ZSCT's Thakur Shyamnarayan Degree College

Learning Outcomes

Department of BSc Computer Science

Sr. No.	Course	Course Outcome	Program Outcome	Graduate Attributes
USCS101	Digital Systems & Architecture	i. To learn about how computer systems work and underlying principles ii. To understand the basics of digital electronics needed for computers iii. To understand the basics of instruction set architecture for reduced and complex instruction sets iv. To understand the basics of processor structure and operation v. To understand how data is transferred between the processor and I/O devices	To develop an understanding and knowledge of the basic theory of Computer Science with good foundation on theory, systems and applications. To foster necessary skills and analytical abilities for developing computer-based solutions of real-life problems. To provide training in emergent computing technologies which lead to innovative solutions for industry and academia. To develop the necessary study skills and knowledge to pursue further post-graduate study in computer science or other related fields. To develop the professional skillset required for a career in an information technology oriented business or industry. To enable students to work independently and collaboratively, communicate effectively, and become responsible, competent, confident, insightful, and creative users of computing technology To formulate, to model, to design solutions, procedure and to use software tools to solve real world problems. To design and develop computer	i. Form strong foundations of Computer Science ii. Nurture programming, analytical & design skills for the real world problems iii. Introduce emerging trends to the students in gradual way. Iv. Groom the students for the challenges of ICT industry
USCS102	Introduction to Programming with Python	i. Ability to store, manipulate and access data in Python ii. Ability to implement basic Input / Output operations in Python iii. Ability to define the structure and components of a Python program. iv. Ability to learn how to write loops and decision statements in Python. v. Ability to learn how to write functions and pass arguments in Python. vi. Ability to create and use Compound data types in Python		
USCS103	LINUX Operating System	i. Work with Linux file system structure, Linux Environment ii. Handle shell commands for scripting, with features of regular expressions, redirections		

		iii. Implement file security permissions iv. Work with vi, sed and awk editors for shell scripting using various control structures v. Install softwares like compilers and develop programs in C and Python programming languages on Linux Platform	programs/computer -based systems in the areas such as networking, web design, security, cloud computing, IoT, data science and other emerging technologies. To familiarize with the modern-day trends in industry and research based settings and thereby innovate novel solutions to existing problems. To apply concepts, principles, and theories relating to computer science to new situations. To use current techniques, skills, and tools necessary for computing practice To apply standard Software Engineering practices and strategies in real-time software project development To pursue higher studies of specialization and to take up technical employment. To work independently or collaboratively as an effective tame member on a substantial software project. To communicate and present their work effectively and coherently. To display ethical code of conduct in usage of Internet and Cyber systems. To engage in independent and life-long learning in the background of rapid changing IT industry.	
USCS104	Open Source Technologies	i. Differentiate between Open Source and Proprietary software and Licensing. ii. Recognize the applications, benefits and features of Open-Source Technologies iii. Gain knowledge to start, manage open-source projects.		
USCS105	Discrete Mathematics	i. Define mathematical structures (relations, functions, graphs) and use them to model real life situations. ii. Understand, construct and solve simple mathematical problems. iii. Solve puzzles based on counting principles. iv. Provide basic knowledge about models of automata theory and the corresponding formal languages. v. Develop an attitude to solve problems based on graphs and trees, which are widely used in software.		
USCS106	Descriptive Statistics	i. Organize, manage and present data. ii. Analyze Statistical data using measures of central tendency and dispersion. iii. Analyze Statistical data using basics techniques of R.		

		iv. Study the relationship between variables using techniques of correlation and regression		
USCS107	Soft Skills	i. Learners will be able to understand the importance and types soft skills ii. Learners will develop skills for Academic and Professional Presentations. iii. Learners will able to understand Leadership Qualities and Ethics. iv. Ability to understand the importance of stress management in their academic & professional life.		
USCS201	Design & Analysis of Algorithms	i. Students should be able to understand and evaluate efficiency of the programs that they write based on performance of the algorithms used. ii. Students should be able to appreciate the use of various data structures as per need iii. To select, decide and apply appropriate design principle by understanding the requirements of any real life problems		
USCS202	Advanced Python Programming	i. Ability to implement OOP concepts in Python including Inheritance and Polymorphism ii. Ability to work with files and perform operations on it using Python. iii. Ability to implement regular expression and concept of threads for developing efficient program iv. Ability to implement exception handling in Python applications for error handling. v. Knowledge of working with		

		databases, designing GUI in Python and implement networking in Python		
USCS203	Introduction to OOPs using C++	i. Work with numeric, character and textual data and arrays. ii. Understand the importance of OOP approach over procedural language. iii. Understand how to model classes and relationships using UML. iv. Apply the concepts of OOPS like encapsulation, inheritance and polymorphism. v. Handle basic file operations.		
USCS204	Database Systems	i. To appreciate the importance of database design. ii. Analyze database requirements and determine the entities involved in the system and their relationship to one another. iii. Write simple queries to MySQL related to String, Maths and Date Functions. iv. Create tables and insert/update/delete data, and query data in a relational DBMS using MySQL commands. v. Understand the normalization and its role in the database design process. Handle data permissions. vi. Create indexes and understands the role of Indexes in optimization search.		
USCS205	Calculus	i. Develop mathematical skills and enhance thinking power of learners. ii. Understand mathematical concepts like limit, continuity, derivative, integration of functions, partial derivatives.		

		iii. Appreciate real world applications which use the learned concepts. iv. Skill to formulate a problem through Mathematical modelling and simulation.		
USCS206	Statistical Methods	i. Calculate probability, conditional probability and independence. ii. Apply the given discrete and continuous distributions whenever necessary. iii. Define null hypothesis, alternative hypothesis, level of significance, test statistic and p value. iv. Perform Test of Hypothesis as well as calculate confidence interval for a population parameter for single sample and two sample cases. v. Apply non-parametric test whenever necessary. Conduct and interpret one-way and two-way ANOVA.		
USCS207	E-Commerce & Digital Marketing	i. Understand the core concepts of E-Commerce. ii. Understand the various online payment techniques Understand the core concepts of digital marketing and the role of digital marketing in business. iii. Apply digital marketing strategies to increase sales and growth of business Apply digital marketing through different channels and platforms iv. Understand the significance of Web Analytics and Google Analytics and apply the same.		
USCS301	Theory of Computation	i. Understand Grammar and Languages ii. Learn about Automata theory and		

		its application in Language Design iii. Learn about Turing Machines and Pushdown Automata iv. Understand Linear Bound Automata and its applications		
USCS302	Core Java	i. Object oriented programming concepts using Java. ii. Knowledge of input, its processing and getting suitable output. iii. Understand, design, implement and evaluate classes and applets. iv. Knowledge and implementation of AWT package.		
USCS303	Operating System	i. To provide a understanding of operating system, its structures and functioning ii. Develop and master understanding of algorithms used by operating systems for various purposes.		
USCS304	Database Management Systems	i. Master concepts of stored procedure and triggers and its use. ii. Learn about using PL/SQL for data management iii. Understand concepts and implementations of transaction management and crash recovery		
USCS305	Combinatorics and Graph Theory	i. Appreciate beauty of combinatorics and how combinatorial problems naturally arise in many settings. ii. Understand the combinatorial features in real world situations and Computer Science applications. iii. Apply combinatorial and graph theoretical concepts to understand Computer Science concepts and		

		apply them to solve problems		
USCS306	Physical Computing and IoT Programming	i. Enable learners to understand System On Chip Architectures. ii. Introduction and preparing Raspberry Pi with hardware and installation. iii. Learn physical interfaces and electronics of Raspberry Pi and program them using practical's iv. Learn how to make consumer grade IoT safe and secure with proper use of protocols.		
USCS307	Web Programming	i. To design valid, well-formed, scalable, and meaningful pages using emerging technologies. ii. Understand the various platforms, devices, display resolutions, viewports, and browsers that render websites iii. To develop and implement client-side and server-side scripting language programs. iv. To develop and implement Database Driven Websites. v. Design and apply XML to create a markup language for data and document centric applications.		
USCS401	Fundamentals of Algorithms	i. Understand the concepts of algorithms for designing good program ii. Implement algorithms using Python		
USCS402	Advanced Java	i. Understand the concepts related to Java Technology ii. Explore and understand use of Java Server Programming		
USCS403	Computer Networks	i. Learner will be able to understand the concepts of networking, which are important for them to		

		be known as a ‘networking professionals. ii. Useful to proceed with industrial requirements and International vendor certifications.		
USCS404	Software Engineering			
USCS405	Linear Algebra using Python	i. Appreciate the relevance of linear algebra in the field of computer science. ii. Understand the concepts through program implementation. iii. Instill a computational thinking while learning linear algebra.		
USCS406	Net Technologies	i. Understand the .NET framework ii. Develop a proficiency in the C# programming language iii. Proficiently develop ASP.NET web applications using C# iv. Use ADO.NET for data persistence in a web application		
USCS407	Android Developer Fundamentals	i. Understand the requirements of Mobile programming environment. ii. Learn about basic methods, tools and techniques for developing Apps iii. Explore and practice App development on Android Platform iv. Develop working prototypes of working systems for various uses in daily lives.		
USCS501	Artificial Intelligence	i. learner should get a clear understanding of AI and different search algorithms used for solving problems. ii. The learner should also get acquainted with different learning algorithms and models used in		

		machine learning.		
USCS502	Linux Server Administration	i. 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. ii. Learner will have proficiency in Linux server administration.		
USCS503	Software Testing and Quality Assurance	i. Understand various software testing methods and strategies. ii. Understand a variety of software metrics, and identify defects and managing those defects for improvement in quality for given software. iii. Design SQA activities, SQA strategy, formal technical review report for software quality control and assurance.		
USCS504	Information and Network Security	i. Understand the principles and practices of cryptographic techniques. ii. Understand a variety of generic security threats and vulnerabilities, and identify & analyze particular security problems for a given application. iii. Understand various protocols for network security to protect against the threats in a network		
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.		
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		
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.		
USCS601	Wireless Sensor Networks and Mobile Communication	i. ii.	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.		
USCS602	Cloud Computing	i. ii. iii.	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.		
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.		
USCS604	Information Retrieval	i. learner should get an understanding of the field of information retrieval and its relationship to search engines. ii. It will give the learner an understanding to apply information retrieval models.		
USCS605	Digital Image Processing	i. Learner should review the fundamental concepts of a digital image processing system. ii. Analyze the images in the frequency domain using various transforms. iii. Evaluate the techniques for image enhancement and image segmentation. iv. Apply various compression techniques. v. They will be familiar with basic image processing techniques for solving real problems.		
USCS606	Data Science	the students should be able to understand & comprehend the problem; and should be able to define suitable statistical method to be adopted.		
USCS607	Ethical Hacking	i. Learner will know to identify security vulnerabilities and weaknesses in the target applications. ii. They will also know to test and exploit systems using various tools and understand the impact of hacking in real time machines.		