Information Technology and Computer Science

The Information and Computer Science department at Lakeland provides instruction in the current high demand Information Technology (IT) skill sets including, programming languages, systems development and support, web content development, database development, administration and analysis, hardware and software usage and support, and networking administration. There are six areas of concentration available within the degree program as well as seven certificate programs that prepare students for entry into the IT field which, according to the U.S. Bureau of Labor Statistics, will see significant increase in employment through 2022.

Gainful Employment	Program Name	Program Type	Area of Study
	Application Programming and Development Concentration (9246) , AAB (https://catalog.lakelandcc.edu/degree-certificate-programs/isys/9246/)	Degree	ISYS
	Computer Science/Software Engineering Concentration (9259) , AAB (https://catalog.lakelandcc.edu/degree-certificate-programs/isys/9259/)	Degree	ISYS
	Cybersecurity Concentration (9247) , AAB (https://catalog.lakelandcc.edu/degree-certificate-programs/isys/9247/)	Degree	ISYS
	Data Analytics Concentration (9258) , AAB (https://catalog.lakelandcc.edu/degree-certificate-programs/isys/9258/)	Degree	ISYS
	IT Support Analyst Major (9243) , AAB (https://catalog.lakelandcc.edu/degree-certificate-programs/isys/9243/)	Degree	ISYS
	Operating Systems/Networking Concentration (9249) , AAB (https://catalog.lakelandcc.edu/degree-certificate-programs/isys/9249/)	Degree	ISYS
	Web Content Developer Concentration (9251) , AAB (https://catalog.lakelandcc.edu/degree-certificate-programs/isys/9251/)	Degree	ISYS
	Computer Information Technology (9720) , ATS (https://catalog.lakelandcc.edu/degree-certificate-programs/isys/9720/)	Degree	ISYS
	Computer User Certificate (2402) (https://catalog.lakelandcc.edu/degree-certificate-programs/isys/2402/)	Certificate	ISYS
	Graphic Design for the Web Certificate (2513) (https://catalog.lakelandcc.edu/degree-certificate-programs/isys/2513/)	Certificate	GRDS
	IT Foundations Certificate (2401) (https://catalog.lakelandcc.edu/degree-certificate-programs/isys/2401/)	Certificate	ISYS
	IT Professional Certificate (2404) (https://catalog.lakelandcc.edu/degree-certificate-programs/isys/2404/)	Certificate	ISYS
	IT Specialist Certificate (2403) (https://catalog.lakelandcc.edu/degree-certificate-programs/isys/2403/)	Certificate	ISYS

Computer Science

ITCS 1010 Programming Logic   **3 Credits**
Prerequisite: ITIS 1005 (can be taken concurrently) or ITIS 1007 (can be taken concurrently), a grade of "SC" or better in MATH 0850 or placement test; or permission of instructor.
This course provides an introduction to problem-solving techniques, the steps of the program development cycle, and fundamental skills needed for programming in any computer language. Students will develop logic plans and create programs using core programming instructions to solve a variety of problems and will use one or more programming languages to gain experience with the complete program development process. The course includes an introduction to object-oriented and event-driven programming, and to the IDE (Integrated Development Environment).
(4.5 contact hours: 1.5 lecture, 3 lab)

ITCS 1011 History of Computing   **2 Credits**
Prerequisite: ITIS 1005 (can be taken concurrently) or ITIS 1007 (can be taken concurrently) or ENGR 1000 (can be taken concurrently) or permission of instructor.
This course traces the history of computational devices, pioneers, and principles from the early ages through the present. Topics include early computational devices, mechanical computation in the 19th century, events that led to electronic computing advances in the 20th century, the advent of personal computing and the Internet, and the rise of social networks. This course also includes a history of programming languages, electronic communication protocols, operating systems, processors, and computing platforms.
(2.5 contact hours: 1.5 lecture, 1 lab)

ITCS 1105 Web Programming I   **(CTAG) 3 Credits**
Prerequisite: GRDS 1375 or ITCS 1010, ITIS 1102; or permission of instructor.
This course provides introductory and intermediate techniques using the current version of HTML (Hypertext Markup Language) to create and manage web pages. Students will explore ways of presenting text, data, and graphics in a browser based environment. Students will explore the use of several HTML editing tools to aid in site management.
(4.5 contact hours: 1.5 lecture, 3 lab)

ITCS 1820 Java Programming I   **3 Credits**
Prerequisite: ITCS 1010 or permission of instructor.
This course provides an introduction to application development, object-oriented programming, and the Java development system. Students will write object-oriented Java applications and applets using methods, variables, operators, strings, arrays, loops, selection statements, classes, inheritance, and encapsulation.
(5 contact hours: 1 lecture, 4 lab)

ITCS 1825 Programming I for iOS   **3 Credits**
Prerequisite: ITCS 1010 or permission of instructor.
This course introduces students to Apple's current development language and object-oriented programming concepts. Students will write programs using classes, methods, input/output, inheritance, and polymorphism for the iPhone/iPad.
(5 contact hours: 1 lecture, 4 lab)

ITCS 1870 Python Programming I   **3 Credits**
Prerequisite: ITCS 1010 or permission of instructor.
This course introduces students to the Python programming language. Students will write procedural and object-oriented applications. Student programs will include arithmetic operations, strings, functions, decisions and loops, and object-oriented constructs. (5 contact hours: 1 lecture, 4 lab)
(5 contact hours: 1 lecture, 4 lab)

ITCS 1880 R Programming I   **3 Credits**
Prerequisite: ITCS 1010, ITDB 1401, ITIS 1520, MATH 1550 or MATH 2130; or permission of instructor.
This course introduces students to the R programming language. Students will write procedural and object-oriented applications. Student programs will include arithmetic/statistical operations, strings, functions, decisions and loops, and object-oriented constructs. Students will read data into R, access packages, profile code, and present meaningful output of results.
(5 contact hours: 1 lecture, 4 lab)

ITCS 2010 Systems Analysis and Design   **3 Credits**
Prerequisite: ITCS 1010 (can be taken concurrently) or ITON 1205 (can be taken concurrently) or CNET 1100 (can be taken concurrently) or permission of instructor.
This course provides an in-depth experience of the business information systems development process, with emphasis on the investigation, analysis, and design phases. Students will study the role of the systems analyst, examine methodologies and apply tools used for system design, and, through participation in a team project and presentation, gain experience with the design of a business information system.
(4 contact hours: 2.5 lecture, 1.5 lab)

ITCS 2012 Discrete Structures   **3 Credits**
Prerequisite: MATH 1650 or higher, CPET 1120 or ITCS 1825 or ITCS 1820 or ITCS 1870; or permission of instructor.
This course provides an introduction to the foundations of discrete mathematics as they apply to computer science, and focuses on providing a solid theoretical foundation for further work. Topics include logic, set algebra, equivalence relations and partitions, functions, mathematical induction, cardinality, recurrence relations, basic combinatorial methods, and trees and graphs; with an emphasis on applications in computer science.
(3 contact hours)

ITCS 2080 Fundamentals of Software Engineering   **3 Credits**
Prerequisite: ITCS 1820 or ITCS 1825 or ITCS 1870; or permission of instructor.
This course introduces the basic principles and concepts of software engineering and provides the necessary foundation for subsequent SE courses at the upper division level. Topics include: basic terminology and concepts of software engineering; system requirements, modeling, and testing; object oriented analysis and design using UML; frameworks and APIs; client-server architecture; user interface technology; and the analysis, design, and programming of simple servers and clients.
(4 contact hours: 2.5 lecture, 1.5 lab)

ITCS 2105 Web Programming II   **3 Credits**
Prerequisite: ITCS 1105, ITCS 1820, ITCS 2120 (can be taken concurrently); or permission of instructor.
This course introduces intermediate and advanced techniques using various markup languages for the Internet in a microcomputer environment. Students will use previously mastered procedural and object-oriented techniques and concepts to develop complex programs using intermediate XHTML, CSS, XML, Internet programming languages, and other advanced techniques as the languages and protocols evolve. Students will also learn the vocabulary and process of group based code and user interface review. Students who have taken the prerequisite courses more than two years prior to attempting this course may wish to retake those courses before attempting ITCS 2105 to ensure current knowledge of the information and the profession.
(5 contact hours: 1 lecture, 4 lab)

ITCS 2120 JavaScript Programming I   **3 Credits**
Prerequisite: ITCS 1820 or ITCS 1825 or ITCS 1870, ITCS 1105; or permission of instructor.
This course introduces JavaScript programming in a hands-on microcomputer environment. JavaScript programming is used extensively in web page design to allow information to be processed on a web page before being sent to a web server for processing. Students will also learn the vocabulary and process of group based code and user interface review. Students who have taken the prerequisite courses more than two years prior to attempting this course may wish to retake those courses before attempting ITCS 2120 to ensure current knowledge of the information and the profession.
(4.5 contact hours: 1.5 lecture, 3 lab)

ITCS 2155 PHP Programming   **3 Credits**
Prerequisite: ITCS 1105, ITCS 1820, ITDB 1401 (can be taken concurrently); or permission of instructor.
This course introduces PHP Hypertext Preprocessor (PHP) technologies for the Internet in a microcomputer environment. Students will study intermediate and advanced HTML, server-side scripting techniques, processing of data to and from databases and non-traditional data formats, and other techniques to create dynamic web pages.
(6 contact hours: 2 lecture, 4 lab)

ITCS 2170 Introduction to ASP.NET   **2 Credits**
Prerequisite: ITCS 1010, ITCS 1105, ITDB 1401; or permission of instructor.
This course introduces ASP.NET programming for the Internet in a microcomputer environment. Students will study intermediate HTML, Web scripting, and other advanced techniques to create dynamic Web applications using server-side technology with ASP.NET.
(3.25 contact hours: 0.75 lecture, 2.5 lab)

ITCS 2188 Advanced Concepts in Web Development   **3 Credits**
Prerequisite: ITCS 1105, ITCS 2120, ITCS 2155, PHOT 2300.
This intermediate-level course provides students the tools to develop an automated workflow for website design and/or interactive design environments. Students will use multiple programming and site development techniques to create, test, and implement techniques to improve workflow efficiencies.
(5 contact hours: 1 lecture, 4 lab)

ITCS 2820 Java/Android Programming II   **3 Credits**
Prerequisite: ITCS 1820, ITDB 1401 (can be taken concurrently) or ITDB 1430 (can be taken concurrently); or permission of instructor.
This course provides advanced instruction in current standard Java program development methodologies and object-oriented programming with an emphasis on mobile application development. Students will use mobile class libraries and J2ME (Java 2 Micro Edition) to create applications for mobile devices.
(5 contact hours: 1 lecture, 4 lab)

ITCS 2821 Java/Android Programming III   **2 Credits**
Prerequisite: ITCS 2820.
This course provides advanced instruction in Android's current development environment with an emphasis on designing, creating and publishing professional Android mobile applications.
(3.5 contact hours: 0.5 lecture, 3 lab)

ITCS 2825 Programming II for iOS   **3 Credits**
Prerequisite: ITCS 1825, ITDB 1401 (can be taken concurrently) or ITDB 1430 (can be taken concurrently; or permission of instructor.
This course provides advanced instruction in Apple's current development language methodologies and object-oriented programming with an emphasis on mobile application development. Students will use mobile class libraries and the Apple Coco class library to create applications for mobile devices.
(5 contact hours: 1 lecture, 4 lab)

ITCS 2826 Programming III for iOS   **2 Credits**
Prerequisite: ITCS 2825.
This course provides advanced instruction in Apple's current development environment with an emphasis on designing, creating and publishing professional iOS mobile applications.
(3.5 contact hours: 0.5 lecture, 3 lab)

ITCS 2848 .NET Programming **3 Credits**
Prerequisite: ITCS 1820 or ITCS 1825 or permission of instructor.
This course provides advanced instruction in application development for the .NET programming environment. Students will apply previously acquired programming knowledge from prerequisite programming classes to enhance object-oriented programming expertise. Students will learn various skills, including the Visual Studio Integrated Development Environment, reflection, threading, regular expressions, database connectivity, web application, and more to create professional applications.
(5 contact hours: 1 lecture, 4 lab)

ITCS 2870 Data Structures **4 Credits**
Prerequisite: CPET 1120, ITCS 1820, MATH 2500; or permission of instructor.
This traditional computer science course introduces students to advanced data structure concepts including objects and inheritance, algorithm analysis, recursion, stacks, queues, lists, randomization, trees, sorting and searching, hash tables, and graphs and paths.
(6 contact hours: 2 lecture, 4 lab)

ITCS 2873 Python Programming II **3 Credits**
Prerequisite: ITCS 1870 or permission of instructor.
This course introduces intermediate and advanced aspects of the Python programming language. Students will explore object-oriented concepts of encapsulation, inheritance, and polymorphism; exception handling; iterators; decorators; and networking and remote data handling.
(5 contact hours: 1 lecture, 4 lab)

ITCS 2875 Computer Architecture and Organization **3 Credits**
Prerequisite: ITCS 2870 or ITCS 2873; or permission of instructor.
This course provides a study of the principles of Von Neumann computer architecture, data representation, and memory addressing as well as processor organization and its impact on system and application software. It also includes discussion and utilization of assembly language and computer processor simulators.
(5 contact hours: 1 lecture, 4 lab)

ITCS 2900 Special Topics in Information Technology/Computer Science **1-4 Credits**
These specialized courses provide in-depth examinations of Information Technology Computer Science/Programming topics not covered in detail elsewhere in the curriculum.
(1-4 contact hours)

Database

ITDB 1300 Introduction to Database Theory **2 Credits**
Prerequisite: ITIS 1007 or permission of instructor.
This course provides a foundation in relational database theory. Students will learn various concepts as they apply to relational database management including the importance of database in application, data modeling, database normalization, and SQL for data processing. Students will also be introduced to concepts in data analytics and database administration.
(2.5 contact hours: 1.5 lecture, 1 lab)

ITDB 1400 Introduction to SQL **2 Credits**
Prerequisite: ITIS 1005 or ITIS 1007 or permission of instructor.
This course provides an introduction to SQL (Structured Query Language) to create and maintain database objects, manipulate data, and to produce readable output displays and reports. Students will use the Oracle relational database management system along with DDL (Data Definition Language), DML (Data Manipulation Language), and SQL*Plus format commands. This course and ITDB 1405 Introduction to Oracle SQL/PL help students prepare for the Introduction to Oracle: SQL and PL/SQL certification exam. Although it is not a prerequisite for this course, students may benefit from taking a programming course prior to taking this course.
(3 contact hours: 1 lecture, 2 lab)

ITDB 1401 SQL Programming and Database Design **3 Credits**
Prerequisite: ITIS 1005 or ITIS 1007 or permission of instructor.
This course provides instruction in SQL (Structured Query Language) as well as a foundation in relational database theory and design. Students will learn various concepts as they apply to relational database management including the importance of database in applications, data modeling, database normalization, and SQL for data processing. Students will also be introduced to concepts in data analytics and database administration. This course helps students to prepare for industry certification. Although it is not a prerequisite for this course, students may benefit from taking a programming course prior to taking this course.
(5 contact hours: 1 lecture, 4 lab)

ITDB 1405 Oracle PL/SQL Programming   **2 Credits**
Prerequisite: ITCS 1010, ITDB 1401 (can be taken concurrently); or permission of instructor.
This course continues the study of the Oracle relational database management system by providing an introduction to the Oracle PL (Procedural Language). Students will write PL with embedded SQL (Structured Query Language) to interact with an Oracle Server, create control structures, write explicit cursors, and handle exceptions. Additional concepts include procedures, functions, packages, and triggers. This course helps students prepare for Oracle certification.
(3.25 contact hours: 0.75 lecture, 2.5 lab)

ITDB 1406 Microsoft SQL Concepts   **2 Credits**
Prerequisite: ITIS 1005 or ITIS 1007 or permission of instructor.
This course provides students with knowledge about SQL (Structured Query Language) along with an introduction to programming objects using Microsoft SQL. Students will use Microsoft SQL Server to write queries, create and modify data, and create database objects such as views, stored procedures and functions, and triggers. This course helps students prepare for Microsoft SQL Server certification. Although it is not a prerequisite for this course, students may benefit from taking ITDB 1401 SQL Programming and Database Design prior to taking this course.
(3 contact hours: 1 lecture, 2 lab)

ITDB 1407 MySQL Database Analysis and Design   **2 Credits**
Prerequisite: ITIS 1005 or ITIS 1007 or permission of instructor.
This course provides instruction on MySQL, an open-source database management system utilized in cloud, web and embedded applications. Students will learn how to install, configure, design and optimize MySQL databases. Concepts in database design theory and management will be covered. Students will learn how to utilize MySQL for data analysis and application implementation.
(3 contact hours: 1 lecture, 2 lab)

ITDB 1450 Visualization Tools for Data Analytics   **2 Credits**
Prerequisite: ITIS 1520 or permission of instructor.
This course provides students with the knowledge, skills, and techniques needed to utilize various powerful visualization tools for data analysis. Students will be shown best practices and features of using data visualization tools such as Tableau and Power BI. Skills learned include connecting to data, charting, forecasting and reporting, creating dashboards, and more. Upon completion of this course students will have obtained sought-after skills in the field of data analysis. This course is required for students in the Data Analytics Concentration but will also benefit students seeking employment in other fields such as health care, business, finance, etc.
(3 contact hours: 1 lecture, 2 lab)

ITDB 2500 Data Analytics   **3 Credits**
Prerequisite: ITDB 1405, ITCS 1880; or permission of instructor.
This course provides students with a range of concepts, techniques and applications of data analytics in various settings. Students will gain experience in data storage, processing, analysis, visualization, and application issues as well as hands-on experience using various tools for data analysis.
(4.5 contact hours: 1.5 lecture, 3 lab)

Information Systems

ITIS 1000 Basic Computer Skills   **1 Credit**
This course provides an overview of computer concepts and introductory training in the use of computer hardware and software. Students will study computer equipment, computer software, and related terminology. The course includes the fundamentals of using operating system and productivity software, Internet tools and services, and an introduction to an e-Learning environment using Blackboard. The selected software studied in this course includes the Microsoft Office Suite and Google Apps. Either ITIS 1005 Computer Essentials or ITIS 1000 serves as a prerequisite for other IT&CS courses. Students who have taken ITIS 1005 should not take this course.
(2.5 contact hours: 0.5 lecture, 2 lab)

ITIS 1005 Computer Essentials   **(TAG) 3 Credits**
This course provides an overview of computer concepts and introductory training in the use of computer hardware and software. Students will study computer equipment, computer software, and related terminology. The course includes the fundamentals of using operating system and productivity software, Internet tools and services, and an introduction to an e-Learning environment using Blackboard. The selected software studied in this course includes the Microsoft Office Suite and Google Apps. Either ITIS 1005 Computer Essentials or ITIS 1000 serves as a prerequisite for other IT&CS courses. Students who have taken ITIS 1005 should not take this course.
(5 contact hours: 1 lecture, 4 lab)

ITIS 1007 Principles of Information Technology and Computer Science   **3 Credits**
This course is an introduction to the fields of information technology and computer science. In includes foundational concepts of computing including algorithms, computer architecture, databases, human-computer interaction, programming languages and concepts, operating systems, networking, and the Internet. Students will have the opportunity to explore how computing has made innovations in other fields possible and will examine the ethical implications of computing technologies as well as gain an introduction to the process of computational thinking. This course presents the basics of computer science principles as outlined in the AP Computer Science Principles exam.
(4 contact hours: 2.5 lecture, 1.5 lab)

ITIS 1008 Ethics in Information Technology   **1 Credit**
Prerequisite: ITIS 1000 or ITIS 1005 or ITIS 1007 or permission of instructor.
This course provides an understanding of ethical and societal issues in today's Information Technology (IT) world. It includes an overview of ethics for IT professionals and topics on computer crime, software development, intellectual property, IT impact on quality of life, morality, and codes of ethics and conduct.
(1.5 contact hours: 0.5 lecture, 1 lab)

ITIS 1025 Managing and Optimizing Personal Computers   **3 Credits**
Prerequisite: ITIS 1005 or ITIS 1007 or ENGR 1000, ITON 1070; or permission of instructor.
This course provides a fundamental knowledge of personal computer hardware and operating systems software. Students will use various software utilities to maintain, troubleshoot, and optimize the operations of PCs in a Windows environment. Topics include troubleshooting fundamentals and support techniques.
(4.5 contact hours: 1.5 lecture, 3 lab)

ITIS 1027 Information Technology Support Fundamentals I   **2 Credits**
Prerequisite: ITIS 1005 (can be taken concurrently) or ITIS 1007 (can be taken concurrently) or permission of instructor.
This course provides an introductory level of understanding and experience in the areas of hardware, software, operating systems, networking, and troubleshooting computer problems. Students will get a basic understanding about the role of the IT Support professional and the skills required to be successful in this role. Successful completion of this course results in the completion of courses one and two in the Google IT Support Professional Certificate program (this Google certificate consists of five total courses).
(4 contact hours: 1 lecture, 3 lab)

ITIS 1028 Information Technology Support Fundamentals II   **2 Credits**
Prerequisite: ITIS 1027 or permission of instructor.
This course provides an introductory level of understanding and experience in the areas of operating systems fundamentals and support, system administration, and IT infrastructure services. Successful completion of this course results in the completion of courses three and four in the Google IT Support Professional Certificate program (this Google certificate consists of five total courses).
(4 contact hours: 1 lecture, 3 lab)

ITIS 1030 Security Awareness   **1 Credit**
This course provides a basic introduction to practical security knowledge of computers and related technology equipment. It covers fundamental aspects of IT security and cybersecurity and explains the value of securing data, both for personal use and the workplace. The course introduces ethical policies at government, organizational and individual levels, the importance of data confidentiality and integrity, risk management, common threats and countermeasures, wired and wireless networks, Internet risks, and personal security defenses. Successful completion of this course results in the completion of the fifth course (IT Security) in the Google IT Support Professional Certificate program (this Google certificate consists of five total courses).
(2 contact hours: 0.5 lecture, 1.5 lab)

ITIS 1102 Internet: Services, Tools, and Web Page Design   **3 Credits**
Prerequisite: ITIS 1000 (can be taken concurrently) or ITIS 1005 (can be taken concurrently) or ITIS 1007 (can be taken concurrently) or permission of instructor.
This introductory course provides an overview of the Internet including services, tools, and Web page creation. Topics also include a brief history of the Internet, browser basics, refined searching techniques, Internet security, electronic commerce, social media, and societal issues. Students will also learn and use basic HTML code to design and create Web pages. Web design techniques for effective Web page creation will be studied along with information presentation and audience considerations when building a Web page.
(4 contact hours: 2.5 lecture, 1.5 lab)

ITIS 1108 Using an HTML Editor   **2 Credits**
Prerequisite: ITIS 1000 or ITIS 1005 or ITIS 1007 or GRDS 1375 or permission of instructor.
This course provides continued instruction in the use of HTML. Students will build on skills and knowledge from ITCS 1105 Web Programming I and incorporate the use of an HTML editor program. Students will use the Adobe Dreamweaver Web authoring tool to develop Web pages and use templates and wizards/coaches to simplify Web page development. The course will examine other authoring tools as the industry evolves.
(3 contact hours: 1 lecture, 2 lab)

ITIS 1355 Security+ and Security Essentials   **3 Credits**
Prerequisite: ITIS 1005 or ITIS 1007 or ITIS 1030 or ITCS 1011 or permission of instructor.
This course introduces the basics of network security including computer network vulnerabilities and threats and how to circumvent them by providing safeguards and countermeasures. Students will explore network security planning, network security technology, network security organization, and the legal and ethical issues associated with network security. This course helps students prepare for CompTIA's Security+ certification.
(5 contact hours: 2 lecture, 3 lab)

ITIS 1360 Cyber/Computer Forensics and Counterterrorism   **3 Credits**
Prerequisite: ITON 1748, ITIS 1355 or Security+ Certification; or permission of instructor.
This course provides students with the basic knowledge, necessary skills, and techniques used to perform cyber/computer forensics, investigate criminal cyber activities, and conduct cyber investigations against criminal and terrorist activities. Students will gain an introduction to tools and techniques of computer forensics. They will also learn about file structures, data recovery, e-mail and network investigations, web-based investigation methods, cyberterrorism and applicable laws and administrative procedures.
(5 contact hours: 1 lecture, 4 lab)

ITIS 1510 Microsoft Office Word: Skills and Techniques   **3 Credits**
Prerequisite: ITIS 1000 or ITIS 1005 or ITIS 1007 or permission of instructor.
This course provides a comprehensive study of word processing software. Students will create and edit documents, enhance text using various formatting options, and use proofing tools. In addition, the course will explore ways to enhance page layout and design using themes, styles, and templates. Advanced topics include creating tables, performing a mail merge, creating and running macros, and creating online documents and forms.
(4.5 contact hours: 1.5 lecture, 3 lab)

ITIS 1520 Microsoft Office Excel: Skills and Techniques   **3 Credits**
Prerequisite: ITIS 1000 or ITIS 1005 or ITIS 1007 or permission of instructor.
This course provides a comprehensive study of electronic spreadsheets. Students will design, create, edit, and format spreadsheets, charts, and tables. In addition, the course will explore ways to utilize spreadsheet functions in data analysis. Advanced topics include handling multiple worksheets as well as creating and using templates, macros, defined names, databases, data protection and validation, and pivot tables.
(4.5 contact hours: 1.5 lecture, 3 lab)

ITIS 1530 Microsoft Office Access: Skills and Techniques   **3 Credits**
Prerequisite: ITIS 1000 or ITIS 1005 or ITIS 1007 or permission of instructor.
This course provides a comprehensive study of database management in a Microsoft Windows environment. Students will develop database structures, create and maintain tables, run and save queries, sort and filter records, and create and customize forms and reports. Advanced topics include creating and running macros, creating switchboards, and writing Visual Basic code. This course is cross-listed as ITIS 1530 Microsoft Office Access: Skills and Techniques and ITDB 1430 Microsoft Access Relational Database. Students who have taken the course under the alternative course ID should not take this course.
(4.5 contact hours: 1.5 lecture, 3 lab)

ITIS 1540 Microsoft Office PowerPoint: Skills and Techniques   **2 Credits**
Prerequisite: ITIS 1000 or ITIS 1005 or ITIS 1007 or permission of instructor.
This course provides a comprehensive study of presentation graphics in a Microsoft Windows environment. Students will create, edit, and display slide shows while using design templates, special effects, and various presentation views. Additional topics include embedding and modifying text, spreadsheets, graphs, organizational charts, clip art, and graphic objects.
(3 contact hours: 1 lecture, 2 lab)

ITIS 1550 Using Microsoft Office: Word and Excel   **3 Credits**
Prerequisite: ITIS 1000 or ITIS 1005 or ITIS 1007 or PARL 2050 or GRDS 1375 or permission of instructor.
This course provides a study of how to use word processing and electronic spreadsheet software. Students will design, create, edit, and format documents, spreadsheets, charts, and tables. In addition, the course will explore ways to enhance page layout and design using styles and templates, as well as utilize spreadsheet formulas and functions in data analysis. Additional topics include performing a mail merge and importing data into a spreadsheet.
(4.5 contact hours: 1.5 lecture, 3 lab)

ITIS 1560 Microsoft Office Project: Skills and Techniques   **3 Credits**
Prerequisite: ITIS 1000 or ITIS 1005 or ITIS 1007 or permission of instructor.
This course provides a comprehensive study of project management software using Microsoft Project. Students will use the software to create a work breakdown structure, define task dependencies, calculate task durations, assign resources and costs to tasks, and determining the critical path. Advanced topics include variance analysis and displaying project information using tables, filters, groups, and views.
(4.5 contact hours: 1.5 lecture, 3 lab)

ITIS 2015 Information Technology Project Management **3 Credits**
Prerequisite: BUSM 1300, ITIS 1005 or ITIS 1007; or permission of instructor.
This course develops project management skills needed to define, plan, lead, monitor, and complete Information Technology projects. Students will study the role of the project manager and examine and apply tools used for project management.
(4 contact hours: 2.5 lecture, 1.5 lab)

ITIS 2355 Security Investigation and Penetration Studies **3 Credits**
Prerequisite: ITON 1748, ITIS 1355 or Security+ Certification; or permission of instructor.
This course introduces the network security specialist to the various methodologies for attacking a network. Students will explore the concepts, principles and techniques, supplemented by hands-on exercises, for attacking and disabling a network. The course presents these methodologies within the context of properly securing the network. It emphasizes network attack methodologies with the use of network attack techniques and tools, and helps students prepare for the Systems Security Certified Practitioner (SSCP) certification.
(5 contact hours: 2 lecture, 3 lab)

ITIS 2510 Help Desk Concepts and Management **3 Credits**
Prerequisite: ITIS 1005 or ITIS 1007 or permission of instructor.
This course develops computer support and customer service skills needed by help desk specialists. Students will study the role of a help desk specialist and examine and apply tools used for help desk management.
(3 contact hours)

ITIS 2890 Information Technology and Computer Science Capstone **2 Credits**
Prerequisite: 45 semester credits including 20 credits of ITCS/ITDB/ITIS/ITON courses, a grade of "C" or better in all ITCS/ITDB/ITIS/ITON courses.
This course serves as a capstone experience for Information Technology and Computer Science degree programs by providing students with an opportunity to finalize their electronic portfolio, practice and refine soft skills required in industry, enhance knowledge of ethical considerations in IT, and prepare for employment with skills related to resume writing, job search, and job interviewing. Students will also participate in experiential activities with area employers.
(2 contact hours)

Operating Systems/Networking

ITON 1011 Comparative Analysis of Microcomputer Operating Systems **2 Credits**
Prerequisite: ITIS 1005 (can be taken concurrently) or ITIS 1007 (can be taken concurrently) or ENGR 1000 (can be taken concurrently); or permission of instructor.
This course provides a historical perspective and an overview of operating systems significant to the development of microcomputer. Students will study vocabulary, usage, and basic functionality of a wide variety of previous and current versions.
(2.5 contact hours: 1.5 lecture, 1 lab)

ITON 1070 Operating Systems: Skills and Techniques **1 Credit**
Prerequisite: ITIS 1000 or ITIS 1005 or ITIS 1007 (can be taken concurrently) or ENGR 1000; or permission of instructor.
This course provides students with an overview of using a client operating system to manage and interact with the microcomputer and mobile devices. Topics include file management techniques, customizing the environment, managing hardware devices, backup and restore strategies, using administrative and management tools, protecting your computer, and using the O/S command line.
(1.5 contact hours: 0.5 lecture, 1 lab)

ITON 1205 Network+ and Networking Essentials **2 Credits**
Prerequisite: ITIS 1005 or ITIS 1007 (can be taken concurrently) or ENGR 1000 or permission of instructor.
This course provides an introduction to local area networking concepts including current networking technology for LANs and WANs (Local and Wide Area Networks), and the Internet. It also helps students prepare for CompTIA's Network+ certification.
(2.5 contact hours: 1.5 lecture, 1 lab)

ITON 1310 Cloud Computing **3 Credits**
Prerequisite: ITON 1205 or CNET 1100; or permission of instructor.
This course provides students with an introduction to cloud computing. Topics covered include a review of virtualization technologies, cloud deployment and service models, infrastructure, performance and capacity planning, and security.
(5 contact hours: 2 lecture, 3 lab)

ITON 1735 Cisco Cyber Operations **3 Credits**
Prerequisite: ITON 1748, ITON 2250, CNET 1100; or permission of instructor.
This course introduces students to the tasks, and responsibilities of an associate-level security analyst working in a security operations center (SOC). Topics will include cyber security specific features of both Windows and Linux operating systems, an overview of network infrastructure, as well as descriptions of various attack vectors. Also included are principles of cryptography, security monitoring, and intrusion data analysis. This course will help to prepare students to pass the Implementing Cisco Cybersecurity Operations Exam. This course is cross-listed as CNET1735 Cisco Cyber Operations. Students who have taken the course under the alternative course ID should not take this course.
(5 contact hours: 1 lecture, 4 lab)

ITON 1748 Linux Administration I   **3 Credits**
Prerequisite: ITIS 1005 or ITIS 1007 or ENGR 1000, ITON 1205 or CNET 1100 ; or permission of instructor.
This course provides students with basic knowledge of Linux in the use of basic commands, file systems, users and groups, bash shell, process management, text editors, network applications, searching and organizing data, and graphical applications.
(5 contact hours: 2 lecture, 3 lab)

ITON 1758 Linux Administration II   **3 Credits**
Prerequisite: ITON 1748 or permission of instructor.
This course provides students with the additional skills necessary to administer Linux systems. Topics include process management, advanced user and file access configuration, working with logical volumes and network storage, SELinux security, firewalls, additional command-line tools, and troubleshooting.
(5 contact hours: 2 lecture, 3 lab)

ITON 2080 Supporting Client Operating Systems   **2 Credits**
Prerequisite: ITON 1070, ITON 1205 or CNET 1100; or permission of instructor.
This course provides a technical level of understanding and experience in the areas of installing, configuring, implementing, supporting and maintaining client operating systems. Topics include: file systems, installation and upgrading operating systems, configuring I/O and storage devices, virtualization and cloud computing fundamentals, configuring network connections, sharing resources and working with accounts, and operating systems management and maintenance.
(4 contact hours: 1 lecture, 3 lab)

ITON 2250 Installation, Storage, and Compute with Windows Server 2016   **2 Credits**
Prerequisite: ITON 1205 or CNET 1100; or permission of instructor.
This course provides a technical level of understanding and experience in the areas of installing and configuring Microsoft's Windows Server 2016. Topics include installation, configuring, virtualization, networking, security, and administration. This course helps students prepare for one of the Microsoft Certified Professional exams.
(4 contact hours: 1 lecture, 3 lab)

ITON 2251 Networking with Windows Server 2016   **2 Credits**
Prerequisite: ITON 2250 or permission of instructor.
This course provides a technical level of understanding and experience in the administration tasks necessary to maintain a Windows Server 2016 infrastructure, such as user and group management, network access, and data security. This course helps students prepare for one of the Microsoft Certified Solution Associate (MCSA) exams.
(4 contact hours: 1 lecture, 3 lab)

ITON 2252 Identity with Windows Server 2016   **2 Credits**
Prerequisite: ITON 2251 or permission of instructor.
This course provides a technical level of understanding and experience in the areas of deployment, configuration, and troubleshooting of identity services such as Active Directory Domain Services (AD DS) and Group Policy in Windows Server 2016. This course will also cover the deployment and installation of other Active Directory server roles. This course helps students prepare for one of the Microsoft Certified Professional exams.
(4 contact hours: 1 lecture, 3 lab)

ITON 2260 MS Windows Server 2019   **2 Credits**
Prerequisite: ITON 1205 or CNET 1100; or permission of instructor.
This course provides a technical level of understanding and experience in the areas of installing and configuring Microsoft's Windows Server 2019. Topics include installation, configuring, virtualization, networking, security, and administration. This course helps students prepare for the Microsoft Professional certification.
(4 contact hours: 1 lecture, 3 lab)

ITON 2750 Shell Script Programming   **2 Credits**
Prerequisite: ITON 1010, ITON 1748; or permission of instructor.
This course provides in-depth coverage of the use of operating system commands to create shell script programs that customize the environment. It includes shell commands, shell grammar, shell script programming concepts, decision structures, looping, functions, arrays, sorting, searching, and dialog boxes for user-friendly scripting. Students will also learn to create manual pages to document scripts.
(3.25 contact hours: 0.75 lecture, 2.5 lab)

ITON 2768 Linux Administration III   **3 Credits**
Prerequisite: ITON 1748, ITON 1758 or CNET 2720; or permission of instructor.
This course is focused on deployment and management of network services and security running on Linux servers. It is intended to help students broaden their ability to administer Linux systems at an enterprise level.
(5 contact hours: 2 lecture, 3 lab)

ITON 2769 Linux Administration III: Automation   **3 Credits**
Prerequisite: ITON 1748, ITON 2750; or permission of instructor.
This course is focused on skills needed to manage large numbers of systems and applications efficiently and consistently. Students will learn the techniques needed to use Ansible® to automate provisioning, configuration, application deployment, and orchestration.
(5 contact hours: 2 lecture, 3 lab)