CAMBRIDGE INSTITUTE OF TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Course outcomes of 2018 scheme

Course Code	Course Name	Course Outcomes
18MAT31	Transform Calculas, Fourier Series and Numerical Techniques	After Studying this course, students will be able to: CO1: Use Laplace transform and inverse Laplace transform in solving differential/ integral equation arising in network analysis, control systems and other fields of engineering. CO2: Demonstrate Fourier series to study the behaviour of periodic functions and their applications in system communications, digital signal processing and field theory. CO3: Make use of Fourier transform and Z-transform to illustrate discrete/continuous function arising in wave and heat propagation, signals and systems. CO4: Solve first and second order ordinary differential equations arising in engineering problems using single step and multistep numerical methods. CO5: Determine the extremals of functionals using calculus of variations and solve problems arising in dynamics of rigid bodies and vibrational analysis.
18CS32	Data Structures and Applications	After Studying this course, students will be able to: CO1: Use different types of data structures, operations and algorithms CO2: Apply searching and sorting operations on files CO3: Use stack, Queue, Lists, Trees and Graphs in problem solving CO4: Implement all data structures in a high-level language for problem solving.
18CS33	Analog and Digital Electronics	After Studying this course, students will be able to: CO1: Design and analyze application of analog circuits using photo devices, timer IC, power supply and regulator IC and op-amp. CO2: Explain the basic principles of A/D and D/A conversion circuits and develop the same. CO3: Simplify digital circuits using Karnaugh Map , and Quine-McClusky Methods CO4: Explain Gates and flip flops and make us in designing different data processing circuits, registers and counters and compare the types. CO5: Develop simple HDL programs
18CS34	Computer Organization	After Studying this course, students will be able to: CO1: Explain the basic organization of a computer system. CO2: Demonstrate functioning of different sub systems, such as processor, Input/output,and memory. CO3: Illustrate hardwired control and micro programmed control, pipelining, embedded and other computing systems. CO4: Design and analyse simple arithmetic and logical units.

18CS35	Software Engineering	After Studying this course, students will be able to: CO1: Design a software system, component, or process to meet desired needs within realistic constraints. CO2: Assess professional and ethical responsibility CO3: Function on multi-disciplinary teams CO4: Use the techniques, skills, and modern engineering tools necessary for engineering practice CO5: Analyze, design, implement, verify, validate, implement, apply, and maintain software systems or parts of software systems
18CS36	Discrete Mathematical Structures	After Studying this course, students will be able to: CO1: Use propositional and predicate logic in knowledge representation and truth verification. CO2: Demonstrate the application of discrete structures in different fields of computer science. CO3: Solve problems using recurrence relations and generating functions. CO4: Application of different mathematical proofs techniques in proving theorems in the courses. CO5: Compare graphs, trees and their applications.
18CSL37	Analog and Digital Electronics Laboratory	After Studying this course, students will be able to: CO1: Use appropriate design equations / methods to design the given circuit. CO2: Examine and verify the design of both analog and digital circuits using simulators. CO3: Make us of electronic components, ICs, instruments and tools for design and testing of circuits for the given the appropriate inputs. CO4: Compile a laboratory journal which includes; aim, tool/instruments/software/components used, design equations used and designs, schematics, program listing, procedure followed, relevant theory, results as graphs and tables, interpreting and concluding the findings.
18CSL38	Data Structures Laboratory	After Studying this course, students will be able to: CO1: Analyze and Compare various linear and non-linear data structures CO2: Code, debug and demonstrate the working nature of different types of data structures and their applications CO3: Implement, analyze and evaluate the searching and sorting algorithms CO4: Choose the appropriate data structure for solving real world problems
18MATDIP31	Additional Mathematics - I	After Studying this course, students will be able to: CO1: Apply concepts of complex numbers and vector algebra to analyze the problems arising in related area. CO2: Use derivatives and partial derivatives to calculate rate of change of multivariate functions. CO3: Analyze position, velocity and acceleration in two and three dimensions of vector valued functions. CO4: Learn techniques of integration including the evaluation of double and triple integrals. CO5: Identify and solve first order ordinary differential equations.

18MAT41	COMPLEX ANALYSIS, PROBABILITY AND STATISTICAL METHODS	After Studying this course, students will be able to: CO1: Use the concepts of analytic function and complex potentials to solve the problems arising in electromagnetic field theory. CO2: Utilize conformal transformation and complex integral arising in aerofoil theory, fluid flow visualization and image processing. CO3: Apply discrete and continuous probability distributions in analyzing the probability models arising in engineering field. CO4: Make use of the correlation and regression analysis to fit a suitable mathematical model for the statistical data. CO5: Construct joint probability distributions and demonstrate the validity of testing the hypothesis.
18CS42	DESIGN AND ANALYSIS OF ALGORITHMS	After Studying this course, students will be able to: CO1: Describe computational solution to well-known problems like searching, sorting etc. CO2: Estimate the computational complexity of different algorithms. CO3: Devise an algorithm using appropriate design strategies for problem solving.
18CS43	OPERATING SYSTEMS	After Studying this course, students will be able to: CO1: Demonstrate need for OS and different types of OS CO2: Apply suitable techniques for management of different resources CO3: Use processor, memory, storage and file system commands CO4: Realize the different concepts of OS in platform of usage through case studies
18CS44	MICROCONTROLLER AND EMBEDDED SYSTEMS	After Studying this course, students will be able to: CO1: Describe the architectural features and instructions of ARM microcontroller CO2: Apply the knowledge gained for Programming ARM for different applications. CO3: Interface external devices and I/O with ARM microcontroller. CO4: Interpret the basic hardware components and their selection method based on the characteristics and attributes of an embedded system. CO5: Develop the hardware /software co-design and firmware design approaches. CO6: Demonstrate the need of real time operating system for embedded system applications
18CS45	OBJECT ORIENTED CONCEPTS	After Studying this course, students will be able to: CO1: Explain the object-oriented concepts and JAVA. CO2: Develop computer programs to solve real world problems in Java. CO3: Develop simple GUI interfaces for a computer program to interact with users, and to understand the event-based GUI handling principles using Applets and swings.
		After Studying this course, students will be able to: CO1: Explain the various components of data communication. CO2: Explain the fundamentals of digital communication and switching.

18CS46	DATA COMMUNICATION	CO3: Compare and contrast data link layer protocols. CO4: Summarize IEEE 802.xx standards
18CSL47	DESIGN AND ANALYSIS OF ALGORITHMS LABORATORY	After Studying this course, students will be able to: CO1: Design algorithms using appropriate design techniques (brute-force, greedy, dynamic programming, etc.) CO2: Implement a variety of algorithms such assorting, graph related, combinatorial, etc., in a high level language. CO3: Analyze and compare the performance of algorithms using language features. CO4: Apply and implement learned algorithm design techniques and data structures to solve real-world problems.
18CSL48	MICROCONTROLLER AND EMBEDDED SYSTEMS LABORATORY	After Studying this course, students will be able to: CO1: Develop and test Assembly Language Program (ALP) using ARM7TDMI/LPC2148 CO2: Conduct the following experiments on an ARM7TDMI/LPC2148 evaluation board using evaluation version of Embedded 'C' & Keil Uvision-4 tool/compiler.
18CS51	MANAGEMENT AND ENTREPRENEURSHIP FOR IT INDUSTRY	After Studying this course, students will be able to: CO1: Define management, organization, entrepreneur, planning, staffing, ERP and outline their importance in entrepreneurship CO2: Utilize the resources available effectively through ERP CO3: Make use of IPRs and institutional support in entrepreneurship
18CS52	COMPUTER NETWORKS	After Studying this course, students will be able to: CO1: Explain principles of application layer protocols CO2: Recognize transport layer services and infer UDP and TCP protocols CO3: Classify routers, IP and Routing Algorithms in network layer CO4: Understand the Wireless and Mobile Networks covering IEEE 802.11 Standard CO5: Describe Multimedia Networking and Network Management
18CS53	DATABASE MANAGEMENT SYSTEM	After Studying this course, students will be able to: CO1: Identify, analyze and define database objects, enforce integrity constraints on a database using RDBMS. CO2: Use Structured Query Language (SQL) for database manipulation. CO3: Design and build simple database systems CO4: Develop application to interact with databases.
		After Studying this course, students will be able to: CO1: Acquire fundamental understanding of the core concepts in automata theory and Theory of Computation CO2: Learn how to translate between different models of Computation (e.g., Deterministic and Non-deterministic and Software models).

18CS54	AUTOMATA THEORY AND COMPUTABILITY	CO3: Design Grammars and Automata (recognizers) for different language classes and become knowledgeable about restricted models of Computation (Regular, Context Free) and their relative powers. CO4: Develop skills in formal reasoning and reduction of a problem to a formal model, with an emphasis on semantic precision and conciseness. CO5: Classify a problem with respect to different models of Computation.
18CS55	RAPID APPLICATION DEVELOPMENT USING PYTHON	After Studying this course, students will be able to: CO1: Demonstrate proficiency in creating functions and handling of lists and dictionaries. CO2: Discover commonly used operations involving strings and regular expressions. CO3: Interpret the concepts of Object-Oriented Programming as used in Python. CO4: Determine the need for scraping websites and working with CSV, JSON and other file formats. CO5: Make use of modules for manipulating the images, keeping track of time and for sending emails using Python.
18CS56	UNIX PROGRAMMING	After Studying this course, students will be able to: CO1: Explain Unix Architecture, File system and use of Basic Commands CO2: Illustrate Shell Programming and to write Shell Scripts CO3: Categorize, compare and make use of Unix System Calls CO4: Build an application/service over a Unix system.
18CSL57	COMPUTER NETWORK LABORATORY	After Studying this course, students will be able to: CO1: Analyze and Compare various networking protocols. CO2: Demonstrate the working of different concepts of networking. CO3: Implement, analyze and evaluate networking protocols in NS2 / NS3 and JAVA programming language.
18CSL58	DBMS LABORATORY WITH MINI PROJECT	After Studying this course, students will be able to: CO1: Create, Update and query on the database. CO2: Demonstrate the working of different concepts of DBMS CO3: Implement, analyze and evaluate the project developed for an application.
18CS61	SYSTEM SOFTWARE AND COMPILER	After Studying this course, students will be able to: CO1: Explain system software such as assemblers, loaders, linkers and macroprocessors CO2: Design and develop lexical analyzers, parsers and code generators CO3: Utilize lex and yacc tools for implementing different concepts of system software

18CS62	COMUTER GRAPHICS AND VISUALIZATION	After Studying this course, students will be able to: CO1: Design and implement algorithms for 2D graphics primitives and attributes. CO2: Illustrate Geometric transformations on both 2D and 3D objects. CO3: Apply concepts of clipping and visible surface detection in 2D and 3D viewing, and Illumination Models. CO4: Decide suitable hardware and software for developing graphics packages using OpenGL.
18CS63	CLOUD COMPUTING AND ITS APPLICATIONS	After Studying this course, students will be able to: CO1: Explain cloud computing, virtualization and classify services of cloud computing CO2: Illustrate architecture and programming in cloud CO3: Describe the platforms for development of cloud applications and List the application of cloud.
18CS641	DATA MINING AND DATA WAREHOUSING	After Studying this course, students will be able to: CO1: Identify data mining problems and implement the data warehouse CO2: Write association rules for a given data pattern. CO3: Choose between classification and clustering solution.
18CS642	OBJECT ORIENTED MODELING AND DESIGN	After Studying this course, students will be able to: CO1: Describe the concepts of object-oriented and basic class modelling. CO2: Draw class diagrams, sequence diagrams and interaction diagrams to solve problems. CO3: Choose and apply a befitting design pattern for the given problem.
18CS643	CRYPTOGRAPHY, NETWORK SECURITY AND CYBERLAW	After Studying this course, students will be able to: CO1: Discuss cryptography and its need to various applications CO2: Design and develop simple cryptography algorithms CO3: Understand cyber security and need cyber Law
18CS651	MOBILE APPLICATION DEVELOPMENT	After Studying this course, students will be able to: CO1: Create, test and debug Android application by setting up Android development environment CO2: Implement adaptive, responsive user interfaces that work across a wide range of devices. CO3: Infer long running tasks and background work in Android applications CO4: Demonstrate methods in storing, sharing and retrieving data in Android applications CO5: Analyze performance of android applications and understand the role of permissions and security CO6: Describe the steps involved in publishing Android application to share with the world

18CS652	INTRODUCTION TO DATA SRUCTURES AND ALGORITHMS	After Studying this course, students will be able to: CO1: Identify different data structures in C programming language CO2: Appraise the use of data structures in problem solving CO3: Implement data structures using C programming language.
18CS653	PYTHON APPLICATION PROGRAMMING	After Studying this course, students will be able to: CO1: Examine Python syntax and semantics and be fluent in the use of Python flow control and functions. CO2: Demonstrate proficiency in handling Strings and File Systems. CO3: Create, run and manipulate Python Programs using core data structures like Lists, Dictionaries and use Regular Expressions. CO4: Interpret the concepts of Object-Oriented Programming as used in Python. CO5: Implement exemplary applications related to Network Programming, Web Services and Databases in Python.
18CSL66	SYSTEM SOFTWARE AND OPERATING SYSTEM LABORATORY	After Studying this course, students will be able to: CO1: Implement and demonstrate Lexer's and Parser's CO2: Evaluate different algorithms required for management, scheduling, allocation and communication used in operating system.
18CSL67	COMPUTER GRAPHICS LABORATORY WITH MINI PROJECT	After Studying this course, students will be able to: CO1: Apply the concepts of computer graphics CO2: Implement computer graphics applications using OpenGL CO3: Animate real world problems using OpenGL
18CSMP68	MOBILE APPLICATION DEVELOPMENT	After Studying this course, students will be able to: CO1: Apply the concepts of computer graphics CO2: Implement computer graphics applications using OpenGL CO3: Animate real world problems using OpenGL
18CS71	ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING	After Studying this course, students will be able to: CO1: Appaise the theory of Artificial intelligence and Machine Learning. CO2: Illustrate the working of AI and ML Algorithms. CO3: Demonstrate the applications of AI and ML.
		After Studying this course, students will be able to: CO1: Master the concepts of HDFS and Map Reduce framework CO2: Investigate Hadoop related tools for Big Data Analytics and perform basic Hadoop

18CS72	BIG DATA AND ANALYTICS	Administration CO3: Recognize the role of Business Intelligence, Data warehousing and Visualization in decision making CO4: Infer the importance of core data mining techniques for data analytics CO5: Compare and contrast different Text Mining Techniques
18CS731	SOFTWARE ARCHITECTURE AND DESIGN PATTERNS	After Studying this course, students will be able to: CO1: Design and implement codes with higher performance and lower complexity CO2: Be aware of code qualities needed to keep code flexible CO3: Experience core design principles and be able to assess the quality of a design with respect to these principles. CO4: Capable of applying these principles in the design of object oriented systems. CO5: Demonstrate an understanding of a range of design patterns. Be capable of comprehending a design presented using this vocabulary. CO6: Be able to select and apply suitable patterns in specific contexts
18CS732	ADVANCED JAVA AND J2EE	After Studying this course, students will be able to: CO1: Interpret the need for advanced Java concepts like enumerations and collections in developing modular and efficient programs CO2: Build client-server applications and TCP/IP socket programs CO3: Illustrate database access and details for managing information using the JDBC API CO4: Describe how servlets fit into Java-based web application architecture CO5: Develop reusable software components using Java Beans
18CS733	STORAGE AREA NETWORKS	After Studying this course, students will be able to: CO1: Identify key challenges in managing information and analyze different storage networking technologies and virtualization CO2: Explain components and the implementation of NAS CO3: Describe CAS architecture and types of archives and forms of virtualization CO4: Illustrate the storage infrastructure and management activities
18CS741	DIGITAL IMAGE PROCESSING	After Studying this course, students will be able to: CO1: Explain fundamentals of image processing CO2: Compare transformation algorithms CO3: Contrast enhancement, segmentation and compression techniques
		After Studying this course, students will be able to: CO1: Analyze the issues and challenges pertaining to management of emerging network technologies such as wired/wireless networks and high-speed internets. CO2: Apply network management standards to manage practical networks CO3: Formulate possible approaches for managing OSI network model.

18CS742	NETWORK MANAGEMENT	CO4: Use on SNMP for managing the network CO5: Use RMON for monitoring the behavior of the network CO6: Identify the various components of network and formulate the scheme for the managing them
18CS743	WEB TECHNOLOGY AND ITS APPLICATIONS	After Studying this course, students will be able to: CO1: Adapt HTML and CSS syntax and semantics to build web pages. CO2: Construct and visually format tables and forms using HTML and CSS CO3: Develop Client-Side Scripts using JavaScript and Server-Side Scripts using PHP to generate and display the contents dynamically. CO4: Appraise the principles of object oriented development using PHP CO5: Inspect JavaScript frameworks like jQuery and Backbone which facilitates developer to focus on core features.
18CS751	INTRODUCTION TO BIG DATA ANALYTICS	After Studying this course, students will be able to: CO1: Explain the importance of data and data analysis CO2: Interpret the probabilistic models for data CO3: Define hypothesis, uncertainty principle CO4: Evaluate regression analysis
18CS752	PROGRAMMING IN JAVA	After Studying this course, students will be able to: CO1: Explain the object-oriented concepts and JAVA. CO2: Develop computer programs to solve real world problems in Java. Develop simple GUI interfaces for a computer program to interact with users
18CS753	INTRODUCTION TO OPERATING SYSTEM	After Studying this course, students will be able to: CO1: Explain the fundamentals of operating system CO2: Comprehend process management, memory management and storage management. CO3: Familiar with various types of operating systems
18CSL76	ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING LABORATORY	After Studying this course, students will be able to: CO1: Implement and demonstrate AI and ML algorithms. CO2: Evaluate different algorithms.
18CS81	INTERNET OF THINGS	After Studying this course, students will be able to: CO1: Interpret the impact and challenges posed by IoT networks leading to new architectural models. CO2: Compare and contrast the deployment of smart objects and the technologies to connect them to network. CO3: Appraise the role of IoT protocols for efficient network communication. CO4: Elaborate the need for Data Analytics and Security in IoT. CO5: Illustrate different sensor technologies for sensing real world entities and identify the applications of IoT in Industry.

18CS821	MOBILE COMPUTING	After Studying this course, students will be able to: CO1: Explain state of art techniques in wireless communication. CO2: Discover CDMA, GSM. Mobile IP, WiMAX CO3: Demonstrate program for CLDC, MIDP let model and security concerns
18CS822	ADVANCED COMPUTER ARCHITECTURES	After Studying this course, students will be able to: CO1: Explain the concepts of parallel computing and hardware technologies CO2: Compare and contrast the parallel architectures CO3: Illustrate parallel programming concepts
18CS823	NOSQL DATABASE	After Studying this course, students will be able to: CO1: Define, compare and use the four types of NoSQL Databases (Document-oriented, Key Value Pairs, Column-oriented and Graph). CO2: Demonstrate an understanding of the detailed architecture, define objects, load data, query data and performance tune Column-oriented NoSQL databases. CO3: Explain the detailed architecture, define objects, load data, query data and performance tune Document-oriented NoSQL databases.