SPACES DEGREE COLLEGE, PAYAKARAOPETA
DEPARTMENT OF COMPUTER SCIENCE
SEMESTER-I
COURSE 1: ESSENTIALS AND APPLICATIONS OF MATHEMATICAL, PHYSICAL AND CHEMICAL SCIENCES

Course Outcomes:

1. Apply critical thinking skills to solve complex problems involving complex numbers, trigonometric ratios, vectors, and statistical measures.

2. To Explain the basic principles and concepts underlying a broad range of fundamental areas of physics and to Connect their knowledge of physics to everyday situations

3. To Explain the basic principles and concepts underlying a broad range of fundamental areas of chemistry and to Connect their knowledge of chemistry to daily life.

4. Understand the interplay and connections between mathematics, physics, and chemistry in various applications. Recognize how mathematical models and physical and chemical principles can be used to explain and predict phenomena in different contexts.

5 To explore the history and evolution of the Internet and to gain an understanding of network security concepts, including threats, vulnerabilities, and countermeasures.

SPACES DEGREE COLLEGE, PAYAKARAOPETA
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SEMESTER-I
COURSE 2: ADVANCES IN MATHEMATICAL, PHYSICAL AND CHEMICAL SCIENCES

Course Outcomes:

1. Explore the applications of mathematics in various fields of physics and chemistry, to understand how mathematical concepts are used to model and solve real-world problems.

2. To Explain the basic principles and concepts underlying a broad range of fundamental areas of physics and to Connect their knowledge of physics to everyday situations.

3. Understand the different sources of renewable energy and their generation processes and advances in nanomaterials and their properties, with a focus on quantum dots. To study the emerging field of quantum communication and its potential applications. To gain an understanding of the principles of biophysics in studying biological systems. Explore the properties and applications of shape memory materials.

4. Understand the principles and techniques used in computer-aided drug design and drug delivery systems, to understand the fabrication techniques and working principles of nano sensors. Explore the effects of chemical pollutants on ecosystems and human health.

5. Understand the interplay and connections between mathematics, physics, and chemistry in various advanced applications. Recognize how mathematical models and physical and chemical principles can be used to explain and predict phenomena in different contexts.

6. Understand and convert between different number systems, such as binary, octal, decimal, and hexadecimal. Differentiate between analog and digital signals and understand their characteristics. Gain knowledge of different types of transmission media, such as wired (e.g., copper cables, fiber optics) and wireless (e.g., radio waves, microwave, satellite).

SPACES DEGREE COLLEGE, PAYAKARAOPETA
DEPARTMENT OF COMPUTER SCIENCE
SEMESTER-II
COURSE 3: Problem Solving using C

Course Objectives

1. To explore basic knowledge on computers

2. Learn how to solve common types of computing problems.

3. Learn to map problems to programming features of C.

4. Learn to write good portable C programs.

Course Outcomes:

Upon successful completion of the course, a student will be able to:

1. Understand the working of a digital computer and Fundamental constructs of Programming

2. Analyze and develop a solution to a given problem with suitable control structures

3. Apply the derived data types in program solutions

4. Use the 'C' language constructs in the right way

5. Apply the Dynamic Memory Management for effective memory utilization

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DEPARTMENT OF COMPUTER SCIENCE
SEMESTER-II
COURSE 4: Digital Logic Design

Course Objectives:

To familiarize with the concepts of designing digital circuits.

Course Outcomes:

Upon successful completion of the course, the students will be able to

1. Understand how to Convert numbers from one radix to another radix and perform arithmetic operations.

2. Simplify Boolean functions using Boolean algebra and k- maps

3. Design adders and subtractors circuits

4. Design combinational logic circuits such as decoders, encoders, multiplexers and demultiplexers.

5. Use flip flops to design registers and counters.

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DEPARTMENT OF COMPUTER SCIENCE
SEMESTER-III
COURSE 5: Object Oriented Programming using Java

Course Objectives:

To introduce the fundamental concepts of Object-Oriented programming and to design &implement object-oriented programming concepts in Java.

Course Outcomes:

Upon successful completion of the course, a student will be able to:

1. Understand the basic concepts of Object-Oriented Programming and Java Program Constructs
2. Implement classes and objects and analyze Inheritance and Dynamic Method Dispatch
3. Demonstrate various classes in different packages and can design own packages
4. Manage Exceptions and Apply Threads
5. Create GUI screens along with event handling

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SEMESTER-III
COURSE 6: Data Structures using C

Course Objectives:

To introduce the fundamental concept of data structures and to emphasize the importance of various data structures in developing and implementing efficient algorithms.

Course Outcomes:

Upon successful completion of the course, a student will be able to:

1. Understand various Data Structures for data storage and processing.

2. Realize Linked List Data Structure for various operations

3. Analyze step by step and develop algorithms to solve real world problems by implementing Stacks, Queues data structures.

4. Understand and implement various searching & sorting techniques.

5. Understand the Non-Linear Data Structures such as Binary Trees and Graphs.

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SEMESTER-III
COURSE 7: Computer Organization

Course Objectives:

To familiarize with organizational aspects of memory, processor and I/O.

Course Outcomes:

Upon successful completion of the course, the students will be able to

1. Identify different types of instructions

2. Differentiate between micro-programmed and hard-wired control units.

3. Analyze the performance of hierarchical organization of memory.

4. Summarize different data transfer techniques.

5. Demonstrate arithmetic operations on fixed- and floating-point numbers and illustrate concepts of parallel processing.

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SEMESTER-III
COURSE 8: Operating Systems

Course Objectives:

To gain knowledge about various functions of an operating system like memory management, process management, device management, etc.

Course Outcomes:

Upon successful completion of the course, a student will be able to:

1. Demonstrate knowledge and comprehension of operating system functions.

2. Analyze different process scheduling algorithms and apply them to manage processes and threads effectively

3. Create strategies to prevent, detect, and recover from deadlocks, and design solutions for inter-process communication and synchronization problems.

4. Compare and contrast different memory allocation strategies and evaluate their effectiveness
5. Evaluate disk scheduling algorithms while implementing OS security measures.

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SEMESTER-IV
COURSE 9: Database Management Systems

Learning Objectives:

To familiarize with concepts of database design

Learning Outcomes:

On successful completion of the course, students will be able to

1. Differentiate between database systems and file-based systems

2. Design a database using ER model

3. Use relational model in database design

4. Use SQL commands for creating and manipulating data stored in databases.

5. Write PL/SQL programs to work with databases.

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SEMESTER-IV
COURSE 10: Object Oriented Software Engineering

Course Objective:

To introduce Object-oriented software engineering (OOSE) - which is a popular technical approach to analyzing, designing an application, system, or business by applying the object-oriented paradigm and visual modeling.

Course Outcomes:

Upon successful completion of the course, a student will be able to:

1. Understand and apply the fundamental principles of Object-Oriented Programming (OOP) concepts and Unified Modeling Language (UML) basics, in the development of software solutions.

2. Analyze and specify software requirements, develop use cases and scenarios, apply object-oriented analysis and design (OOAD) principles

3. Familiar with the concept of test-driven development (TDD) and its practical implementation
4. Analyze and Evaluate Software Maintenance and Evolution Strategies

5. Apply Advanced Object-Oriented Software Engineering Concepts.

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SEMESTER-IV
COURSE 11: Data Communication and Computer Networks

Course Objectives:

To provide students with a comprehensive understanding of networking principles, protocols, and technologies, enabling them to design, analyze, and evaluate efficient and reliable network solutions.

Course Outcomes:

Upon successful completion of the course, a student will be able to:

1. Understand and apply network applications, hardware, software, and reference models for network communication.

2. Design and analyze data link layer protocols, multiple access protocols, and wireless LAN technologies.

3. Design routing algorithms, congestion control algorithms, and evaluate network layer protocols for internetworking.

4. Analyze transport service, transport protocols, and evaluate UDP and TCP in the internet.

5. Understand and evaluate application layer protocols, including DNS, email, WWW, and network management protocols.

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