SUDHARSAN ENGINEERING COLLEGE
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Sathiyamangalam, Kulathur(TK), Pudukkottai District-622 501
Ph: 04339-240830, 240840 Fax: 04339-240205
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Department of Computer Science and Engineering

COURSE OUTCOMES

List of Courses

As per Anna University Regulation 2017, the list of courses for the batch 2019 - 2023 is given in the Table 1.

SL.NO.	COURSE CODE (NBA)	COURSE CODE (University)	TITLE OF THE COURSE
Semester – I			
1.	C101	HS8151	Communicative English
2.	C102	MA8151	Engineering Mathematics – I
3.	C103	PH8151	Engineering Physics
4.	C104	CY8151	Engineering Chemistry
5.	C105	GE8151	Problem Solving and Python Programming
6.	C106	GE8152	Engineering Graphics
7.	C107	GE8161	Problem Solving and Python Programming Laboratory
8.	C108	BS8161	Physics and Chemistry Laboratory

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Semester – II			
9.	C109	HS8251	Technical English
10.	C110	MA8251	Engineering Mathematics – II
11.	C111	PH8252	Physics for Information Science
12.	C112	BE8255	Basic Electrical Electronics and Measurement Engineering
13.	C113	GE8291	Environmental Science and Engineering
14.	C114	CS8251	Programming in C
15.	C115	GE8261	Engineering Practices Laboratory
16.	C116	CS8261	C Programming Laboratory
Semester – III			
17.	C201	MA8351	Discrete Mathematics
18.	C202	CS8351	Digital Principles and System Design
19.	C203	CS8391	Data Structures
20.	C204	CS8392	Object Oriented Programming
21.	C205	EC8395	Communication Engineering
22.	C206	CS8381	Data Structures Laboratory
23.	C207	CS8383	Object Oriented Programming Laboratory
24.	C208	CS8382	Digital Systems Laboratory
25.	C209	HS8381	Interpersonal Skills/Listening &Speaking
Semester – IV			
26.	C210	MA8402	Probability and Queueing Theory
27.	C211	CS8491	Computer Architecture

28.	C212	CS8492	Database Management Systems
29.	C213	CS8451	Design and Analysis of Algorithms
30.	C214	CS8493	Operating Systems
31.	C215	CS8494	Software Engineering
32.	C216	CS8481	Database Management Systems Laboratory
33.	C217	CS8461	Operating Systems Laboratory
34.	C218	HS8461	Advanced Reading and Writing Lab
Semester – V			
35.	C301	MA8551	Algebra and Number Theory
36.	C302	CS8591	Computer Networks
37.	C303	EC8691	Microprocessors and Microcontrollers
38.	C304	CS8501	Theory of Computation
39.	C305	CS8592	Object Oriented Analysis and Design
40.	C306	OAN551	Sensors and Transducers
41.	C307	EC8681	Microprocessors and Microcontrollers Laboratory
42.	C308	CS8582	Object Oriented Analysis and Design Laboratory
43.	C309	CS8581	Networks Laboratory
Semester – VI			
44.	C310	CS8651	Internet Programming
45.	C311	CS8691	Artificial Intelligence
46.	C312	CS8601	Mobile Computing
47.	C313	CS8602	Compiler Design

48.	C314	CS8603	Distributed Systems
49.	C315	CS8072	Agile Methodologies
50.	C316	CS8661	Internet Programming Laboratory
51.	C317	CS8662	Mobile Application Development Laboratory
52.	C318	CS8611	Mini Project
53.	C319	HS8581	Professional Communication
Semester – VII			
54.	C401	MG8591	Principles of Management
55.	C402	CS8792	Cryptography And Network Security
56.	C403	CS8791	Cloud Computing
57.	C404	OIE751	Robotics
58.	C406	CS8079	Human Computer Interaction
59.	C407	CS8711	Cloud Computing Laboratory
60.	C408	IT8761	Security Laboratory
Semester – VIII			
61.	C409	GE8074	Cyber Forensics
62.	C410	CS8078	Green Computing
63.	C411	CS8811	Project Work

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SEMESTER 1

Course Code &Name: C101 & HS8151 - Communicative English		
	CO Statements	**Knowledge Level**
The students should be able to		
C101.1	**Enhance** their reading and technical writing skills in the first year itself	K2
C101.2	**Comfortably read and understand** articles in science and Engineering journals and articles in dailies	K2
C101.3	**Get** themselves involved in an active manner during informal conversations, state opinions and express willingness	K3
C101.4	**Communicate** effectively in short conversations and talks uttered in English	K4
C101.5	**Draft** essays related to their subjects and write personal letters and emails in comfortable manner for lifelong learning	K4

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Course Code &Name: C102 & MA8151 - Engineering Mathematics – I		
	CO Statements	**Knowledge Level**
The students should be able to		
C102.1	**Analyze** and apply the Engineering knowledge in differentiation to solve maxima and minima problems	K4
C102.2	**Solve** the problems of integrals using different methods of calculus	K5
C102.3	**Design** and develop the problems of integration to compute multiple integrals, area, volume, integrals in polar coordinates, in addition to change of order and change of variables	K6
C102.4	**Analyze** the problems of integrals by using various methods of integration, such as substitution, partialfractions and integration by parts	K4
C102.5	**Apply** various tools in solving the differential equations to recognize the need for life-long learning	K3

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Course Code &Name: C103 &PH8151 - Engineering Physics		
	CO Statements	**Knowledge Level**
The students should be able to		
C103.1	**Analyse** the problems in columns and beams andgain the engineering knowledge in properties of matter toformulate	K4
C103.2	**Understand** the fundamental concepts and applications of waves, lasers and fiber optics to give theoreticalapproaches to design modern devices	K2
C103.3	**Interpret** the knowledge in thermal properties of materials and can determined expansion joints and heatexchangers in devices	K3
C103.4	**Understand** the fundamental concepts of quantum theory and how modern electron microscope techniquesuse it to make predictions in the field of physics	K2
C103.5	**Appreciate** the behavior of solids, describe the fundamentals of crystals, their structures, and the variouscrystal development processes	K2

Course Code &Name: C104 &CY8151 - Engineering Chemistry		
	CO Statements	**Knowledge Level**
The students should be able to		
C104.1	**Apply** the water treatment techniques water in the industries and domestic water using the latest techniques by using engineering knowledge	K3
C104.2	**Understand** the absorption methods used in the field of water and air pollution purification to assess societal, health, safety and cultural issues in the environmental	K2
C104.3	**Know** the significance of alloying and the behavior of one component and two component systems using phase diagram and apply appropriate techniques in the field of metallurgy	K2
C104.4	**Discuss** the types of fuels, calorific value calculations, and analyze the need for alternative fuels to solve current social problems by using engineering techniques.	K4
C104.5	**Review** the principles and generation of energy in batteries, nuclear reactors, solar cells, wind mills and fuel cells with appropriate consideration for the societal and environmental considerations.	K2

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Course Code &Name: C105 &GE8151- Problem Solving and Python		
	CO Statements	**Knowledge Level**
The students should be able to		
C105.1	**Understand** the concepts of computational thinking and algorithmic problem-solving techniques	K2
C105.2	**Develop** simple python programs for applying the concepts of data types, expressions, and python statements	K3
C105.3	**Develop** Python programs for solving real-time computational problems by using conditionals, looping, functions, and strings	K3
C105.4	**Understand** the concepts of compound data using Python lists, tuples, and dictionaries	K2
C105.5	**Develop** python programs for solving computational problems by using modules, files, and python packages	K3

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Course Code and Name: C106 & GE8152- Engineering Graphics		
	CO Statements	**Knowledge Level**
The students should be able to		
C106.1	**Sketch** the conic sections, special curves, and draw orthographic views from pictorial views and models	K4
C106.2	**Apply** the principles of orthographic projections of points in all quadrants, lines and planes in first quadrant	K3
C106.3	**Sketch** the projections of simple solids like prisms, pyramids, cylinder and cone and obtain the traces of plane figures	K4
C106.4	**Practic**e the sectional views of solids like cube, prisms, pyramids, cylinders & cones and extend its lateral surfaces	K3
C106.5	**Sketch** the perspective projection of simple solids, truncated prisms, pyramids, cone and cylinders and sketch the isometric projection of simple machine parts	K4

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Course Code and Name: C107 &GE8161- Problem Solving and Python Laboratory		
	CO Statements	**Knowledge Level**
The students should be able to		
C107.1	**Develop** simple python programs for applying the concepts of data types, expressions, and python statements	K3
C107.2	**Develop** Python programs using conditionals, looping, functions, and strings for solving real-time computational problems	K3
C107.3	**Understand** the concepts of compound data using Python lists, tuples, and dictionaries	K2
C107.4	**Develop** python programs for solving problems by using modules, files, and python packages	K3
C107.5	**Utilize** Python packages for developing real-world software applications	K6

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Course Code and Name: C108 & BS8161 - Physics and Chemistry Laboratory		
	CO Statements	**Knowledge Level**
The students should be able to		
C108.1	**Manipulate** the fundamental concepts like torque, elasticity and bending moment of beams for various engineering applications by the determination of rigidity modulus of the wire and young's modulus of the material of the beam by non-uniform bending	K3
C108.2	**Practice** the fundamentals of thermal properties of material of the bad conductor by Lee's disc method	K3
C108.3	**Understand** the basic knowledge and estimation of DO content in water sample by Winkler's method and molecular weight of polymer by Ostwald viscometer	K2
C108.4	**Dramatize** the strength of an acid using pH meter and conductometer for applications in the field ofengineering	K3
C108.5	**Experiment**ing the estimation of total, permanent and temporary hardness of water for our environment	K3

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SEMESTER 2

Course Code &Name: C109 & HS8251 - Technical English		
	CO Statements	**Knowledge Level**
The students should be able to		
C109.1	**Read and write** their technical and area-specific texts in an effortless manner	K3
C109.2	**Listen** comfortably and respond confidently to lectures and talks pertaining to their domain skills	K2
C109.3	**Speak** in an appropriate manner in both formal and informal situations for lifelong learning	K3
C109.4	**Create** CVs and draft Job applications in confident manner	K6
C109.5	**Communicate** confidently by using all the four skills with their peers and in real life situations	K4

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Course Code &Name: C110 & MA8251 - Engineering Mathematics - II		
	CO Statements	**Knowledge Level**
The students should be able to		
C110.1	**Analyze** the different types of matrices for solving practical problems	K4
C110.2	**Apply** Gradient, divergence and curl of a vector point function and related identities in engineering field	K3
C110.3	**Acquire** the knowledge to solve the engineering problems in analytic functions	K2
C110.4	**Analyze** and **apply** the different methods to solve complex integration problems	K4
C110.5	**Create** and **manage** the projects after applying and analyzing the fundamentals of Laplace transforms	K6

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Course Code &Name: C111 & PH8252 - Physics for Information Science		
	CO Statements	**Knowledge Level**
The students should be able to		
C111.1	**Comprehend** the materials for their diverse applications, it is necessary to grasp the energy band structuresand the classical and quantum electron theories	K3
C111.2	**Provide** a balanced understanding of diverse semiconductor electronic devices, such as hall devices, ohmic contacts, Schottky diodes, and power transistors, by explaining the fundamental principles of semiconductor physics	K2
C111.3	**Interpret** the properties, manipulation of magnetic materials used in modern devices such as Magnetic hard disc, GMR sensor and computer data storage.	K3
C111.4	**Understand** the fundamental properties of optical materials in optoelectronics is essential to comprehend thetheoretical methods for designing modern optoelectronic devices	K2
C111.5	**Comprehend** the fundamentals of quantum structures and the nano scale manipulation of modern materialsin spintronics and carbon electronics	K2

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Course Code &Name: C112 & BE8255 - Basic Electrical Electronics and Measurement Engineering		
	CO Statements	**Knowledge Level**
The students should be able to		
C112.1	**Illustrate** the behavior of electric circuits using fundamental laws and techniques	K2
C112.2	**Understand** the operation of DC, AC and Special machines	K2
C112.3	**Summarize** different energy sources, protective devices and its applications	K2
C112.4	**Outline** the characteristics and applications of semiconductor diodes.	K2
C112.5	**Summarize** the characteristics and errors of the instruments	K2

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Course Code &Name: C113 & GE8291- Environmental Science and Engineering		
	CO Statements	**Knowledge Level**
The students should be able to		
C113.1	**Apply** the finding and implementing scientific, technological, economic and political solutions to environmental problems with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.	K3
C113.2	**Understand** the impact of the professional engineering solutions in societal and environmental contexts for the importance of Public participation in conservation of natural resources.	K2
C113.3	**Discuss** the types of natural energy sources and analyze the need for alternative fuels to solve current social problems by using engineering techniques.	K2
C113.4	**Learn**ing the concepts from unsustainable to sustainable development and urban problems related to energy, water conservation, rain water harvesting.	K2
C113.5	**Apply** the basics of information technology in environment and human health function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.	K3

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Course Code &Name: C114 & CS8251 – Programming in C		
	CO Statements	**Knowledge Level**
The students should be able to		
C114.1	**Understand** the basic concepts of C programming tokens, control statements Input/Output statements, and Preprocessor directives	K2
C114.2	**Develop** C Programs using basic programming constructs for solving simple problems	K3
C114.3	**Develop** C programs for solving computational problems by using arrays and strings	K3
C114.4	**Develop** simple real-time applications in C using functions, arrays, and strings	K3
C114.5	**Develo**p applications for real time problems in C using pointers and structures	K3

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Course Code &Name: C115 & GE8261 - Engineering Practices Laboratory		
	CO Statements	**Knowledge Level**
The students should be able to		
C115.1	**Analyze** the pipe line plan; lay and connect various pipe fittings used in common household plumbingwork; Saw; plan; make joints in wood materials used in common household wood work	K2
C115.2	**Weld** various joints in steel plates using arc welding work; Simple machine processes like turning, drilling, tapping in parts; Making simple mechanical assembly of common household equipments; Make a tray outof metal sheet using sheet metal work	K2
C115.3	**Apply** the Knowledge of electrical wiring in common household electrical wire work	K2
C115.4	**Demonstrate** the soldering and testing of simple electronic circuits and assembling and testing of simpleelectronic components on PCB	K2

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Course Code &Name: C116 & CS8261 – C Programming Laboratory		
	CO Statements	**Knowledge Level**
The students should be able to		
C116.1	**Understand** the basic concepts of C programming tokens, control statements, Input/ Output statements and Preprocessor directives	K2
C116.2	**Develop** C Programs using basic programming constructs for solving simple problems	K3
C116.3	**Develop** C programs for solving computational problems by using arrays and strings	K3
C116.4	**Develop** simple real-time applications in C using functions, arrays, and strings	K3
C116.5	**Develop** applications for real time problems in C using pointers and structures	K3

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SEMESTER 3

Course Code &Name: C201 & MA8351 - Discrete Mathematics		
	CO Statements	**Knowledge Level**
The students should be able to		
C201.1	**Apply** the engineering knowledge to solve the logic of a program.	K3
C201.2	**Understand** and analyze the structures of problems on mathematical induction and counting principle.	K2
C201.3	**Apply** the fundamentals of graph theory using modern tools in computer networking to manage projects	K3
C201.4	**Apply** the notion of groups, rings and fields to design and solve the algebraic structures problems.	K3
C201.5	**Acquire** the knowledge of engineering in real life phenomena by solving Lattices and Boolean algebra	K3

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Course Code and Name: C202 & CS8351 – Digital Principles and System Design		
	CO Statements	**Knowledge Level**
The students should be able to		
C202.1	**Apply** Arithmetic operations in any number system and various techniques to simplify the Boolean functions	K3
C202.2	**Build** Combinational & Sequential logic Circuits that perform arithmetic & Shift operations correspondingly	K3
C202.3	**Analyze** Combinational & Sequential logic design	K4
C202.4	**Model** Memory arrays for the appropriate problem	K4
C202.5	**Develop** HDL code for Combinational & Sequential logic circuits	K4

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Course Code and Name: C203 & CS8391 – Data Structures		
	CO Statements	**Knowledge Level**
The students should be able to		
C203.1	**Understand** the basic concepts of abstract datatype and implement List ADT for analyzing the real-world problems	K2
C203.2	**Use** appropriate linear data structures - stack and queue, and apply its operations for solving complex problems.	K3
C203.3	**Implement** the non-linear data structure - tree and heap, and analyze its various applications.	K3
C203.4	**Apply** the non-linear graph data structures and compare the different methodologies to analyze its performance.	K4
C203.5	**Analyze** and **implement** various kinds of searching, sorting and hashing techniques.	K4

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Course Code and Name: C204 & CS8392 – Object Oriented Programming		
	CO Statements	**Knowledge Level**
The students should be able to		
C204.1	**Understand** the concept and features of object oriented programming using java programs with classes and objects	K2
C204.2	**Create** the java program using inheritance, access specifiers, abstract classes, interfaces and strings	K4
C204.3	**Use** of exceptions and its types , input and output stream	K5
C204.4	**Build** java applications for multi-threading and its life cycle, generic classes and methods and bounded types.	K4
C204.5	**Combine** the concept of interactive, graphics programming using swing components such as text fields , text areas, button, check box and menus	K4

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Course Code and Name: C205 & EC8395 Communication Engineering		
	CO Statements	**Knowledge Level**
The students should be able to		
C205.1	**Understand** the various analog modulation techniques	K2
C205.2	**Deliberate** about DPCM, DM, ADPCM and ADM techniques.	K2
C205.3	**Illustrate** about digital modulation & Transmission	K2
C205.4	**Compute** the error control coding techniques in communication systems	K3
C205.5	**Classify** the various multiple access method supporting wireless communication	K2

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Course Code and Name: C206 & CS8381 – Data Structures Laboratory		
	CO Statements	**Knowledge Level**
The students should be able to		
C206.1	**Implement** the operations and applications of List, Stack and Queue using array	K4
C206.2	**Implement** the operations of List, Stack and Queue using Linked List	K4
C206.3	**Understand** and implement the different operations of various Trees.	K4
C206.4	**Implement** graph traversal algorithms and techniques	K4
C206.5	**Understand** and **implement** various sorting, searching and hashing algorithms	K4

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Course Code and Name: C207 & CS8383 - Object Oriented Programming Laboratory		
	CO Statements	**Knowledge Level**
The students should be able to		
C207.1	**Design** and implement java simple application that make use of classes, packages and interfaces	K2
C207.2	**Develop** a java application using class and its members and also implement java converter applications.	K4
C207.3	**Apply** the java string programs using string operations using array list, abstract classes	K4
C207.4	**Develop** a java program to implement user defined exceptions, reading and writing a file	K4
C207.5	**Develop** a java program for multi threaded applications and generic function.	K4

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Course Code and Name: C208 & CS8382 – Digital Systems Laboratory		
	CO Statements	**Knowledge Level**
The students should be able to		
C208.1	**Apply** Boolean simplification techniques to design simplified combinational circuits using basic gates	K2
C208.2	**Design** and **Implement** combinational circuits using MSI devices	K4
C208.3	**Design** and **implement** magnitude comparator, parity checker circuit	K4
C208.4	**Construct** sequential circuits like registers and counters	K4
C208.5	**Construct** and **simulate** digital circuit using VHDL software	K4

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Course Code and Name: C209 &HS8381 - Interpersonal Skills/Listening &Speaking		
	CO Statements	**Knowledge Level**
The students should be able to		
C209.1	**Listen** and react to English in an appropriate manner	K2
C209.2	**Get** themselves actively involved in Group Discussion activities	K3
C209.3	**Feel** comfortable in making oral presentations	K2
C209.4	**React** well in both formal and informal contexts in professional situations	K4
C209.5	**Persuade** their audience by making appropriate expressions	K5

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Course Code and Name: C210 & MA8402 – Probability and QueueingTheory		
	CO Statements	**Knowledge Level**
The students should be able to		
C210.1	**Understand** the basic notion of the concepts of probability and have knowledge of standard distributions which can apply to real life phenomenon.	K2
C210.2	**Solve** complex problems by using the Engineering knowledge of one- and two-dimensional random variables	K3
C210.3	**Identify** and **apply** the concept of random processes in engineering disciplines.	K3
C210.4	**Analyze** and **acquire** skills in queueing models to manage projects and in multi-disciplinary environments.	K6
C210.5	**Understand** and **apply** the impact of environmental contexts to characterize phenomenon of queueing models	K3

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Course Code and Name: C211 & CS8491 – Computer Architecture		
	CO Statements	**Knowledge Level**
The students should be able to		
C211.1	**Describe** the basic structures of a computer system,operations and instructions	K2
C211.2	**Understand** the various arithmetic operations for computers.	K2
C211.3	**Analyze** pipelined control units and the different types of hazards in the Instructions	K3
C211.4	**Interpret** the concepts of various parallel processing architectures	K2
C211.5	**Understand** the fundamentals of memory and I/O systems comunication	K2

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Course Code and Name: C212 & CS8492 – Database Management Systems		
	CO Statements	**Knowledge Level**
The students should be able to		
C212.1	**Understand** basics of SQL and construct queries using SQL, relational algebra and calculus and apply query processing.	K3
C212.2	**Design** and implement schemas using normal forms, address the problems by decomposition, functional dependencies and redundancies.	K3
C212.3	**Analyze** and **solve** various issues of transaction processing, concurrency control and recovery techniques.	K4
C212.4	**Analyze** various indexing and hashing strategies to perform query optimization in database systems	K4
C212.5	**Develop** a small database project using database tools.	K4

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Course Code and Name: C213 & CS8451 – Design and Analysis of Algorithms		
	CO Statements	**Knowledge Level**
The students should be able to		
C213.1	**Understand** the fundamental concepts of algorithmic problem solving, analysis of algorithmic efficiency, and asymptotic notations	K2
C213.2	**Apply** the Brute Force method and Divide and Conquer method to solve the algorithmic complex computing problems.	K3
C213.3	**Develop** algorithmic solutions for complex problems by applying the concept of dynamic programming and greedy techniques	K3
C213.4	**Understand** the concept of the simplex method, maximum flow problem, and stable marriage problem	K2
C213.5	**Analyze** the different algorithm design techniques for a given problem based on its time and space complexity.	K4

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Course Code and Name: C214 & & CS8493 – Operating Systems		
	CO Statements	**Knowledge Level**
The students should be able to		
C214.1	**Understand** the fundamental concepts about the overall view of computer system and its components.	K2
C214.2	**Analyse** and predict solutions/algorithms for the interpretation of data involved during the process scheduling, synchronization and management.	K4
C214.3	**Compare** and analyse the concept of various memory management techniques.	K4
C214.4	**Demonstrate** knowledge and understand the functionalities of file systems and I/O Systems.	K3
C214.5	**Compare** and communicate effectively about the functions of Linux Systems, Mobile OS (iOS and Android)	K4

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Course Code and Name: C215 & CS8494 -Software Engineering		
	CO Statements	**Knowledge Level**
The students should be able to		
C215.1	**Identify** the key activities in managing a software project and compare different process models and understand the phases in a software project	K2
C215.2	**Understand** the Concepts of requirements engineering process and Requirement Analysis Modeling	K2
C215.3	**Apply** systematic procedure for software design using various software design methodologies	K3
C215.4	**Compare** and **contrast** the various testing and maintenance.	K4
C215.5	**Manage** project schedule, estimate project cost and effort required.	K4

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Course Code and Name: C216 & CS8481 - Database Management Systems Laboratory		
	CO Statements	**Knowledge Level**
The students should be able to		
C216.1	**Apply** MYSQL products for creating tables, views, indexes, sequences and other database objects.	K3
C216.2	**Design** and **implement** simple and complex queries using DDL, DML, DCL and TCL.	K3
C216.3	**Develop** Entity-Relationship model from specifications and to perform the transformation of the conceptual model into corresponding logical data structure.	K3
C216.4	**Design** applications to test nested and join queries.	K3
C216.5	**Implement** PL/SQL blocks, procedures, functions, packages triggers and cursors in databases.	K3

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Course Code and Name: C217& CS8461 – Operating Systems Laboratory		
	CO Statements	**Knowledge Level**
The students should be able to		
C217.1	**Understand** the fundamental concepts and design the Various CPU Scheduling algorithms to develop a solution for real world problems.	K3
C217.2	**Implement** deadlock avoidance and detection algorithms for the investigation of complex problems.	K3
C217.3	**Apply** appropriate techniques to implement Semaphore Concepts, Process and IPC	K3
C217.4	**Analyze** the performance of the various page replacement algorithms to get better solution for the problems.	K3
C217.5	**Implement** File Organization and File Allocation Strategies to write report and make effective presenations for complex engineering activities	K3

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Course Code and Name: C218 & HS8461 Advanced Reading and Writing Lab		
	CO Statements	**Knowledge Level**
The students should be able to		
C218.1	**Write** technical articles in a confident manner	K3
C218.2	**Create** their CV and write cover letter without anyone's help	K6
C218.3	**Read** and express their views critically	K2
C218.4	**Exhibit** their critical wisdom in varied professional situations	K3
C218.5	**Write** confidently by acquiring competency in writing skills and use them in academic situations for ever	K5

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Course Code and Name: C301 & MA8551 – Algebra and Number Theory		
	CO Statements	**Knowledge Level**
The students should be able to		
C301.1	**Apply** the basic notions of groups, rings, fields which will be used to solve related problems.	K3
C301.2	**Iidentify** the fundamental concepts of advanced algebra and their role in modern mathematics and applied contexts.	K3
C301.3	**Solve** accurate and efficient use of advanced algebraic techniques.	K3
C301.4	**Solve** the non - trivial problems related to basic concepts applied in engineering field	K3
C301.5	**Apply** integrated approach to number theory and abstract algebra, and provide a firm basis for further reading and study in the subject.	K3

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Course Code and Name: C302 & CS8591 – Computer Networks		
	CO Statements	**Knowledge Level**
The students should be able to		
C302.1	**Understand** the concepts of data communication, protocol layering, functions of OSI layers and familiarize the physical level communication	K2
C302.2	**Identify** the link layer addressing and data link layer protocols.such as HDLC, PPP, wired and wireless LANs.	K2
C302.3	**Design** the various network layer protocols such as IPV4 , ICMP v4 and unicast, multicast routing protocols and algorithms..	K3
C302.4	**Understand** the different transport layer protocols such as UDP, TCP and SCTP characteristics.	K2
C302.5	**Identity** with world wide web, HTTP and FTP, Email, Telnet and various application layer protocols	K3

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Course Code and Name: C303 & EC8691 – Microprocessors and Microcontrollers		
	CO Statements	**Knowledge Level**
The students should be able to		
C303.1	**Understand** the fundamental concepts of 8086 microprocessor architecture, addressing modes & instruction set	K2
C303.2	**Understand** the design aspects of I/O and Memory Interfacing circuits	K2
C303.3	**Develop** Assembly language program to interface 8086 microprocessor with supporting chips for different applications	K4
C303.4	**Understand** the fundamental concepts of 8051 microprocessor architecture, addressing modes & instruction set	K2
C303.5	**Develop** Assembly language program to interface 8051 microcontroller with supporting chips for different applications	K4

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Course Code and Name: C304 & CS8501 – Theory of Computation		
	CO Statements	**Knowledge Level**
The students should be able to		
C304.1	**Design** different types of automata by understanding the fundamental concepts of automata theory.	K3
C304.2	**Construct** regular expression for any automata and find the minimized automata with its equivalent	K3
C304.3	**Design** Push down automata for any context free grammar and vise versa	K3
C304.4	**Understand** Turing machines and their capability with various Programming Techniques for TM.	K3
C304.5	**Analyze** decidability of the problems and complex NP class problems	K4

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Course Code and Name: C305 & CS8592 -Object Oriented Analysis and Design		
	CO Statements	**Knowledge Level**
The students should be able to		
C305.1	**Understand** the fundamental concepts of OOAD with object oriented basics such as unified modeling language diagrams and use case diagrams with relations of use cases.	K2
C305.2	**Demonstrate** the concepts of static unified modeling language diagrams with the use of domain model and domain model refinement in finding class hierarchies.	K3
C305.3	**Realize** the fundamental concepts of dynamic and unified modeling diagrams with the implementation of unified modeling language interaction diagrams, state machine diagrams and collaboration diagrams.	K2
C305.4	**Transform** UML based software design into pattern based design using design patterns	K3
C305.5	**Interpret** various testing methodologies with the impact of object orientation to develop test cases and test plans.	K2

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Course Code and Name: C306 & OAN551 - Sensors and Transducers		
	CO Statements	**Knowledge Level**
The students should be able to		
C306.1	**Understand** the expertise in various calibration techniques and signal types for sensors	K2
C306.2	**Apply** the various sensors in the Automotive applications	K3
C306.3	**Apply** the various sensors in the Mechatronics applications	K3
C306.4	**Understand** the basic principles of various smart sensors	K2
C306.5	**Implement** the DAQ systems with different sensors for real time applications	K4

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Course Code and Name: C307 & EC8681 - Microprocessors and Microcontrollers Laboratory		
	CO Statements	**Knowledge Level**
The students should be able to		
C307.1	**Develop** the ALP Programs for fixed point arithmetic circuits	K3
C307.2	**Demonstrate** the interfacing circuits for different I/Os.	K3
C307.3	**Develop** the Assembly Language Program for generating waveforms such as square wave and triangular wave using microprocessors.	K3
C307.4	**Develop** the arithmetic and logical programs using 8051 microcontrollers.	K3
C307.5	**Demonstrate** the performance in simulator and emulator	K2

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Course Code and Name: C308 & CS8582- Object Oriented Analysis and Design Laboratory		
	CO Statements	**Knowledge Level**
The students should be able to		
C308.1	**Apply** and perform object-oriented analysis and design concepts to solve a given problem specifications	K3
C308.2	**Develop** and identify basic software requirements mapping in unified modeling language	K3
C308.3	**Improve** the software quality using design patterns and to explain the rationale behind applying specific design patterns	K5
C308.4	**Develop** and test the compliance of the software system with software requirement specification.	K6
C308.5	**Develop** and perform mapping of object-oriented design for various software's with code development.	K3

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Course Code and Name: C309 & CS8581- Networks Laboratory		
	CO Statements	**Knowledge Level**
The students should be able to		
C309.1	**Study** of various network commands such as netstat, ipconfig, nslookup and trace route and HTTP client program to download a web page using TCP Sockets	K2
C309.2	**Design** the programs of TCP sockets such as echo client and echo server, chat server, file transfer and simulation od DNS using DNS sockets	K3
C309.3	**Apply** simulation tools using ARP/ RARP protocols and study of Network simulator of congestion control algorithms.	K3
C309.4	**Study** the TCP/UDP performance, simulation of distance vector, link state routing algorithm.	K4
C309.5	**Apply** performance evaluation of routing protocols and simulation of Error correcting codes	K4

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Course Code and Name: C310 & CS8651 – Internet Programming		
	CO Statements	**Knowledge Level**
The students should be able to		
C310.1	**Understand** the concepts of different internet technologies, protocols , HTML programs web essentials, illustrate web pages using HTML and cascade style sheets	K2
C310.2	**Apply** a client server programming such as java script, DOM, DHTML, JSON.	K4
C310.3	**Using** server side programming java servlet, life cycle, Tomcat web server and Compare and contrast dynamic web pages using server side programming	K5
C310.4	**Develop** a PHP programs, XML such as XML parser, XSLT, news feed	K4
C310.5	**Build** the applications using AJAX and java web services such as WSDL and SOAP concepts	K6

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Course Code and Name: C311 & CS8691 – Artificial Intelligence		
	CO Statements	**Knowledge Level**
The students should be able to		
C311.1	**Demonstrate** the concepts of AI problems and the search algorithms used in it.	K2
C311.2	**Utilize** first order and predicate logic methods for knowledge representation.	K3
C311.3	**Summarize** the framework for different Artificial Intelligence approaches to resolving a problem.	K2
C311.4	**Apply** various scientific approaches to AI techniques in machine learning**.**	K3
C311.5	**Illustrate** the evaluation of the various algorithms on a formalization of the Problem	K2

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Course Code and Name: C312 & CS8601 – Mobile Computing		
	CO Statements	**Knowledge Level**
The students should be able to		
C312.1	**Understand** the fundamental concepts of mobile telecommunication systems	K2
C312.2	**Demonstrate** the generations of telecommunication systems in wireless networks and learn the basics of mobile telecommunication system	K2
C312.3	**Determine** the functionality of MAC, network layer and Identify a routing protocol for a given Ad hoc network .	K3
C312.4	**Understand** the functionality of Mobile TCP and WTA Architecture in Transport and Application layers	K2
C312.5	**Develop** a mobile application using android/blackberry/ios/Windows SDK and gain knowledge about different mobile platforms and application development	K3

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Course Code and Name: C313 & CS8602 – Compiler Design		
	CO Statements	**Knowledge Level**
The students should be able to		
C313.1	**Understand** the various phases of compiler and develop a lexical analyzer for a sample language.	K2
C313.2	**Apply** the knowledge and design parser for the given grammar to implement syntax analyzer with the help of YACC tools.	K3
C313.3	**Identify** and formulate the steps and process involved in Intermediate Code Generation.	K3
C313.4	**Understand** the concept of storage organizations and design of simple code generator in run time environment.	K4
C313.5	**Apply** the knowledge and learn to develop/implement the code optimization techniques.	K6

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Course Code and Name: C314 & CS8603 – Distributed Systems		
	CO Statements	**Knowledge Level**
The students should be able to		
C314.1	**Elucidate** the foundations and issues of distributed systems and understand different models of distributed executions.	K2
C314.2	**Analyze** various synchronization issues and global states in distributed systems.	K4
C314.3	**Choose** appropriate Distributed mutual exclusion and Deadlock detection algorithms in distributed systems.	K3
C314.4	**Apply** various checkpointing, rollback recovery, and consensus and agreement algorithms in distributed systems for complex problems.	K3
C314.5	**Relate** the features of peer-to-peer and distributed shared memory systems and solve the real time complex problems in distributed system.	K3

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Course Code and Name: C315 & CS8072 - Agile Methodologies		
	CO Statements	**Knowledge Level**
The students should be able to		
C315.1	**Realize** the importance of interacting with business stakeholders in determining the requirements for a software system	K2
C315.2	**Perform** iterative software development processes: how to plan them, how to execute them.	K3
C315.3	**Point out** the impact of social aspects on software development success.	K3
C315.4	**Develop** techniques and tools for improving team collaboration and software quality	K4
C315.5	**Perform** Software process improvement as an ongoing task for development teams and Show how agile approaches can be scaled up to the enterprise level.	K3

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Course Code and Name: C316 & CS8661 – Internet Programming Laboratory		
	CO Statements	**Knowledge Level**
The students should be able to		
C316.1	**Build** web pages using HTML and cascade style sheets.	K3
C316.2	**Fabricate** dynamic web pages with validation using Java Script objects	K5
C316.3	**Contract** dynamic web pages using server-side scripting.	K4
C316.4	**Make use** of Tomcat web server and JSP.	K5
C316.5	**Validate** the PHP application and web services.	K4

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Course Code and Name: C317 & CS8662 – Mobile Application Development Laboratory		
	CO Statements	**Knowledge Level**
The students should be able to		
C317.1	**Understand** the components and structure of mobile application development frameworks for Android and windows OS-based mobiles.	K1
C317.2	**Formulate** with various mobile application development frameworks and develop mobile applications using Event Listener.	K3
C317.3	**Develop** the mobile applications using Databases.	K3
C317.4	**Identify** the mobile applications using RSS Feed, Internal/External Storage, SMS, Multi-threading and GPS.	K2
C317.5	**Analyze** and **discover** own mobile app for simple needs	K4

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Course Code and Name: C318 & CS8611 – Mini Project		
	CO Statements	**Knowledge Level**
The students should be able to		
C318.1	**Choose** problems with technical importance and societal contribution	K3
C318.2	**Identify** and survey the relevant literature for getting exposed to related solutions	K3
C318.3	**Build** project plans with feasible requirements	K3
C318.4	**Analyse**, **design** and **develop** adaptable and reusable solutions	K4
C318.5	**Implement** and **test** solutions to trace against the user requirements	K4

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Sathiyamangalam, Kulathur(TK), Pudukkottai District-622 501
Ph: 04339-240830, 240840 Fax: 04339-240205
Website: www.sec.ac.in Email: principal@sec.ac.in

Course Code and Name: C319 & HS8581 Professional Communication		
	CO Statements	**Knowledge Level**
The students should be able to		
C319.1	**Enhance** the employability and career skills in engineering domain	K3
C319.2	**Improve** professional communication	K4
C319.3	**Build** confidence in employability skills	K4
C319.4	**Face** interviews with necessary skills	K5
C319.5	**Acquire** required skills to excel in their career	K3

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SEMESTER 7

Course Code and Name: C401 & MG8591 – Principles of Management		
	CO Statements	**Knowledge Level**
The students should be able to		
C401.1	**Discuss** the evolution of management, functions and roles of managers	K2
C401.2	**Explain** the different types of planning process and tools used for planning	K2
C401.3	**Elaborate** different organization structures and functions of human resources manager	K2
C401.4	**Illustrate** the different theories of motivation and leadership	K2
C401.5	**Describe** the control techniques and the role of technology in management	K2

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Course Code and Name: C402 & CS8792 – Cryptography and Network Security		
	CO Statements	**Knowledge Level**
The students should be able to		
C402.1	**Define** the fundamental concepts of security policies, services, mechanisms and various encryption techniques.	K2
C402.2	**Formulate** and **analyse** the mathematical concept of symmetric key cryptographic algorithms	K4
C402.3	**Apply** and **design** solutions for the complex engineering problems using the public key cryptographic algorithms	K6
C402.4	**Analyse** the impact about the usage modern tools for the message integrity and various authentication mechanisms in terms of safety and security.	K4
C402.5	**Communicate** the needs of several security practices and standards of the technological change	K2

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Course Code and Name: C403 & CS8791 – Cloud Computing		
	CO Statements	**Knowledge Level**
The students should be able to		
C403.1	**Understand** the fundamental concepts, key technologies, strengths and limitations of cloud computing	K1
C403.2	**Identify** the evolution of cloud from the existing technologies and learn the key and enabling technologies that help in the development of cloud.	K2
C403.3	**Develop** the ability to understand and use the architecture of compute and storage cloud, service and delivery models and make use of NIST cloud computing architecture to solve architecture design challenges	K3
C403.4	**Formulate** the core issues of cloud computing such as resource management and security and familiar with the lead players in cloud	K2
C403.5	**Evaluate** and **choose** the appropriate technologies, algorithms and approaches for implementation and use of cloud and appreciate the emergence of cloud as the next generation computing paradigm.	K4

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Course Code and Name: C404 & OIE751 - Robotics		
	CO Statements	**Knowledge Level**
The students should be able to		
C404.1	**Summarize** the basic concepts of industrial robotics and key components of robotics technologies.	K5
C404.2	**Summarize** the robot drive systems, gripper sand various end effectors.	K5
C404.3	**Describe** the various sensors and image processing & data reduction method for the control of robots.	K2
C404.4	**Analyze** the various kinematics of robots and prepare the robot program.	K4
C404.5	**Explain** the implementations of robots in industries and analyzing robot economics.	K2

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Course Code and Name: C406 & CS8079 – Human Computer Interaction		
	CO Statements	**Knowledge Level**
The students should be able to		
C406.1	**Design**ing the fundamental concepts of human computer interface and its components, methodologies	K3
C406.2	**Apply** interactive design such as prototypes, software process, life cycle , design rules and evaluation techniques	K3
C406.3	**Use** cognitive models, collaboration models, socio organizational issues, hyper text.	K4
C406.4	**Justify** the the mobile related HCI and its applications, design, tools and case studies.	K5
C406.5	**Create** about web interfaces such as drag and drop, contextual tools.	K4

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Course Code and Name: C407 & CS8711 – Cloud Computing Laboratory		
	CO Statements	**Knowledge Level**
The students should be able to		
C407.1	**Configure** the various virtualization tools such as Virtual Box, VMware workstation	K2
C407.2	**Design** and deploy a web application in a PaaS environment	K3
C407.3	**Understand** the design and development process involved in creating a cloud based application and learn how to simulate a cloud environment to implement new schedulers.	K2
C407.4	**Install** and use a generic cloud environment that can be used as a private cloud and Simulate a cloud scenario using CloudSim and run a scheduling algorithm	K3
C407.5	**Manipulate** large data sets in a parallel environment and Install Hadoop single node cluster	K2

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Course Code and Name: C408 & IT8761 - Security Laboratory		
	CO Statements	**Knowledge Level**
The students should be able to		
C408.1	**Identify** the problem and develop code for classical Encryption Techniques to get solution for real world problems	K3
C408.2	**Design** Solutions and build cryptosystems by applying symmetric and public key encryption algorithms.	K3
C408.3	**Construct** code for authentication algorithms that meet specific needs for securing the data in the real-world environment	K3
C408.4	**Develop** a signature scheme using Digital signature standard for complex engineering activities	K4
C408.5	**Demonstrate** the network security system using open-source tools in multi-disciplinary environments.	K4

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SEMESTER 8

Course Code and Name: C409 & CS8074 - Cyber Forensics		
	CO Statements	**Knowledge Level**
The students should be able to		
C409.1	**Understand** the basics of computer forensics	K2
C409.2	**Apply** a number of different computer forensic tools to a given scenario	K3
C409.3	**Analyze** and validate forensics data	K4
C409.4	**Identify** the vulnerabilities in a given network infrastructure	K4
C409.5	**Implement** real-world hacking techniques to test system security	K4

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Course Code and Name: C410 & CS8078 - Green Computing		
	CO Statements	**Knowledge Level**
The students should be able to		
C410.1	**Analyze** the concepts of technologies that conform to low-power computation	K2
C410.2	**Discuss** green (power-efficient) technologies for components of one single computer, such as CPU, memory and disk, and appreciate cutting edge designs for these components	K3
C410.3	**Analyse** a variety of technologies applied in building a green system and to identify the various key sustainability and green IT trends	K3
C410.4	**Discuss** the various laws, standards and protocols for regulating green IT	K3
C410.5	**Use** a range of tools to help monitor and design green systems	K2

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Course Code and Name: C411 & CS8811 - Project Work		
	CO Statements	**Knowledge Level**
The students should be able to		
C411.1	**Identify** technically and economically feasible problems of social relevance	K3
C411.2	**Plan** and build the project team with assigned responsibilities	K5
C411.3	**Identify** and **survey** the relevant literature for getting exposed to related solutions	K4
C411.4	**Analyze**, **design** and **develop** adaptable and reusable solutions of minimal complexity by using modern tools	K6
C411.5	**Implement** and **test** solutions to trace against the user requirements	K4