

# CIS-GEN COMPUTER&INFO SCIENCE (CIS)

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## CIS 1203 Web Technologies (2-2-3)

This course introduces the basic concepts of the World Wide Web and its underlying technologies. Topics include, but are not limited to, web clients and web servers, web protocols, HTML, CSS, website categories, design challenges, and standards. Throughout the course, a series of progressive assignments helps students gain hands-on experience in planning, designing, creating, and testing webpages and websites with multimedia elements using HTML and CSS.

## CIS 1213 Introduction to Information Security (2-2-3)

This course offers a comprehensive overview of information security principles and practices, including the analysis of the threats to, and vulnerabilities of information systems, and the related processes and mechanisms established for their mitigation and management. It also introduces students to frameworks and methodologies for risk management, as well as the ethical, legal, and regulatory environment governing information security.

**Prerequisites:** CIS 1313

## CIS 1303 Database Systems (2-2-3)

This course delves into the core principles of database systems. Topics include, but are not limited to, Relational Database (RDB) concepts, non-relational database concepts, conceptual data modeling using ERD, transforming ERD to RDB, data normalization, and SQL querying techniques. Throughout the course, a series of activities help students gain hands-on experience in designing databases, transforming into normalized relational models, and querying using SQL.

## CIS 1313 Introduction to Computer Systems and Networks (2-2-3)

This introductory course equips the students with the essential skills and knowledge of computer systems structures and their networking architectures. Through a balanced foundation of theoretical understanding and practical experience, students gain expertise in the fundamental concepts of hardware, software, network devices, protocols, standards and topologies, that underpin modern computer systems and their data communication principles.

## CIS 1603 Programming I (2-2-3)

This course covers the fundamental programming principles and constructs, using Python as the language of practice. Topics include, but are not limited to, problem analysis, basic programming constructs, control flow structures, non-primitive data structure principles with a focus on lists, and the implementation of functions for code modularization. Throughout the course, a series of progressive activities helps students gain hands-on experience in applying these principles to create structured, efficient, and well-organized code.

## CIS 1613 Programming II (2-2-3)

Building upon Programming I, this course covers the basic and intermediate concepts of object-oriented programming. Topics include, but are not limited to, classes, objects, encapsulation, simulating overloading, overriding, exception handling, and non-primitive data structures. Throughout the course, a series of progressive activities helps students gain hands-on experience in implementing UML class diagrams (Generalization/Specialization, Association, Aggregation) using Python language.

**Prerequisites:** CIS 1603

## CIS 1703 Introductory Statistics and Probability (2-2-3)

Discussing the fundamental concepts of probability and statistics with an emphasis on their application in Information Technology. Developing skills in probabilistic and statistical intuition for application in the discipline. Exploring the elements of descriptive statistics, discrete probability, probability distributions, sampling and inferential statistics, and their application in the field of computing and associated domains.

**Prerequisites:** LSM 1003 or LSM 1113 or LSM 1013

## CIS 2023 Applied Discrete Mathematics (2-2-3)

This course equips the students with the essential skills and understanding of discrete mathematics with a focus on its applications in computer science. Students explore topics including graph theory, combinatorics, and formal languages. Emphasis is placed on practical applications relevant to networking, cybersecurity, software development, and data systems.

**Prerequisites:** LSM 1003 or LSM 1113 or LSM 1013

## CIS 2033 User Centered Design (2-2-3)

This course explores the core principles of user centered design (UX & UI), emphasizing on creating intuitive and user-friendly experiences for individuals interacting with digital products. Students will learn about the importance of accessibility, usability, and inclusivity in user interface design, as well as how to incorporate feedback from users into the design process. By course completion, students will have a comprehensive understanding of creating user-friendly interfaces meeting the diverse user needs and expectations.

## CIS 2113 Introduction to Software Engineering (2-2-3)

This course provides a comprehensive introduction to the principles, methodologies, and practices of Software Engineering (SWE), with an emphasis on ethical standards, and professional responsibility. Topics include, but are not limited to, software development lifecycle, software methodologies, requirements engineering, UML, software qualities.

Through a series of progressive activities and case studies, students will not only gain a thorough understanding of the technical aspects of building high-quality software design model but also learn to prioritize ethical practices in all SWE stages.

**Prerequisites:** CIS 1303

**Corequisites:** CIS 1613

## CIS 2213 Full-stack Web Application Development (2-2-3)

Building upon Web Technologies and Database Systems, this course covers languages, frameworks, and techniques for developing interactive and dynamic web applications. Topics include page styling, client and server-side scripting, client and server-side validation, state management, and interacting with databases. Throughout the course, a series of progressive assignments helps students gain hands-on experience in developing interactive and dynamic web applications using emerging technologies.

**Prerequisites:** CIS 1203, CIS 1303

## CIS 2603 Artificial Intelligence Foundations (2-2-3)

This course introduces students to the fundamental concepts of Artificial Intelligence (AI) and explores its diverse applications, focusing on business impact and ethical considerations. Students will be introduced to Generative AI, learning to evaluate its capabilities, investigate applications across sectors and use tools for creating text, code, images, audio, and video. By the end of the course students will have the knowledge and skills to employ best practices in prompt engineering and develop basic Generative AI-powered applications using no-code platforms for various business solutions

**CIS 2903 Operating Systems (2-2-3)**

The course focuses on Operating System fundamentals, architectural principles, and technologies essential for enterprise networks. Topics include process synchronization, inter-process communications, and memory management, along with I/O strategies and file system structures. Additionally, it covers the basics of cloud computing, virtualization, and domain-based enterprise networks. Students will learn to install, configure, and administer various operating systems, focusing on network protocols, services, and server functions such as storage, backup, and security in domain-based networks.

**Prerequisites:** CIS 1313

**CIS 3303 System Architecture and Integration (3-1-3)**

Introduce the concept of architecture in the context of system integration and architecture reflecting ISO/IEC/IEEE 42010. The architecture helps justify how complex systems can be represented using architectural views and how this can facilitate system evolution over time. The system integration addresses the middleware platforms in addition to business process integration and service integration as well as the data and information integration.

**Prerequisites:** CIS 2113

**CIS 3413 Data Mining for Business (2-2-3)**

Preparing and preprocessing data related to real business problems to derive predictive, descriptive, prescriptive models. Finding useful patterns in datasets using descriptive analytics tools and presenting them in easy to interpret visualizations within dashboards for tactical decisions. Discovering and extracting hidden knowledge from datasets by applying suitable data mining algorithms for strategic decisions related to planning. Understanding and complying with data privacy and ethical principles. Using data driven methodologies to solve real business cases, including SEMMA and CRISP-DM

**Prerequisites:** CIS 1303

**CIS 3503 Technopreneurship (2-2-3)**

This course exposes students to the underpinning competencies that merge the requirement of entrepreneurial talent with technologies skills to create innovative products and services. It also examines the ethical and sustainability implications, especially in the UAE context. Students will develop innovative business proposals using design thinking principles, including business model generation, market research, financial planning, and go-to-market strategies. Students will engage in collaborative team projects, beside a blend of lectures, workshops, and project-based learning

**Prerequisites:** CIS 1213, CIS 2113

**CIS 3603 Project Management (2-2-3)**

The course develops an understanding of project management concepts. It examines the project management framework, including key terminology, project management context, and project management processes. The students will be demonstrating skills in managing budgets, schedules, planning communications, estimating resources, planning procurement, and responding to identified risks. The course presents leadership and collaboration skills and tools necessary for managing projects.

**Prerequisites:** CIS 2113

**CIS 4003 Green Computing (3-1-3)**

Introduce the study and practice of environmentally sustainable computing or IT. Identify the impact of Information and Communication Technology (ICT) on the environment and discuss the need for green computing as a countermeasure. Examine a variety of standards and approaches used in developing green computing both at the national level and globally. Analyze different scenarios and propose ways to implement green computing to counter the environmental impact of ICT.

**CIS 4013 Data Analytics for IT Professionals (2-2-3)**

This course provides students with a comprehensive overview of essential topics in data analytics. Topics include data engineering, the data analytics process, data visualization, and the decision-making process. Students will gain the necessary skills to prepare, analyze and interpret data, make data-driven decisions, and communicate insights effectively.

**Prerequisites:** CIS 1703

**CIS 4403 Cloud Computing (2-2-3)**

This course offers a comprehensive overview of cloud data centers, covering their architecture, design principles, and implementation strategies. Students will gain the skills to analyze traditional data centers, design cloud-based solutions, and address key concerns like security, reliability, and resilience.

**Prerequisites:** CIS 1313

**CIS 4703 Blockchain Technology (2-2-3)**

This course introduces students to the transformative potential of Blockchain technology, delving beyond its association with cryptocurrencies. Students will explore the underlying concepts, applications across diverse industries, and the impact it has on trust, security, and data management. Through interactive lectures, discussions, and case studies, students gain a comprehensive understanding of Blockchain Technology. This course leverages an open-source platform for hands-on experience, equipping students to critically analyze and evaluate the potential of Blockchain in various contexts.

**Prerequisites:** CIS 1613, CIS 2903