

Information Technology

ITE 101

Management Information Systems.... 3.00 credits

This course will focus on providing an understanding of how information technologies gather, store, process, and communicate information. The course combines a conceptual understanding of the technology necessary for success in the information age, along with an understanding of the hardware and software required for an organization to successfully utilize technology. Attention will also be given to the legal, social, and ethical uses of technology.

ITE 105

Computer Information Systems..... 3.00 credits

This course is designed to provide a comprehensive foundation in the principles and practices of information systems. Focused on the intersection between business and technology, this course offers an exploration of hardware, software, databases, network architectures, cybersecurity, and systems analysis. Participants gain skills essential for navigating today's tech-driven business environments, including critical thinking, problem-solving, and effective communication in IT settings. This course caters to both beginners and those looking to update their knowledge, ensuring a robust understanding of the strategic role of information systems in organizational success.

ITE 107

Integrated IT Syst/Emerging Tech..... 3.00 credits

This course is designed to build upon foundational knowledge, diving deeper into complex topics such as database management, advanced networking, cybersecurity practices, systems analysis, and software development. Topics include SQL database queries, object-oriented programming concepts, network infrastructure design, risk assessment strategies, and the integration of emerging technologies into existing systems. Progress is assessed through quizzes, assignments, and a project. Prerequisite(s): ITE 105

ITE 111

Digital Literacy in 21st Century..... 3.00 credits

Digital Literacy for the 21st Century: Navigating the Digital Landscape is an 8-week course designed to equip students with essential knowledge and skills to thrive in the digital age. This course covers various aspects of digital literacy, including digital tools and online communications technology, artificial intelligence, machine learning, and generative artificial intelligence, cybersecurity, and ethical considerations involved with cutting edge digital tools. Students will gain a general understanding of these topics and obtain the ability to explain the key concepts and apply them to an examination of how such technology may impact their field of study.

ITE 115

Program Logic & Design with Python. 3.00 credits

Students will learn the foundational logic for developing software applications. Topics will include data types, variables, I/O and associate formatting, data containers, functions and libraries, decisions, repetition, files and an introduction to classes and object-oriented programming (OOP). Skills will be reinforced using numerous coding exercises. Python will be the primary learning language used to convey the fundamentals.

ITE 145

Fund Information Systems Security... 3.00 credits

This course will focus on an overview of security challenges and strategies of countermeasure in the information systems environment. Topics include definition of terms, concepts, elements, and goals incorporating industry standards and practices with a focus on availability, vulnerability, integrity and confidentiality aspects of information systems. (Formerly numbered: ITE 135.) Prerequisite(s): ITE 101 or ITE 102.

ITE 203

Introduction to R Programming..... 3.00 credits

This course provides students with a foundational understanding of R, a powerful language for statistical computing and data analysis. The course covers essential programming concepts in R, including data structures, control flow, and functions, while emphasizing its use for statistical analysis and data visualization. Students will learn how to manipulate datasets, perform basic statistical tests, and create compelling visualizations. By the end of the course, students will be able to use R to efficiently analyze and interpret data, making it an essential tool for data science and research applications.

ITE 211

Data Structures and Algorithms..... 3.00 credits

This course provides an in-depth exploration of fundamental data structures and algorithms, essential for efficient problem solving and software development. It is designed for students with a solid foundation in programming who aim to enhance their understanding of how data can be organized and manipulated to optimize performance and resource usage. Prerequisite(s): ITE 115

ITE 215

Software Develop Method & Languages. . 3.00 credits

This comprehensive course covers a spectrum of software development methodologies, programming languages, and secure coding practices. Students will gain practical experience with Waterfall and Agile methodologies, explore the daily workflows of professional developers, and develop proficiency in key programming languages such as C/C++, Java, C#, Go, and Rust. Emphasis will also be placed on secure coding techniques to protect applications from vulnerabilities and threats. (Formerly Titled: Software Development Process Overview) Prerequisite(s): ITE 211

ITE 217**Object Oriented Prog/Architectures... 3.00 credits**

This course delves into the principles and practices of object-oriented programming (OOP) and software architecture. Students will gain a solid understanding of OOP concepts, design patterns, and the fundamentals of building scalable and maintainable software architectures. The course will cover advanced topics such as architectural styles, design principles, Test-Driven Development and the modeling of software solutions. Prerequisite(s): ITE 211

ITE 220**Networking & Data Communications... 3.00 credits**

This course will explore how networks connect multiple devices and allow them to communicate. Topics include: the Transmission Control Protocol / Internet Protocol (TCP/IP) model and network hardware, like routers and modems. It will also focus on network-level vulnerabilities, and explain how to secure a network using firewalls, system hardening, and virtual private networks. (3 credits) Pre-requisite: CSS 101 or ITE 101.

ITE 225**Computer Organization..... 3.00 credits**

This course will focus on the basics of computer organization and architecture. Topics include: Boolean algebra, combinational and sequential circuit design, storage mechanisms and their organization, the instruction cycle in a simple CPU, and the role of assembly language in understanding the hardware/software interface.

ITE 305**Web-based Development..... 3.00 credits**

Web development is a dynamic and multifaceted field that encompasses the creation and maintenance of websites and web applications. As the internet has become an integral part of everyday life, the demand for skilled web developers has skyrocketed. This course aims to provide a comprehensive introduction to web development, covering the essential technologies and frameworks used in the industry. Students will gain a solid foundation in HTML, CSS, Javascript, Django, PHP, and well as databases and the technologies powering the Internet. Prerequisite(s): ITE 115, ITE 211

ITE 315**DevOps Methodology..... 3.00 credits**

This 8-week intensive course introduces students to DevOps, a set of practices that combines software development (Dev) and IT operations (Ops). The course covers essential DevOps concepts, tools, and techniques aimed at improving the development and delivery of software. Students will learn how to implement continuous integration/continuous deployment (CI/CD) pipelines, automate infrastructure, and ensure high availability and scalability of applications. Prerequisite(s): ITE 211

ITE 330**Systems Analysis and Design..... 3.00 credits**

This course will focus on studying IT systems from various angles. It will introduce students to techniques and strategies to carry out system design, with a focus on a developer's view. The course will consider methodologies to analyze both legacy systems and design of newly specified systems. Other applicable topics such as modular design components, iterative versus flexible design, databases, and data collection will also be studied. Prerequisite(s): ENG 101, ENG 102.

ITE 345**Computer Ethics..... 3.00 credits**

This course will focus on ethical issues relating to various aspects of computing use and design. By utilizing case studies, students will examine and discuss various topical situations in the realms of information acquisition, access, stewardship, software licensing, intellectual property, safety, and reliability. Students will gain experience measuring the costs and risks from both a business standpoint and societal impact. They will also study the potential trade offs between them, while considering processes to bring both into alignment. Prerequisite(s): ENG 101, ENG 102. Recommended Prerequisite(s): ITE 200-level course or equivalent.

ITE 410**Software Engineering..... 3.00 credits**

This course will focus on the practice and theory of software engineering. Components to aid in the design of complex systems will be studied by examining modularity, interfaces, data and control flow models, and controlling interaction, coupling, and cohesion, as well as basic data structures and algorithms. Coverage of the differing design methodologies will be discussed including waterfall and stage gate, iterative, RAD, JAD, and project analysis to aid in selecting the most appropriate model(s). Prerequisite(s): ENG 101, ENG 102. Recommended Prerequisite(s): ITE 200-level course or equivalent.

ITE 430**Database Management and Design... 3.00 credits**

This course will focus on the design and implementation of database management systems used in a modern business environment. Topics include how to design, develop, and implement relational database management systems to solve business problems. Prerequisite(s): ENG 101, ENG 102. Recommended Prerequisite(s): ITE 101 & MAT 115. Knowledge of SQL required.

ITE 499**Info Systems Studies Capstone. 3.00 credits**

This is the capstone course for the Information Systems concentration and should be taken in the student's last semester. The student can have no more than 6 credits remaining in their concentration to complete in their degree program prior to enrolling in this course. The goal of the course is for students to to integrate the concepts of the Information Systems concentration and prepare individuals for positions that use information technology to develop computer-based systems that support organizations. The course must be taken at Charter Oak State College. Prerequisite(s): ENG 101, ENG 102.