

# INFORMATION TECHNOLOGY (IT)

## IT-1025 Information Technology Concepts for Programmers 3 Credits

Designed for students pursuing careers in programming, networking and general Information Technology fields. Introduces computer, networking, and programming concepts.

*Lecture: 2 hours. Laboratory: 2 hours*

*Prerequisite(s): None.*

## IT-1050 Programming Logic 3 Credits

Learn to solve business problems by designing, coding, and testing programming solutions using a current high-level programming language. Learn and apply standard language constructs, control flow, and beginning object-oriented programming concepts.

*Lecture: 2 hours. Laboratory: 2 hours*

*Prerequisite(s): IT-1025 Information Technology Concepts for Programmers, or concurrent enrollment.*

## IT-1080 Introduction to Data Analytics 4 Credits

Broad coverage of topics key to data scientists to convert information to knowledge. Focus is on current data analytics methods to address business problems.

*Lecture: 3 hours. Laboratory: 2 hours*

*Prerequisite(s): IT-1025 Information Technology Concepts for Programmers or concurrent enrollment.*

## IT-1090 Computer Applications 3 Credits

Overview of the computer techniques and skills used in a professional environment. Instruction and hands-on training in file management, word processing, spreadsheet, presentation software, electronic collaboration, and professional Internet usage. Practical applications in researching, creating, editing, saving, presenting, and printing computer generated materials in a professional manner.

*Lecture: 2 hours. Laboratory: 2 hours*

*Prerequisite(s): Recommend BT-1000 Keyboarding and Document Formatting for students who type less than 25 wpm or have no keyboarding experience. OAN Approved: Transfer Assurance Guide OBU003.*

## IT-109H Honors Computer Applications 3 Credits

Overview of the computer techniques and skills used in a professional environment, with an emphasis on problem solving and addressing business needs. Instruction and hands-on training in file management, word processing, spreadsheet, presentation software, database management, electronic collaboration, and professional Internet usage. Practical applications in researching, creating, editing, saving, presenting, and printing computer generated materials in a profession manner.

*Lecture: 2 hours. Laboratory: 2 hours*

*Prerequisite(s): MATH-0955 Beginning Algebra, or appropriate Math placement score; and eligibility for ENG-101H Honors College Composition I.*

## IT-1150 Introduction to Web Programming 3 Credits

Build Web pages using current technologies including but not limited to HTML, cascading style sheets and JavaScript using an HTML editor. Focus is on developing a foundation in web programming.

*Lecture: 2 hours. Laboratory: 2 hours*

*Prerequisite(s): IT-1025 Information Technology Concepts for Programmers, or concurrent enrollment.*

## IT-1200 Introduction to Software Quality Assurance 4 Credits

Introductory course in Software Quality Assurance that provides the fundamentals of software development life cycle, role of a tester, software testing types, methodologies, software testing cycle and testing tools.

*Lecture: 3 hours. Laboratory: 2 hours*

*Prerequisite(s): None.*

## IT-1815 Introduction to Blockchain 3 Credits

Course provides a foundation in Blockchain terminology, concepts and design and development fundamentals.

*Lecture: 2 hours. Laboratory: 2 hours*

*Prerequisite(s): IT-1025 Information Technology for Programmers, IT-1050 Programming Logic, and IT-2351 Enterprise Database Systems.*

## IT-1816

### Special Topics: Introduction to Quality Assurance 3 Credits

Introductory course in Quality Assurance that provides the fundamentals of software testing with exposure to Agile methodologies

*Lecture: 2 hours. Laboratory: 2 hours*

## IT-1819 Special Topics in Machine Learning 4 Credits

To provide a foundation in machine learning by exploring and developing programs that utilize data and statistics to learn and predict outcomes.

*Lecture: 3 hours. Laboratory: 2 hours*

*Prerequisite(s): IT1025: Information Technology Concepts for Programmers, IT1050: Programming Logic and MATH-1000 level or higher.*

## IT-1820 Independent Study/Research in Information Technology 1-3 Credits

Directed individual study. Study/research title and specific content arranged between instructor and student. May be repeated for a maximum of six credits of different topics.

*Lecture: 1-3 hours*

*Prerequisite(s): Departmental approval, and instructor approval, and ENG-0995 Applied College Literacies, or appropriate score on English Placement Test. Note: ENG-0990 Language Fundamentals II taken prior to Fall 2021 will also meet prerequisite requirements.*

## IT-2030 ASP.NET Web Programming 4 Credits

Capstone course for Programming and Development majors. Advanced server-side programming course. Create server-side, database-driven websites using the ASP.NET framework in combination with markup, style sheets and client-side scripting.

*Lecture: 3 hours. Laboratory: 2 hours*

*Prerequisite(s): IT-1150 Introduction to Web Programming, and IT-2351 Enterprise Database Systems; and IT-2650 Java Programming or IT-2620 Visual Basic .NET Programming.*

### **IT-2080 Data Visualization**

#### **4 Credits**

Create static and dynamic data visualizations using the latest development tools and techniques. Advanced topics include dashboards and stories.

*Lecture: 3 hours. Laboratory: 2 hours*

*Prerequisite(s): IT-1025 Information Technology Concepts for Programmers, and IT-1080 Introduction to Data Analytics or concurrent enrollment, and IT-2351 Enterprise Database Systems.*

### **IT-2090 Data Analytics Programming**

#### **4 Credits**

This course covers the fundamental concepts of R and the use of R for effective data analysis. Students will develop skills to develop solutions to complex problems across a variety of disciplines using data and real-world case studies.

*Lecture: 3 hours. Laboratory: 2 hours*

*Prerequisite(s): IT-1050 Programming Logic, and IT-1080 Introduction to Data Analytics or concurrent enrollment.*

### **IT-2100 iOS Application Programming**

#### **4 Credits**

Focuses on skills required to successfully create dynamic and efficient iOS applications. Covers the fundamentals of objects, classes and behaviors as well as object communication and user interface design considerations. Mac computer required with ability to download/install software.

*Lecture: 3 hours. Laboratory: 2 hours*

*Prerequisite(s): IT-2650 Java Programming.*

### **IT-2110 Android Mobile Application Development**

#### **3 Credits**

Introduction to mobile development using the Android Software Development Kit (SDK). Focuses on the skills required to design, develop and publish applications for the Android platform. Covers the fundamentals of Android application development including designing an application, implementing specific framework components such as a splash screen and main menu, how to handle user interaction and make an application available in the Android market.

*Lecture: 2 hours. Laboratory: 2 hours*

*Prerequisite(s): IT-2650 Java Programming.*

### **IT-2200 Software Quality Assurance Techniques**

#### **4 Credits**

Continuation of Software Quality Assurance process covering testing types, techniques and test management cycle and will also get exposure to Agile Testing. Gain practical experience creating and executing test cases and plans, logging and tracking defects etc.

*Lecture: 3 hours. Laboratory: 2 hours*

*Prerequisite(s): IT-1200 Software Quality Assurance.*

### **IT-2320 Interactive Internet Programming**

#### **4 Credits**

Introduction to interactive object-oriented programming in an Internet environment from a conceptual approach. Emphasis is on understanding the basic Internet technologies (mostly from the client side), how and when to use them and how to integrate them into a system.

*Lecture: 3 hours. Laboratory: 2 hours*

*Prerequisite(s): IT-1050 Programming Logic, and IT-1150 Introduction to Web Programming.*

### **IT-2351 Enterprise Database Systems**

#### **4 Credits**

Apply knowledge of: relational algebra, data migration, data warehousing, data mining, distributed databases and security to design, develop and normalize a Structured Query Language (SQL) database to 3rd normal form using appropriate diagrams and database objects. Retrieve, insert, update, delete, troubleshoot and report data from complex SQL databases.

*Lecture: 3 hours. Laboratory: 2 hours*

*Prerequisite(s): IT-1025 Information Technology Concepts for Programmers; IT-1050 Programming Logic; and MATH-0955 Beginning Algebra, or MATH-0990 Math Literacy for College Students, appropriate score on Math placement test.*

### **IT-2400 Unity Game Programming**

#### **3 Credits**

An introduction to scripting with Unity focusing on the programming skills needed to translate game design principles into a fully-functional game.

*Lecture: 2 hours. Laboratory: 2 hours*

*Prerequisite(s): VCIM-1400 Game Design II: Game Engines, or departmental approval.*

### **IT-2600 E-Business Programming Technologies**

#### **3 Credits**

Use of web programming technologies to create Internet client/server applications. Design, create, code and debug applications using Web objects. Topics include, but are not limited to, SQL, XML, C# .Net, Visual Basic .Net, and a server-side technology such as PHP.

*Lecture: 2 hours. Laboratory: 2 hours*

*Prerequisite(s): IT-1150 Introduction to Web Programming, and IT-2351 Enterprise Database Systems; and IT-1050 Programming Logic; or IT-2650 Java Programming; or IT-2670 C/C++ Programming Language, or IT-2680 Visual C#.NET.*

### **IT-2650 Java Programming**

#### **4 Credits**

Introduction to object-oriented methodologies and programming using the Java programming language. Design, code, and debug Java applications. Other topics include GUI components, event handling, and exception handling.

*Lecture: 3 hours. Laboratory: 2 hours*

*Prerequisite(s): IT-1050 Programming Logic.*

*OAN Approved: CTAN Approved: Career Technical Assurance Guide CTPROG002*

### **IT-2660 Data Structures & Algorithms**

#### **4 Credits**

Programming and problem-solving skills are further developed by using language features to implement various data structures such as stacks, queues, linked lists, trees and graphs. Additional topics include recursion, sorting, searching, and hashing algorithms.

*Lecture: 3 hours. Laboratory: 2 hours*

*Prerequisite(s): IT-2650 Java Programming.*

**IT-2670 C/C++ Programming Language****4 Credits**

Introduction to programming using the C and C++ programming languages, emphasizing program development and design, debugging techniques, and common basics of the C/C++ languages. Topics include Object-Oriented concepts (including classes, objects, attributes, methods and object communication), Structured Programming concepts (including control statements, conditions, loops) and Data Structures (including collections), data types, functions, argument passing, arrays, strings, structures, data files, and classes.

*Lecture: 3 hours. Laboratory: 2 hours*

*Prerequisite(s): IT-1050 Programming Logic.*

**IT-2680 Visual C# .NET****4 Credits**

An introduction to object-oriented programming using the Visual C# .NET programming language. Design, code and debug Visual C# .NET applications and objects. Topics include, but not limited to, using methods, creating and using classes, GUI components, the Visual Studio IDE, event handling, using controls and exception handling.

*Lecture: 3 hours. Laboratory: 2 hours*

*Prerequisite(s): IT-1050 Programming Logic.*

**IT-2700 Systems Analysis and Design****3 Credits**

Overview of systems development life cycle. Utilize structured tools and object-oriented techniques to analyze and document process flow, data flows, data structures, file designs, input & output designs and program specifications in the systems development life cycle. Examine information gathering and reporting activities. Analyze strategies and techniques for producing logical methodologies which deal with complexity in development of information systems.

*Lecture: 3 hours*

*Prerequisite(s): IT-1050 Programming Logic.*

**IT-2710 Advanced Topics in Network Security****3 Credits**

Capstone course. Provides in-depth understanding of network security principles and the tools and configurations needed to secure a network.

*Lecture: 2 hours. Laboratory: 2 hours*

*Prerequisite(s): ITNT-2370 Network Security Fundamentals.*

**IT-2720 Ethical Hacking and Systems Defense****3 Credits**

Combines an ethical hacking methodology with the application of security tools to better help students secure systems. Includes an introduction to common countermeasures that effectively reduce and/or mitigate attacks.

*Lecture: 2 hours. Laboratory: 2 hours*

*Prerequisite(s): ITNT-2370 Network Security Fundamentals, and ITNT-2320 Network Administration I, and ITNT-2380 Linux Administration.*

**IT-2730 Intrusion Detection/Prevention Systems Fundamentals****3 Credits**

Covers the design, implementation, and administration of Intrusion Detection/Prevention Systems. Includes practical, hands-on experience working with these systems and analysis various attack signatures and the network traffic these systems collect.

*Lecture: 2 hours. Laboratory: 2 hours*

*Prerequisite(s): EET-2303 Cisco II and ITNT-2370 Network Security Fundamentals.*

**IT-2740 Fundamentals of Client Operating Systems and Hardware for Cybersecurity****4 Credits**

Provides an introduction to and basic technical understanding of the function and operation of operating systems and computing hardware with consideration given to relevant security best practices.

*Lecture: 3 hours. Laboratory: 2 hours*

*Prerequisite(s): IT-1025 Information Technology Concepts for Programmers.*

**IT-2750 Scripting Fundamentals for Cybersecurity****3 Credits**

Introduction to concepts important for popular cybersecurity scripting languages, including basic data types, control structures, regular expressions, input/output, and textual analysis. One or more common scripting languages relevant to the field of cybersecurity will be utilized in the course.

*Lecture: 2 hours. Laboratory: 2 hours*

*Prerequisite(s): IT-1050 Programming Logic.*

**IT-2760 Introduction to Digital Forensics****3 Credits**

Introduction to Digital Forensics introduces the legal and technical aspects of digital forensics, including general forensic processes, imaging, hashing, file recovery, file system basics, identifying mismatched file types, reporting, and laws regarding computer evidence.

*Lecture: 2 hours. Laboratory: 2 hours*

*Prerequisite(s): ITNT-2380 Linux Administration.*

**IT-2815 Special Topics: Blockchain Applications****3 Credits**

Continuation of IT-1815 Special Topics: Introduction to Blockchain where students will continue to discover the building blocks of Blockchain and then extend their learning to examine and create Blockchain applications.

*Lecture: 2 hours. Laboratory: 2 hours*

*Prerequisite(s): IT-1815 Special Topics: Introduction to Blockchain.*

**IT-2816 Special Topics: QA-2 - Software Testing****3 Credits**

This is a continuation of IT1816 Introduction to Quality Assurance. In this course, students will learn SDLC process, testing types, techniques and test management cycle and will also get exposure to Agile Testing.

*Lecture: 2 hours. Laboratory: 2 hours*

*Prerequisite(s): None.*

**IT-2818 Special Topics: Server-side Web Programming****4 Credits**

This is an advanced web programming course where we use Node.js framework to build web applications. Students will learn full stack web development including asynchronous processing, routing and accessing data in Node.js framework using Javascript, Express and MongoDB.

*Lecture: 3 hours. Laboratory: 2 hours*

*Prerequisite(s): IT-2320 Interactive Internet Programming*

**IT-2819 Special Topics: Python Programming**

**4 Credits**

Python is a widely used general-purpose, high-level programming language. Its design philosophy emphasizes code readability, and its syntax allows programmers to express concepts in fewer lines of code than would be possible in languages such as C# or Java. The language provides constructs intended to enable clear programs on both a small and large scale.

*Lecture: 3 hours. Laboratory: 2 hours*

*Prerequisite(s): IT-1050 Programming Logic or departmental approval: equivalent industry experience.*

**IT-2820 Advanced Independent Study in Information Technology**

**1-3 Credits**

Directed individual advanced study. Study/research title and specific content arranged between instructor and student. May be repeated for a maximum of six credits of different topics.

*Lecture: 1-3 hours*

*Prerequisite(s): Departmental approval, and instructor approval, and ENG-0995 Applied College Literacies, or appropriate score on English Placement Test. Note: ENG-0990 Language Fundamentals II taken prior to Fall 2021 will also meet prerequisite requirements.*

**IT-2830 Cooperative Field Experience**

**1-3 Credits**

Open to students eligible for the Cooperative Education Program. Employment in an approved training facility under College supervision. Requirement for one credit is 180 hours of approved work. Students may earn up to three credits in one semester. May be repeated for an accrued maximum of nine credits.

*Other Required Hours: 180 clock hours of approved work per credit hour.*

*Prerequisite(s): See campus CO-OP Advisor for the Cooperative Education Program application.*