

# Computer Science

## CS 101

### Intro to Computers & Information Technology • 5.0 Credits

CS 101 is a five-credit introductory class designed to meet the needs of all students as defined in CBC's "Using Information Technology & Tools Student Learning Outcome." The class emphasizes the cognitive aspects of dealing with Information Technology (IT): evaluating information, learning practical IT skills, solving problems, and dealing with information-related issues such as privacy, security, ethics, etc. Students also learn computer basics using Windows, Word, Excel, PowerPoint, email, and Internet skills to locate, present, and report information. \$35 virtual desktop fee. **Prerequisite: A grade of 2.0 or better in either MATH 40 or 50, or concurrent enrollment in MATH 50, or a grade of 1.0 or better in a higher math class, or appropriate placement.**

## CS 102

### Programming Fundamentals [M/S] • 5.0 Credits

An introduction to programming using current technologies. It is designed for those with little or no programming experience. Topics include: program development cycle, fundamentals of programming and logic, decisions, repetitions, controls, functions, and procedures. \$35 virtual desktop fee. **Prerequisite: A grade of 2.0 or better in MATH 50, 70, or 72, or a grade of 0.7 or better in a higher math class, or appropriate placement.**

## CS 106

### Database Systems • 5.0 Credits

This is a beginning database course in which students create, modify, and implement relational databases using Microsoft Access. Topics include: tables, queries, forms, reports, sharing information with other programs, data access pages, advanced queries, managing database objects, and creating macros and navigation forms. \$35 virtual desktop fee. **Prerequisite: A grade of 2.0 or better in either MATH 40 or 50, or a grade of 0.7 or better in a higher math class, or appropriate placement. It is also recommended that students complete CS 101 with a 2.5 or better prior to enrollment.**

## CS 117

### Computer Ethics • 2.0 Credits

Covers essential topics of information and technology ethics. Students will understand what to do and what not to do as a user and an employee. Topics include: ethics and information technology, IT configured societies, information flow, privacy and surveillance, digital intellectual property, and professional ethics in computing. Students work in small groups to discuss important issues based on scenarios given. \$35 virtual desktop fee. **Prerequisite: A grade of 2.5 or higher in CS 101 or concurrent enrollment in CS 101, and a grade of 0.7 or higher in ENGL 99 or a higher ENGL class or placement above ENGL 99.**

## CS 118

### Customer Service [RE] • 3.0 Credits

Helps students develop the skills needed to present a professional image and to communicate effectively in everyday customer service transactions, as well as in difficult situations. Students learn about various types of customers and develop strategies for dealing with each. Emphasis is placed on verbal and nonverbal communication, listening to the customer, customer service in a diverse world, managing stress and time, encouraging customer loyalty, and recovering customers after a breakdown in service. \$35 virtual desktop fee. **Prerequisite: A grade of 2.0 or better in either MATH 40 or 50, or a grade of 0.7 or better in a higher math class, or appropriate placement.**

## CS 123

### PC Hardware [RE] • 5.0 Credits

Students gain the knowledge, skills, and abilities essential to become a successful computer service technician as defined by experts from companies across the industry. Students learn how to troubleshoot and repair hardware problems and install components. Hardware topics include: power supply, CPUs and motherboards, memory, I/O busses, removable and fixed drives, optical drives, graphics and sound, and networking and printers. Other topics include: the DOS operating system, number systems, working safely and professionally, and the customer relations skills necessary for the industry. \$35 virtual desktop fee. **Prerequisite: Completion of CS 101 with a 2.5 or better, or concurrent enrollment.**

## CS 127

### Windows Configuration [RE] • 5.0 Credits

Prepares students to develop the skills needed to deploy and manage a Windows desktop operating system. Students learn about hardware management, network configuration, application management, Windows installation, mobile computing, and system monitoring and maintenance. \$35 virtual desktop fee. **Prerequisite: Completion of CS 101 with a 2.5 or better, or concurrent enrollment.**

## CS& 131

### Computer Science I C++ [M/S] • 5.0 Credits

Formerly CS 161, CS& 131

This class is the first in a series of three in which students learn the C++ programming language. C++ is an extension of C language, which includes both procedural and object-oriented programming. It is the basis for most PC-based windows programs. Students learn C++ keywords, control structures, functions, arrays, strings, and introduction to classes and objects. \$35 virtual desktop fee. **Prerequisite: A grade of 2.0 or better in MATH 50, 70, or 72, or a grade of 0.7 or better in a higher math class, or appropriate placement.**

## CS 135

### Cloud Fundamentals [RE] • 5.0 Credits

Cloud Fundamentals is intended for students who seek an overall understanding of cloud computing concepts, independent of specific technical roles. It provides a detailed overview of cloud concepts, cloud core services, security, architecture, pricing, and support. **Prerequisite: Completion of CS 101 with a 2.5 or better.**

## CS 140

### Sharepoint [RE] • 5.0 Credits

Provides students with the knowledge and skills that are needed to use and manipulate fundamental features of SharePoint Server. Students are introduced to core functions of SharePoint Server to gain a deeper insight of the capabilities and use of these functions and features. This information will assist students in effectively applying and securing SharePoint in a business environment. \$35 virtual desktop fee. **Prerequisite: Completion of CS 101 and CS 228, both with a 2.5 or better.**

## CS& 141

### Computer Science I Java [M/S] • 5.0 Credits

Formerly CS 215, CS& 141

Java is an object-oriented programming language that is widely used to enhance information delivery on the web. Topics include: compiling and running a Java program, use of selection, loop structures, arrays, file processing, and introduction to classes and objects. Students learn how to write and debug Java programs with and without graphical user interfaces. \$35 virtual desktop fee. **Prerequisite: A grade of 2.0 or better**

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in MATH 50, 70, or 72, or a grade of 0.7 or better in a higher math class, or appropriate placement.

## CS 150

### Computer Security [RE] • 5.0 Credits

This class covers the basics of computer security. Students learn about virus protection, installing security patches, using firewalls to protect networks, cryptography and Public Key Infrastructure (PKI), and legal issues. \$35 virtual desktop fee. **Prerequisite: A grade of 2.5 or better in CS 101 and a grade of 2.0 or better in MATH 50, 60, or 62, or a grade of 0.7 or better in a higher math class, or appropriate placement.**

## CS 162

### C++2 [M/S] [RE] • 5.0 Credits

This is an intermediate C++ course that provides students an understanding of key object-oriented programming (OOP) theories and concepts, and how to create and manipulate objects in a GUI environment. Students learn advanced features of C++ including: arrays, strings, file processing, classes, inheritance, composition, pointers, virtual functions, templates, and introduction to linked lists. \$35 virtual desktop fee. **Prerequisite: Completion of CS& 131 with a 2.5 or better.**

## CS 199

### Special Studies [RE] • 1.0–15.0 Credits

A class used to explore new coursework. \$35 virtual desktop fee.

## CS 202

### Programming Fundamentals 2 [M/S] • 5.0 Credits

This is an intermediate programming course using current technologies. Students learn to write, design, and debug Windows applications using a variety of controls and events, procedures, functions, arrays, structures, files, classes/Object Oriented design, database programming, and calculations to solve problems. Class projects involve writing games and business applications. \$35 virtual desktop fee. **Prerequisite: Completion of CS 102 with a 2.5 or better.**

## CS 206

### Database Design [RE] • 5.0 Credits

An advanced course designed to help students understand concepts including: SQL, relational algebra, integrity constraints, relational database design, normalization, and physical database design. Students will gain hands-on experience designing a functional relational database. \$35 virtual desktop fee. **Prerequisite: A grade of 2.5 or better in CS 106 and a grade of 2.0 or better in MATH 50, 70, or 72, or a grade of 0.7 or better in a higher math class, or appropriate placement.**

## CS 217

### Internship [RE] • 1.0–3.0 Credits

Provides students with major-related, supervised, evaluated practical training work experiences which may be paid or voluntary. Students are graded on the basis of documented learning acquired through hands-on new experiences in an actual work setting. \$35 virtual desktop fee. **Prerequisite: Current enrollment in the Computer Science program is required prior to enrollment. You must also have a department approved Job Placement into a Computer Science-related field and instructor permission.**

## CS 221

### SQL Server Administration [RE] • 5.0 Credits

This course provides students with the knowledge and skills to install, configure, administer, and troubleshoot Microsoft SQL Server client/server database management systems. It helps prepare students for the MCDBA Certificate. \$35 virtual desktop fee. **Prerequisite: A grade of 2.5 or better**

in CS 106 and CS 228, and a grade of 2.0 or better in MATH 50, 70, or 72, or a grade of 0.7 or better in a higher math class, or appropriate placement.

## CS 223

### Unix/Linux [RE] • 5.0 Credits

This course helps prepare students for working with other operating systems. Students learn how to use UNIX/Linux, which is an industry standard, and widely used on the Internet. Covers basic user commands, customizing the user shell, the vi editor, and basic scripting. \$35 virtual desktop fee. **Prerequisite: A grade of 2.5 or better in CS 101, and a grade of 2.0 or better in MATH 50, 70, or 72, or a grade of 0.7 or better in a higher math class, or appropriate placement.**

## CS 225

### SQL Server Programming [RE] • 5.0 Credits

This course provides students with the knowledge and skills to implement a database solution using Transact SQL and Microsoft SQL Server. Topics include: manipulating data using Transact SQL, enforcing referential integrity, managing relationships, and implementing a physical database ensuring data integrity. \$35 virtual desktop fee. **Prerequisite: A grade of 2.5 or better in CS 106 and a grade of 2.0 or better in MATH 50, 70, or 72, or a grade of 0.7 or better in a higher math class, or appropriate placement.**

## CS 228

### Windows Server [RE] • 5.0 Credits

This course prepares students to work with Windows Server. This course covers topics related to installation, configuration, troubleshooting, and optimization of a Windows Server. Students learn to set up and maintain users, groups, and file systems. Students learn how to use critical thinking and troubleshooting tools to troubleshoot the server, printers, and workstations. This class helps to prepare students to pass one of the Windows exams. \$35 virtual desktop fee. **Prerequisite: A grade of 2.5 or better in CS 101, and a grade of 2.0 or better in MATH 50, 70 or 72, or a grade of 0.7 or better in a higher math class, or appropriate placement.**

## CS 230

### Active Directory [RE] • 5.0 Credits

This course is designed to provide students with the knowledge and skills necessary to install, configure, and administer Microsoft Windows Active Directory. The course also focuses on implementing Group Policy and performing the Group Policy-related tasks that are required to centrally manage users and computers. \$35 virtual desktop fee. **Prerequisite: A grade of 2.5 or better in CS 228 and a grade of 2.0 or better in MATH 50, 70, or 72, or a grade of 0.7 or better in a higher math class, or appropriate placement.**

## CS 231

### Network Infrastructure [RE] • 5.0 Credits

This course prepares students to install, manage, monitor, configure, and troubleshoot DNS, DHCP, Remote Access, Network Protocols, IP Routing, and WINS in a Windows network infrastructure. In addition, this class prepares students to manage, monitor, and troubleshoot Network Address Translation and Certificate Services. It also prepares students to pass one of the MCSA/MCSE exams. \$35 virtual desktop fee. **Prerequisite: A grade of 2.5 or better in CS 228 and a grade of 2.0 or better in MATH 50, 70, or 72, or a grade of 0.7 or better in a higher math class, or appropriate placement.**

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## CS 232

### Network Security [RE] • 5.0 Credits

This course builds on the experience users gain in previous network and security classes. The class is designed around the layered security framework concept including setting up perimeter defenses down to protecting your data. The class teaches how to implement the proper security measure at each layer to protect the network from a myriad of threats. \$35 virtual desktop fee. **Prerequisite: A grade of 2.5 or better in CS 150 and CS 228, and a grade of 2.0 or better in MATH 50, 70, or 72, or a grade of 0.7 or better in a higher math class, or appropriate placement.**

## CS 236

### Advanced Object Oriented Programming [M/S] [RE] • 5.0 Credits

An advanced course in Java programming in which students create applications to solve problems using common algorithms and Object Oriented Design. Topics include: classes, methods, interfaces, inheritance, exceptions, stacks, queues, linked lists, recursion, and binary trees. \$35 virtual desktop fee. **Prerequisite: Completion of CS& 141 with a 2.5 or better.**

## CS 245

### Webpage Authoring Essentials [RE] • 5.0 Credits

The fundamentals and industry standards of web page design and implementation. This course will prepare students to design and publish a dynamic website. Students will differentiate between client-based website tasks and server-side tasks. Principles of web design, file management, HTML and data service topics will be introduced. Students will create an accessible website for an effective online presence based on a client need. **Prerequisite: Completion of CS 101 with a 1.0 or better.**

## CS 250

### HTML5-JavaScript/JQuery • 5.0 Credits

An introduction to dynamic client-side website development using JavaScript and JQuery. Students learn JavaScript to manipulate HTML and CSS elements, adding rich features to websites and mobile devices. Other topics include: JSON, HTML DOM, PHP, and Ajax. \$35 virtual desktop fee. **Prerequisite: Completion of CS 102 or CS& 131 or CS& 141 with a 2.5 or better, or instructor permission.**

## CS 260

### Data Structures In C++ [RE] • 5.0 Credits

This course is the third in a series of three in which students learn the C++ programming language and how to implement and use different types of data-structures. This leads students to create data-driven programs and algorithms. Students also learn more about linked lists, stacks, queues, binary trees, and binary search, recursion, and sorting. The course starts at a level that assumes a good working knowledge of C++. \$35 virtual desktop fee. **Prerequisite: Completion of CS 162 with a 2.5 or better.**

## CS 262

### Game Programming Design and Development [RE] • 5.0 Credits

Helps students understand important fundamentals of how to develop game applications using object-oriented development techniques. Course projects involve developing, debugging, and optimizing games for multiple hardware platforms. \$35 virtual desktop fee. **Prerequisite: Completion of CS 102 or CS& 131 or CS& 141 with a 2.5 or better, or instructor permission.**

## CS 299

### Special Studies [RE] • 1.0–5.0 Credits

A class used to explore new coursework. \$35 virtual desktop fee.

## CS 301

### Introduction to Information Systems [RE] • 5.0 Credits

Formerly CS 301, CSIT 301

The course is designed to help students understand the importance and elements of today's information technology (IT) systems. Topics include actual and contemporary examples to clearly illustrate how they can be applied to improve and strengthen IT organizations, IT security, and hands-on scenarios for class projects. \$35 virtual desktop fee. **Prerequisite: Completion of CS 206 and CS 250, both with a 2.5 or higher, and meets the criteria for acceptance into a BAS/BSN program and completion of a two-year degree or equivalent.**

## CS 316

### Cloud Computing HTML5 and PHP [RE] • 5.0 Credits

Formerly CS 316, CSIT 316

This course in database-driven websites gives students an understanding of HTML5 with PHP (Hypertext Preprocessor). Students acquire web development techniques that use databases to create content with HTML form objects, database connections, and server side programming. Use of HTML5, MySQL, and PHP5 for programming turns simple static websites into dynamic, database-driven web applications. Course projects involve developing, debugging, PHP, and SQL. \$35 virtual desktop fee. **Prerequisite: Completion of CS 206 and CS 250, both with a 2.5 or higher, and meets the criteria for acceptance into a BAS/BSN program and completion of a two-year degree or equivalent.**

## CS 321

### Python for Data Processing [RE] • 5.0 Credits

Formerly CS 321, CSIT 311

This course is designed for students who have an object-oriented programming background. Students learn to use built-in data structures in Python computer language to perform complex data analysis. Students also learn to work with HTML, XML, and JSON data in Python to do basic data visualization. \$35 virtual desktop fee. **Prerequisite: Completion of CS 250 and either CS 236 or CS 260, all with a 2.5 or higher, and meets the criteria for acceptance into a BAS/BSN program and completion of a two-year degree or equivalent.**

## CS 331

### Big Data Analysis [RE] • 5.0 Credits

Formerly CS 331, CSIT 306

The course provides a comprehensive view on computing architectures in data analytics and data mining. Topics include big data characteristics and algorithms, analyzing tools, data mining techniques, massive databases processing, implementation of machine learning algorithms, and analytics environments. Students learn to conceptualize an analytic environment that is suited to the challenges of today's analytics demands. \$35 virtual desktop fee.

## CS 401

### Software Analysis and Design [RE] • 5.0 Credits

Formerly CS 401, CSIT 401

This course covers web development, service-oriented architecture, traditional, UML, and object-oriented approaches to information technology systems analysis and design. Real world case projects and technologies are provided throughout the course for hands-on exercises. Students apply the concepts learned to develop a conceptual, technical, and managerial foundation for systems analysis design and implementation as well as project management principles for systems development. \$35 virtual desktop fee. **Prerequisite: Completion of PROJ 100 with a 2.0 or better and meets the criteria for acceptance into a BAS/BSN program and completion of a two-year degree or equivalent.**

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## CS 411

### Agile Methodology & ePortfolio Planning • 5.0 Credits

Formerly CS 411, CSIT 411

This course represents the integration of previous coursework and practical experience with a focus on authentic demonstration of competencies outlined by the program. This course also covers Agile Methodology practices for teamwork using Scrum techniques. Students use an open source ePortfolio to collect information on performance-based artifacts combined with metacognitive reflection and a professional statement of purpose that reflects their ability to make globally, socially, and ethically responsible information technology and systems decisions that are aligned with the legal and organizational policy requirements. Students also reflect on a previous project and describe in writing how Scrum techniques could have been used to make their project more successful. \$35 virtual desktop fee. **Prerequisite: Completion of PROJ 100 and CS 401, both with a 2.0 or higher, and meets the criteria for acceptance into a BAS/BSN program and completion of a two-year degree or equivalent.**

## CS 416

### Data Visualization [RE] • 5.0 Credits

Formerly CS 416, CSIT 416

This course introduces a data analytics tool used to prepare and analyze data for effective visualizations. Students learn theory and concepts of data analytics and how to display and share data in a meaningful way. Students also learn the principles of preparing, analyzing, and processing data to create desired data visualizations. \$35 virtual desktop fee. **Prerequisite: Completion of CS 331 with a 2.0 or higher, and meets the criteria for acceptance into a BAS/BSN program and completion of a two-year degree or equivalent.**

## CS 417

### Contemporary Topics in Computer Science [RE] • 5.0 Credits

This course is an in-depth survey of new and emerging technologies from the field of computer science. Students will have an opportunity to study advanced topics which may include, but is not limited to, artificial intelligence, cloud computing, big data, Internet of Things (IoT), and blockchains. **Prerequisite: Completion of CS 135 with a 2.5 or better; completion of CS 321 and CS 331, both with a 2.0 or better, and meets the criteria for acceptance into a BAS/BSN program and completion of a two-year degree or equivalent.**

## CS 421

### Software Development Capstone [RE] • 5.0 Credits

Formerly CS 421, CSIT 421

This course integrates all IT knowledge and skills learned in previous courses into a project. Emphasis is placed on secure information system design, process planning, procedure definition, business continuity, and systems security architecture. Students design and implement a comprehensive information system from the planning and design phase through execution. \$35 virtual desktop fee. **Prerequisite: Completion of CS 411 with a 2.0 or higher, or concurrent enrollment, and meets the criteria for acceptance into a BAS/BSN program and completion of a two-year degree or equivalent.**