Computer Science Outcomes

Class :- FYCS   **Semester : I**

Sr. No.	Course Code	Course Title	Expected Learning Outcomes
1	USCS101	**Computer Organization and Design**	1) To learn about how computer systems work and underlying principles 2) To understand the basics of digital electronics needed for computers 3) To understand the basics of instruction set architecture for reduced and complex instruction sets 4) To understand the basics of processor structure and operation 5) To understand how data is transferred between the processor and I/O devices
2	USCS102	**Programming with Python- I**	1) Students should be able to understand the concepts of programming before actually starting to write programs. 2) Students should be able to develop logic for Problem Solving. 3) Students should be made familiar about the basic constructs of programming such as data, operations, conditions, loops, functions etc. 4) Students should be able to apply the problem solving skills using syntactically simple language i.e.
3	USCS103	**Free and Open-source Software**	1) Upon completion of this course, students should have a good working knowledge of Open Source ecosystem, its use, impact and importance. 2) This course shall help student to learn Open Source methodologies, case studies with real life examples.
4	USCS104	**Database Systems**	1) Students should be able to evaluate business information problem and find the requirements of a problem in terms of data. 2) Students should be able to design the database schema with the use of appropriate data types for storage of data in database. 3) Students should be able to create, manipulate, query and back up the databases.
5	USCS105	**Discrete Mathematics**	1) To provide overview of theory of discrete objects, starting with relations and partially ordered sets. 2) Study about recurrence relations, generating function and operations on them.

Sr. No.	Course Code	Course Title	Expected Learning Outcomes
			3) Give an understanding of graphs and trees, which are widely used in software. 4) Provide basic knowledge about models of automata theory and the corresponding formal languages.
6	USCS106	**Descriptive Statistics and Introduction to Probability**	1) Enable learners to know descriptive statistical concepts 2) Enable study of probability concept required for Computer learners
7	**USCS107**	**Soft Skills Development**	1) To know about various aspects of soft skills and learn ways to develop personality 2) Understand the importance and type of communication in personal and professional environment. 3) To provide insight into much needed technical and non-technical qualities in career planning. 4) Learn about Leadership, team building, decision making and stress management

Class :- FYCS   Semester : II

Sr. No.	Course Code	Course Title	Expected Learning Outcomes
1	USCS201	**Programming with C**	1) Students should be able to write, compile and debug programs in C language. 2) Students should be able to use different data types in a computer program. 3) Students should be able to design programs involving decision structures, loops and functions. 4) Students should be able to explain the difference between call by value and call by reference 5) Students should be able to understand the dynamics of memory by the use of pointers. 6) Students should be able to use different data structures and create/update basic data files.
2	USCS202	**Programming with Python – II**	1) Students should be able to understand how to read/write to files using python. 2) Students should be able to catch their own errors that happen during execution of programs. 3) Students should get an introduction to the concept of pattern matching. 4) Students should be made familiar with the concepts of GUI controls and designing GUI applications.

			5) Students should be able to connect to the database to move the data to/from the application. 6) 6)Students should know how to connect to computers, read from URL and send email.
3	USCS203	**Linux**	1) Upon completion of this course, students should have a good working knowledge of Linux, from both a graphical and command line perspective, allowing them to easily use any Linux distribution. 2) This course shall help student to learn advanced subjects in computer science practically. 3) Student shall be able to progress as a Developer or Linux System Administrator using the acquired skill set.
4	**USCS204**	**Data Structures**	1) Learn about Data structures, its types and significance in computing 2) Explore about Abstract Data types and its implementation 3) Ability to program various applications using different data structure in Python
5	USCS205	**Calculus**	1) Understanding of Mathematical concepts like limit, continuity, derivative, integration of functions. 2) Ability to appreciate real world applications which uses these concepts. 3) Skill to formulate a problem through Mathematical modeling and simulation.
6	USCS206	**Statistical Methods and Testing of Hypothesis**	1) Enable learners to know descriptive statistical concepts 2) Enable study of probability concept required for Computer learners
7	**USCS207**	**Green Technologies**	1) Learn about green IT can be achieved in and by hardware, software, network communication and data center operations. 2) Understand the strategies, frameworks, processes and management of green IT

Class :- SYCS   **Semester : III**

Sr. No.	Course Code	Course Title	Expected Learning Outcomes
1	**USCS301**	**Theory of Computation**	1. Understand Grammar and Languages 2. Learn about Automata theory and its application in Language Design 3. Learn about Turing Machines and Pushdown Automata 4. Understand Linear Bound Automata and its applications
2	**USCS302**	**Core Java**	1. Object oriented programming concepts using Java. 2. Knowledge of input, its processing and getting suitable output. 3. Understand, design, implement and evaluate classes and applets. 4. Knowledge and implementation of AWT package.
3	**USCS303**	**Operating System**	1. To provide a understanding of operating system, its structures and functioning 2. Develop and master understanding of algorithms used by operating systems for various purposes.
4	**USCS304**	**Database Management Systems**	1. Master concepts of stored procedure and triggers and its use. 2. Learn about using PL/SQL for data management 3. Understand concepts and implementations of transaction management and crash recovery
5	**USCS305**	**Combinatorics and Graph Theory**	1. Appreciate beauty of combinatorics and how combinatorial problems naturally arise in many settings. 2. Understand the combinatorial features in real world situations and Computer Science applications. 3. Apply combinatorial and graph theoretical concepts to understand Computer Science concepts and apply them to solve problems
6	**USCS306**	Physical Computing and IoT Programming	1. Enable learners to understand System On Chip Architectures.

			2. Introduction and preparing Raspberry Pi with hardware and installation. 3. Learn physical interfaces and electronics of Raspberry Pi and program them using practical's 4. Learn how to make consumer grade IoT safe and secure with proper use of protocols.
7	USCS307	**Web Programming**	1. To design valid, well-formed, scalable, and meaningful pages using emerging technologies. 2. Understand the various platforms, devices, display resolutions, viewports, and browsers that render websites 3. To develop and implement client-side and server-side scripting language programs. 4. To develop and implement Database Driven Websites. 5. Design and apply XML to create a markup language for data and document centric applications.

Class :- SYCS   Semester : IV

Sr. No.	Course Code	Course Title	Expected Learning Outcomes
1	USCS401	**Fundamentals of Algorithms**	1. Understand the concepts of algorithms for designing good program 2. Implement algorithms using Python
2	USCS402	**Advanced Java**	1) Understand the concepts related to Java Technology 2) Explore and understand use of Java Server Programming
3	USCS403	**Computer Networks**	1. Learner will be able to understand the concepts of networking, which are important for them to be known as a '*networking professionals*'. 2. Useful to proceed with industrial requirements and International vendor certifications.
4	**USCS404**	**Software Engineering**	1. Graduates embrace problem solving and learning as a natural aspect of their work. 2. Graduates value and are valued by their professional teammates.

			3. Graduates have broad and deep knowledge of the technical issues that they face.
5	USCS405	**Linear Algebra using Python**	1. Appreciate the relevance of linear algebra in the field of computer science. 2. Understand the concepts through program implementation 3. Instill a computational thinking while learning linear algebra.
6	USCS406	**.Net Technologies**	1. Understand the .NET framework 2. Develop a proficiency in the C# programming language 3. Proficiently develop ASP.NET web applications using C# 4. Use ADO.NET for data persistence in a web application
7	USCS407	**Android Developer Fundamentals**	1) Understand the requirements of Mobile programming environment. 2) Learn about basic methods, tools and techniques for developing Apps 3) Explore and practice App development on Android Platform 4) Develop working prototypes of working systems for various uses in daily lives.

Class :- TYCS   **Semester : V**

Sr. No.	Course Code	Course Title	Expected Learning Outcomes
1	**USCS501**	**Artificial Intelligence**	After completion of this course, learner should get a clear understanding of AI and different search algorithms used for solving problems. The learner should also get acquainted with different learning algorithms and models used in machine learning.
2	**USCS502**	**Linux Server Administration**	Learner will be able to develop Linux based systems and maintain. Learner will be able to install appropriate service on Linux server as per requirement. Learner will have proficiency in Linux server administration.

3	**USCS503**	**Software Testing and Quality Assurance**	Understand various software testing methods and strategies. Understand a variety of software metrics, and identify defects and managing those defects for improvement in quality for given software. Design SQA activities, SQA strategy, formal technical review report for software quality control and assurance.
4	**USCS504**	**Information and Network Security**	Understand the principles and practices of cryptographic techniques. Understand a variety of generic security threats and vulnerabilities, and identify & analyze particular security problems for a given application. Understand various protocols for network security to protect against the threats in a network
5	USCS505	**Architecting of IoT**	Learners are able to design & develop IoT Devices. They should also be aware of the evolving world of M2M Communications and IoT analytics.
6	**USCS506**	**Web Services**	Emphasis on SOAP based web services and associated standards such as WSDL. Design SOAP based / RESTful / WCF services Deal with Security and QoS issues of Web Services
7	USCS507	**Game Programming**	Learner should study Graphics and gamming concepts with present working style of developers where everything remains on internet and they need to review it, understand it, be a part of community and learn.

Class :- TYCS   Semester : VI

Sr. No.	Course Code	Course Title	Expected Learning Outcomes
1	**USCS601**	**Wireless Sensor Networks and Mobile Communication**	After completion of this course, learner should be able to list various applications of wireless sensor networks, describe the concepts, protocols, design, implementation and use of wireless sensor networks. Also implement and evaluate new ideas for solving wireless sensor network design issues.
2	USCS602	**Cloud Computing**	After successfully completion of this course, learner should be able to articulate the main concepts, key technologies, strengths, and limitations of cloud computing and the

			possible applications for state-of-the-art cloud computing using open source technology. Learner should be able to identify the architecture and infrastructure of cloud computing, including SaaS, PaaS, IaaS, public cloud, private cloud, hybrid cloud, etc. They should explain the core issues of cloud computing such as security, privacy, and interoperability.
3	USCS603	**Cyber Forensics**	The student will be able to plan and prepare for all stages of an investigation - detection, initial response and management interaction, investigate various media to collect evidence, report them in a way that would be acceptable in the court of law.
4	**USCS604**	**Information Retrieval**	After completion of this course, learner should get an understanding of the field of information retrieval and its relationship to search engines. It will give the learner an understanding to apply information retrieval models.
5	USCS605	**Digital Image Processing**	Learner should review the fundamental concepts of a digital image processing system. Analyze the images in the frequency domain using various transforms. Evaluate the techniques for image enhancement and image segmentation. Apply various compression techniques. They will be familiar with basic image processing techniques for solving real problems.
6	USCS606	**Data Science**	After completion of this course, the students should be able to understand & comprehend the problem; and should be able to define suitable statistical method to be adopted.
7	USCS607	**Ethical Hacking**	Learner will know to identify security vulnerabilities and weaknesses in the target applications. They will also know to test and exploit systems using various tools and understand the impact of hacking in real time machines.

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