

# COMPUTER & INFO. TECH. (CITP)

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## CITP 3304

### **Fundamentals of Python and Machine Learning**

CRT HRS:3 LEC HRS:2 LAB HRS:3 OTH HRS:0

This course familiarizes students with the fundamental concepts and terminology of Artificial Intelligence and machine learning. Upon completion of the course, students will possess the skills to choose and implement machine learning services effectively for addressing business challenges. Additionally, they will gain proficiency in machine learning algorithms, such as linear regression, K Nearest Neighbors, and logic regression.

*Prerequisites: Program Chair approval.*

## CITP 3305

### **System Analysis and Design**

CRT HRS:3 LEC HRS:2 LAB HRS:3 OTH HRS:0

This course provides an introduction to the system design and development process, including structured programming logic, computer-based problem-solving concepts, and algorithm design. Individual topics will include program flowcharting and pseudo-coding, input/out techniques, control structures (including sequence, design, and repetition structures), procedures/functions/methods, modularization, file handling, and user documentation. Basic concepts of object-oriented programming are also introduced.

*Prerequisite: Program Chair approval.*

## CITP 3306

### **Internet/Intranet Server Integration**

CRT HRS:3 LEC HRS:2 LAB HRS:3 OTH HRS:0

This course is an in-depth study in the designing, installing, and administration of Windows and Linux-based servers. Use of scripting languages to administer servers will be used.

*Prerequisite: ITCC 1414 with a grade of "C" or better and Program Chair approval.*

## CITP 3309

### **Machine Learning for Natural Language Processing**

CRT HRS:3 LEC HRS:2 LAB HRS:3 OTH HRS:0

This course on Machine Learning for Natural Language Processing (NLP) follows the Introduction to Python and Machine Learning course. Positioned at an intermediate technical level, it is well-suited for students seeking careers where proficiency in machine learning (ML) is essential. Topics include neural networks, computer vision, deep learning, natural language processing (NLP), and AI Ethics.

*Prerequisites: CITP 3304 with a grade of "C" or better and Program Chair approval.*

## CITP 3310

### **Survey of Programming Languages**

CRT HRS:3 LEC HRS:2 LAB HRS:3 OTH HRS:0

This course introduces two languages. One language will be a common programming language and the other will be a common scripting language. The concepts covered in the programming language will include simple input and output, conditionals, and use of standard structures in the language. The concepts covered in the scripting language will include formatting, enhancements and error detection.

*Prerequisite: CITP 3305 with a grade of "C" or better and Program Chair approval.*

## CITP 3311

### **Reverse Software Engineering**

CRT HRS:3 LEC HRS:2 LAB HRS:3 OTH HRS:0

This course provides a study of reverse software engineering concepts and hands-on training with reverse engineering tools including disassemblers, decompilers and code analyzers.

*Prerequisite: CITP 3310 with a grade of "C" or better and Program Chair approval.*

## CITP 3312

### **Fundamentals of Information Security**

CRT HRS:3 LEC HRS:2 LAB HRS:3 OTH HRS:0

This course synthesizes technical material covered in prior courses to monitor, audit, analyze, and revise computer and network security systems to ensure appropriate levels of protection are in place.

*Prerequisite: ITCC 1444 and Program Chair approval.*

## CITP 3320

### **Database Management**

CRT HRS:3 LEC HRS:2 LAB HRS:3 OTH HRS:0

In this course, the logical concept and physical organization of relational database management systems are studied. The SQL language will be used extensively in exploring and querying databases. Students will receive extensive hands-on skills for designing, analyzing and implementing a relational database using Oracle.

*Prerequisite: Program Chair approval.*

## CITP 3321

### **Advanced Database Security and Management**

CRT HRS:3 LEC HRS:2 LAB HRS:3 OTH HRS:0

This course provides the study of principles and practices of implementing advanced database security mechanisms in order to keep data safe. Students will also receive extensive hands-on skills in advanced administration tasks using a Database Management System (DBMS) such as Oracle.

*Prerequisite: CITP 3320 and Program Chair approval.*

## CITP 3360

### **Digital Image Processing and Presentation**

CRT HRS:3 LEC HRS:2 LAB HRS:3 OTH HRS:0

This course provides a basic competency in preparation and creation of photo quality images. Topics may include cropping, color adjustments, restoration of damage, adding and removing elements and animated images.

*Prerequisite: Program Chair approval.*

## CITP 4301

### **Capstone: Computer and Information Technology Internship**

CRT HRS:3 LEC HRS:3 LAB HRS:0 OTH HRS:0

This course presents a work-based learning experience that enables the student to apply specialized occupational theory, skills and concepts. A learning plan is developed by the college and the employer.

*Prerequisite: Senior standing and program chair approval.*

## CITP 4316

### **Advanced Web Design**

CRT HRS:3 LEC HRS:2 LAB HRS:3 OTH HRS:0

This course will introduce the paradigm of web development by utilizing server-side technology. Data-driven web applications will be created by applying programming, security and database management techniques. Topics include, but are not limited to, dynamic web page generation, basic web server configuration and database connectivity.

*Prerequisite: CITP 3310 and (ITSE 1411 or COSC 1315) with a grade of "C" or better and Program Chair approval.*

**CITP 4330****Advanced Network Security**

CRT HRS:3 LEC HRS:2 LAB HRS:3 OTH HRS:0

This course prepares students to synthesize technical material covered in prior courses to perform a comprehensive security audit on a network infrastructure. Includes configuring secure hardware and software firewalls. Emphasis will be placed on overall network security processes and competencies covered on security certification exams.

*Prerequisite: CITP 3312 or ITSY 1400 with a grade of "C" or better and Program Chair approval.*

**CITP 4340****Special Topics Course - CIT**

CRT HRS:3 LEC HRS:2 LAB HRS:3 OTH HRS:0

In this course, students will utilize knowledge from previous course work to create a programming project. The programming project has to adhere to the given topic of study. The topic of study chosen by the instructor may change from semester to semester.

*Prerequisite: CITP 4350 with a grade of "C" or better and Program Chair approval.*

**CITP 4346****Cyber Law and Digital Forensics**

CRT HRS:3 LEC HRS:2 LAB HRS:3 OTH HRS:0

This course presents the laws and legal issues that impact law enforcement, businesses, and investigators when preserving, collecting, and analyzing digital data and evidence of computer crimes. Students will examine the tools and techniques required to conduct a successful investigation of illegal activities related to information technology.

*Prerequisites: CITP 3312 or ITSY 1400 with a grade of "C" or better and Program Chair approval.*

**CITP 4347****Principles of Cybersecurity**

CRT HRS:3 LEC HRS:2 LAB HRS:3 OTH HRS:0

This course introduces the basic concepts and principles of cybersecurity and the fundamental approaches of securing systems. Its main topics include: security basics, security management, risk assessment, software security, operating systems security, cryptography protocols, network authentication, security network applications, malware, network threats and defenses, web security, mobile security, cloud computing, virtualization, ethical issues and privacy.

*Prerequisite: ITSY 1400 and ITCC 1444 with a grade of "C" or better and Program Chair approval.*

**CITP 4348****Cybersecurity Assessments**

CRT HRS:3 LEC HRS:2 LAB HRS:3 OTH HRS:0

This course provides a study of vulnerabilities, assessments, and penetration testing. Topics include performing reconnaissance, identifying possible attack vectors, exploiting a system's vulnerabilities, and reporting the results of a penetration test. Emphasis is to identify security weaknesses on a computer network.

*Prerequisites: CITP 4330 with a grade of "C" or better and Program Chair approval.*

**CITP 4349****Advanced Artificial Intelligence**

CRT HRS:3 LEC HRS:2 LAB HRS:3 OTH HRS:0

This course will introduce students to advanced artificial intelligence. Topics include advanced programming, heuristic search, game playing, and reinforcement learning.

*Prerequisites: CITP 3309 with a grade of "C" or better and Program Chair approval.*

**CITP 4350****Advanced Computer Programming**

CRT HRS:3 LEC HRS:2 LAB HRS:3 OTH HRS:0

This course will introduce students to more advanced concepts in computer programming languages. Topics may include Graphical User Interface, Database Connectivity, Threads, and Network Programming.

*Prerequisite: CITP 3310 with a grade of "C" or better and Program Chair approval.*