components.
C208.6	Integrate the components and gates using soldering practices.

COURSE OUTCOMES (SEM III – VIII) _ Regulation– 2017 – UG

YEAR/SEMESTER : II/III	
C301/ MA8351- DISCRETE MATHEMATICS	
C301.1	Rewrite the mathematical statements into logical values.
C301.2	Discuss the discrete structure of combinatorial objects.
C301.3	Solve the recurrence relation with generating functions.
C301.4	Elaborate the basic concepts of Graph theory.
C301.5	Elaborate the concepts of Lattices and Boolean Algebra.

C302 CS8351 Digital Principles and System Design	
C302.1	Apply various techniques to simplify the Boolean functions.
C302.2	Construct different combinational logic circuits for the given specification and model the same using HDL.
C302.3	Construct clocked sequential circuits for the given specification and obtain its HDL
C302.4	Analyze asynchronous sequential circuitsusing state reduction techniques .
C302.5	Explain the concept of semiconductor memory and programmable logic devices.

C303/ CS8391- DATA STRUCTURES	
C303.1	Explain abstract data types for linked list and its applications.
C303.2	Interpret the concepts of stack, queue and its applications.
C303.3	Understand the types of nonlinear data structure tree

C303.4	Interpret non linear data structure graph and its applications
C303.5	Discuss various sorting and searching techniques in data structures and hashing techniques for Indexing.

C304/ CS8392- OBJECT ORIENTED PROGRAMMING	
C304.1	Explain the basic concepts of Object Oriented Programming and characteristics of Java.
C304.2	Illustrate the concepts of Inheritance and Interface
C304.3	Develop Java Applications using Exceptions and I/O Streams
C304.4	Explain the concepts of Multithreading and Generic Programming
C304.5	Develop Graphical User Interface applications using swings

C305/ EC8395- COMMUNICATION ENGINEERING	
C305.1	Ability to comprehend and appreciate the significance and role of this course in the present contemporary world
C305.2	Apply analog and digital communication techniques.
C305.3	Use data and pulse communication techniques.
C305.4	Analyze Source and Error control coding

C306/ CS8381- DATA STRUCTURES LABORATORY	
C306.1	Implement Stack and Queue using array and Linked List ADT.
C306.2	Implement the applications of stack and queue using C programming.
C306.3	Experiment with various Graph algorithms to find shortest path.
C306.4	Implement sorting and searching algorithms using C Programming.
C306.5	Experiment the collision Technique using Hashing concepts.

C207/ CS8383- OBJECT ORIENTED PROGRAMMING LABORATORY	
C207.1	Develop simple Java applications using classes and packages.
C207.2	Develop Java programs using inheritance and interfaces.
C207.3	Implement exception handling and file concepts.
C207.4	Develop simple application using multithreading and generic programming.
C207.5	Develop event driven programming and applications using java

	concepts.

C208/ CS8382- DIGITAL SYSTEMS LABORATORY	
C208.1	Exercise the implementation of Boolean theorems, simple combinational circuits using basic logic gates
C208.2	Construct and implement combinational circuits using MSI devices.
C208.3	Examine the operation of sequential circuits like shift register and counters.
C208.4	Simulate the combinational and sequential circuits using HDL.
C208.5	Design simple digital system and validate its performance.

C209/ HS8381- Interpersonal Skills /Listening	
C209.1	Demonstrate listening skill to give information as part of a simple explanation
C209.2	Develop speaking skills to give personal information to express ability and ask for clarification to improve pronunciation.
C209.3	Interpret information and ideas from multiple sources with reasonable accuracy over a wide range of everyday topics.
C209.4	Participate confidently and appropriately in conversations both formal and informal.
C209.5	Make effective presentations and participate in group discussions

YEAR/SEMESTER : II/IV	
C401 MA8402 Probability and Queuing Theory	
C401.1	Understand the fundamental knowledge of the concepts of probability and have knowledge of standard distributions which can describe real life phenomenon.
C401.2	Understand the basic concepts of one and two dimensional random variables and apply in engineering applications.
C401.3	Apply the concept of random processes in engineering disciplines.
C401.4	Acquire skills in analyzing queueing models.
C401.5	Understand and characterize phenomenon which evolve with respect to time in a probabilistic manner

C402 CS8491 Computer Architecture	
C402.1	Understand the basics structure of computers, operations and instructions.

C402.2	Design arithmetic and logic unit.
C402.3	Understand pipelined execution and design control unit.
C402.4	Understand parallel processing architectures.
C402.5	Understand the various memory systems and I/O communication.

C403 CS8492 Database Management Systems	
C403.1	Classify the modern and futuristic database applications based on size and complexity
C403.2	Map ER model to Relational model to perform database design effectively
C403.3	Write queries using normalization criteria and optimize queries
C403.4	Compare and contrast various indexing strategies in different database systems
C403.5	Appraise how advanced databases differ from traditional databases.

C404 CS8451 Design and Analysis of Algorithm	
C404.1	Design algorithms for various computing problems.
C404.2	Analyze the time and space complexity of algorithms.
C404.3	Critically analyze the different algorithm design techniques for a given problem.
C404.4	Modify existing algorithms to improve efficiency.
C404.5	Solve the problems using back tracking and branch and bound techniques.

C405 CS8493 Operating Systems	
C405.1	Analyze various scheduling algorithms.
C405.2	Understand deadlock, prevention and avoidance algorithms.
C405.3	Understand the functionality of file systems.
C405.4	Perform administrative tasks on Linux Servers.
C405.5	Compare iOS and Android Operating Systems.

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C406 CS8494 Software Engineering	
C406.1	Identify the key activities in managing a software project and compare different process models.
C406.2	Concepts of requirements engineering and Analysis Modeling.
C406.3	Apply systematic procedure for software design and deployment.
C406.4	Compare and contrast the various testing and maintenance.
C406.5	Manage project schedule, estimate project cost and effort required.

C407 CS8481 Database Management Systems Laboratory	
C407.1	Use typical data definitions and manipulation commands.
C407.2	Design applications to test Nested and Join Queries
C407.3	Implement simple applications that use Views
C407.4	Implement applications that require a Front-end Tool
C407.5	Critically analyze the use of Tables, Views, Functions and Procedures

C408 CS8461 Operating Systems Laboratory	
C408.1	Compare the performance of various CPU Scheduling Algorithms
C408.2	Implement Deadlock avoidance and Detection Algorithms
C408.3	Create processes and implement IPC
C408.4	Analyze the performance of the various Page Replacement Algorithms
C408.5	Implement File Organization and File Allocation Strategies

409 HS8461 Advanced Reading and Writing	
C409.1	Identify different text types for enhanced reading comprehension.
C409.2	Write a paragraph: topic sentence, supporting sentence, concluding sentence.
C409.3	Writing descriptive, narrative, issue-based, argumentative and analytical types of essays.
C409.4	Organize ideas for E-mail writing and Job application.
C409.5	Apply critical reading and thinking skills.

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YEAR/SEMESTER : III/V	
C501 MA8551 Algebra and Number Theory	
C501.1	Apply the basic notions of groups, rings, fields which will then be used to solve related problems.
C501.2	Explain the fundamental concepts of advanced algebra and their role in modern mathematics and applied contexts.
C501.3	Demonstrate accurate and efficient use of advanced algebraic techniques.
C501.4	Demonstrate their mastery by solving non - trivial problems related to the concepts, and by proving simple theorems about the, statements proven by the text.
C501.5	Apply integrated approach to number theory and abstract algebra, and provide a firm basis for further reading and study in the subject.

C502 CS8591 Computer Networks	
C502.1	Understand the basic layers and its functions in computer networks.
C502.2	Understand the basics of how data flows from one node to another.
C502.3	Analyze and design routing algorithms.
C502.4	Design protocols for various functions in the network.
C502.5	Understand the working of various application layer protocols.

C503 EC8691 Micro Processor and Micro Controller	
C503.1	Understand the architecture of 8086 and impart the knowledge about the instruction set and addressing mode.
C503.2	Develop assembly level programs and illustrate the system bus structures, multiprocessor configuration of 8086.
C503.3	Illustrate the interfacing methods of various I/O modules for 8086.
C503.4	Acquire knowledge about the architecture, programming of microcontroller 8051.
C503.5	Apply programming and interfacing concepts for 8051 microcontroller based system design.

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C504 CS8501 Theory of Computation	
C504.1	Construct automata, regular expression for any pattern.
C504.2	Write Context free grammar for any construct.
C504.3	Design Turing machines for any language.
C504.4	Propose computation solutions using Turing machines.
C504.5	Derive whether a problem is decidable or not.

C505 CS8592 Object Oriented Analysis and Design	
C505.1	Express software design with UML diagrams
C505.2	Design software applications using OO concepts.
C505.3	Identify various scenarios based on software requirements
C505.4	Transform UML based software design into pattern based design using design patterns
C505.5	Understand the various testing methodologies for OO software

C506 OMF551 Product Design and Development	
C506.1	Explain the difference between simulator and Emulator
C506.2	Draw UML diagrams for the given project
C506.3	Implement design patterns for the project
C506.4	Develop source code for the project
C506.5	Experiment with various testing techniques in various levels of project

C507 EC8681 MICROPROCESSORS AND MICROCONTROLLERS LABORATOR	
C507.1	Write ALP Programmes for fixed and Floating Point and Arithmetic operations
C507.2	Interface different I/Os with processor
C507.3	Generate waveforms using Microprocessors
C507.4	Execute Programs in 8051
C507.5	Explain the difference between simulator and Emulator

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C508 CS8252 Object Oriented Analysis and Design Laboratory	
C508.1	Perform OO analysis and design for a given problem specification
C508.2	Identify and map basic software requirements in UML mapping.
C508.3	Improve the software quality using design patterns and to explain the rationale behind applying specific design patterns
C508.4	Test the compliance of the software with the SRS

C509 CS8581 Networks Laboratory	
C509.1	Implement various protocols using TCP and UDP.
C509.2	Compare the performance of different transport layer protocols.
C509.3	Use simulation tools to analyze the performance of various network protocols.
C509.4	Analyze various routing algorithms.
C509.5	Implement error correction codes.

YEAR/SEMESTER : III/VI	
C601 CS8581 Internet Programming	
C601.1	Construct a basic website using HTML and Cascading Style Sheets.
C601.2	Build dynamic web page with validation using Java Script objects and by applying different event handling mechanisms.
C601.3	Develop server side programs using Servlets and JSP.
C601.4	Construct simple web pages in PHP and to represent data in XML format.
C601.5	Use AJAX and web services to develop interactive web applications

C602 CS8691 Artificial Intelligence	
C602.1	Use appropriate search algorithms for any AI problem
C602.2	Represent a problem using first order and predicate logic
C602.3	Provide the apt agent strategy to solve a given problem
C602.4	Design software agents to solve a problem
C602.5	Design applications for NLP that use Artificial Intelligence.

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C603 CS8601 Mobile Computing	
C603.1	Explain the basics of mobile telecommunication systems
C603.2	Illustrate the generations of telecommunication systems in wireless networks
C603.3	Determine the functionality of MAC, network layer and Identify a routing protocol for a given Ad hoc network
C603.4	Explain the functionality of Transport and Application layers
C603.5	Develop a mobile application using android/blackberry/ios/Windows SDK

C604 CS8602 Compiler Design	
C604.1	Understand the different phases of compiler.
C604.2	Apply different parsing algorithms to develop the parsers for a given grammar.
C604.3	Understand syntax-directed translation and run-time environment.
C604.4	Learn to implement code optimization techniques and a simple code generator.
C604.5	Design and implement a scanner and a parser using LEX and YACC tools.

C605 CS8603 Distributed Systems	
C605.1	Elucidate the foundations and issues of distributed systems
C605.2	Understand the various synchronization issues and global state for distributed systems.
C605.3	Understand the Mutual Exclusion and Deadlock detection algorithms in distributed systems
C605.4	Describe the agreement protocols and fault tolerance mechanisms in distributed systems.
C605.5	Describe the features of peer-to-peer and distributed shared memory systems

C606 CS8661 Internet Programming Laboratory	
C606.1	Construct Web pages using HTML/XML and style sheets.
C606.2	Build dynamic web pages with validation using Java Script objects and by applying different event handling mechanisms.
C606.3	Develop dynamic web pages using server side scripting.
C606.4	Use PHP programming to develop web applications.
C606.5	Construct web applications using AJAX and web services.

C607 CS8662 Mobile Application Development Laboratory	
C607.1	Develop mobile applications using GUI and Layouts.
C607.2	Develop mobile applications using Event Listener.
C607.3	Develop mobile applications using Databases.
C607.4	Develop mobile applications using RSS Feed, Internal/External Storage, SMS, Multi-threading and GPS.
C607.5	Analyze and discover own mobile app for simple needs.

C608 HS8581 Professional Communication	
C608.1	Apply appropriate communication skills across settings, purposes, and audiences.
C608.2	Demonstrate knowledge of communication theory and application.
C608.3	Practice critical thinking to develop innovative and well-founded perspectives related to the students' emphases.
C608.4	Build and maintain healthy and effective relationships. Use technology to communicate effectively in various settings and contexts.
C608.5	Demonstrate appropriate and professional ethical behavior.

YEAR/SEMESTER : IV/VII	
C701 CS8792 Cryptography and Network Security	
C701.1	Understand the fundamentals of networks security, security architecture, threats and vulnerabilities
C701.2	Apply the different cryptographic operations of symmetric cryptographic algorithms
C701.3	Apply the different cryptographic operations of public key cryptography

C701.4	Apply the various Authentication schemes to simulate different applications.
C701.5	Understand various Security practices and System security standards

C702 CS8791 Cloud Computing	
C702.1	Articulate the main concepts, key technologies, strengths and limitations of cloud computing.
C702.2	Learn the key and enabling technologies that help in the development of cloud.
C702.3	Develop the ability to understand and use the architecture of compute and storage cloud, service and delivery models.
C702.4	Explain the core issues of cloud computing such as resource management and security.
C702.5	Evaluate and choose the appropriate technologies, algorithms and approaches for implementation and use of cloud.

C703 CS8711 Cloud Computing Laboratory	
C703.1	Configure various virtualization tools such as Virtual Box, VMware workstation.
C703.2	Design and deploy a web application in a PaaS environment.
C703.3	Learn how to simulate a cloud environment to implement new schedulers.
C703.4	Install and use a generic cloud environment that can be used as a private cloud.
C703.5	Manipulate large data sets in a parallel environment.

C704 IT8761 Security Laboratory	
C704.1	Develop code for classical Encryption Techniques to solve the problems.
C704.2	Build cryptosystems by applying symmetric and public key encryption algorithms.
C704.3	Construct code for authentication algorithms.
C704.4	Develop a signature scheme using Digital signature standard.
C704.5	Demonstrate the network security system using open source tools

C705 OIE751 Robotics	
C705.1	Understand the fundamentals of Robotics
C705.2	Illustrate robot drive system and end efforts
C705.3	Understand the sensors and machine vision
C705.4	Explain kinematics and robot programming
C705.5	Implement Robot economics

VIII semester	
C801 MG8591 Principles of Management	
C801.1	Understand the Evolution of Management and organizations
C801.2	Understand the Managerial function like planning
C801.3	Understand the Managerial function like Organizing
C801.4	Understand the Managerial function like Directing
C801.5	Understand the Managerial function like Controlling

C802 CS8091 Big Data Analytics	
C802.1	Work with big data tools and its analysis techniques
C802.2	Analyze data by utilizing clustering and classification algorithms
C802.3	Learn and apply different mining algorithms and recommendation systems for large volumes of data
C802.4	Perform analytics on data streams
C802.5	Learn NoSQL databases and management.

C803 CS8079 Human Computer Interaction	
C803.1	Design effective dialog for HCI
C803.2	Design effective HCI for individuals and persons with disabilities.
C803.3	Assess the importance of user feedback.
C803.4	Explain the HCI implications for designing multimedia/ ecommerce/ e-learning Web sites.
C803.5	Develop meaningful user interface.

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C804 CS8074 Cyber Forensics	
C804.1	Understand the basics of computer forensics
C804.2	Apply a number of different computer forensic tools to a given scenario
C804.3	Analyze and validate forensics data
C804.4	Identify the vulnerabilities in a given network infrastructure
C804.5	Implement real-world hacking techniques to test system security

C805 CS8078 Green Computing	
C805.1	Acquire knowledge to adopt green computing practices to minimize negative impacts on the environment
C805.2	Enhance the skill in energy saving practices in their use of hardware.
C805.3	Evaluate technology tools that can reduce paper waste and carbon footprint by the stakeholders.
C805.4	Understand the ways to minimize equipment disposal requirements.
C805.5	Understand and analyze different case studies