Chemistry

CHEM 104  4 Credits
SURVEY OF CHEMISTRY (HEALTH)
Quarters: Summer, Fall, Winter, Spring
Studies the fundamental concepts of chemistry including metric system, atomic structure, chemical reactions and gas laws, buffers, solution chemistry and acids and bases. Examines the relationship of chemical principles to current environmental and health related topics. Lab required. Prerequisites: MATH 60, or suitable placement score.

CHEM 105  4 Credits
SURVEY OF CHEMISTRY (HEALTH)
Quarters: Winter, Spring
Studies the fundamental concepts of chemistry, including nuclear radiation, energy, and organic chemistry. Lab required. Prerequisites: CHEM 104.

CHEM 106  4 Credits
SURVEY OF CHEMISTRY (HEALTH)
Quarters: Spring
Studies the fundamental concepts of chemistry, including carbohydrates, lipid and protein metabolism, RNA and DNA synthesis, action of enzymes, hormones and steroids, and overall integration of metabolism. Lab required. Prerequisites: CHEM 105.

CHEM 121  4 Credits
GENERAL CHEMISTRY
Quarters: Fall
Provides an introduction to the fundamentals of inorganic chemistry, including metric system, atomic structure, chemical reactions and gas laws, buffers, solution chemistry, and acids and bases. Lab required. Prerequisites: MATH 65 or suitable placement score.

CHEM 122  4 Credits
GENERAL CHEMISTRY
Quarters: Winter
Covers the radiation and environmental issues. Introduces organic nomenclature, functional groups and reactions. Prerequisites: CHEM 121 or 104.

CHEM 123  4 Credits
GENERAL CHEMISTRY
Quarters: Spring
Covers the basics of organic and biochemistry. Lab required. Prerequisites: CHEM 122

CHEM 221  5 Credits
COLLEGE CHEMISTRY
Quarters: Fall
Studies measurement, chemical reactions, stoichiometry, thermo chemistry, atomic structure, chemical bonding and gas laws. Lab required. Prerequisites: MATH 95 or suitable placement score. Previous chemistry experience strongly recommended.

CHEM 222  5 Credits
COLLEGE CHEMISTRY
Quarters: Winter
Includes molecular bonding, solution chemistry, chemical reactions, oxidation reduction, chemical equilibrium and acid base equilibrium. Lab required. Prerequisites: CHEM 221.

CHEM 223  5 Credits
COLLEGE CHEMISTRY
Quarters: Spring
Includes thermodynamics, electrochemistry, nuclear chemistry, metals, nonmetals and transition elements and brief survey of organic and biochemistry. Lab required. Prerequisites: CHEM 222.

CHEM 227  5 Credits
ORGANIC CHEMISTRY
Quarters: Fall
Presents alkanes, alkenes, stereochemistry, role of solvents and organic reactions. Lab required. Prerequisites: CHEM 223.

CHEM 228  5 Credits
ORGANIC CHEMISTRY
Quarters: Winter
Examines alynes, aromaticity, aromatic substitution, spectroscopy, NMR, CMR, IR, aldehydes and ketones and carboxylic acids. Lab required. Prerequisites: CHEM 227

CHEM 229  5 Credits
ORGANIC CHEMISTRY
Quarters: Spring
Includes amines, phenols, molecular orbital theory, carbohydrates, lipids, proteins and nucleic acids. Lab required. Prerequisites: CHEM 228
## Computer Information Systems

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
<th>Quarters</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIS 133 CP</td>
<td>C/C++ PROGRAMMING</td>
<td>4</td>
<td>(P/T)</td>
<td>C++ programming language and its subset, the C programming language. Program structure, blocks, storage types, console and file I/O, functions, arrays, strings, pointers, call-by-reference, call-by-value, and dynamic memory allocation and difference between C++ and C. Introduction to the concept of classes. Prerequisites: CIS 140.</td>
</tr>
<tr>
<td>CIS 133 JA</td>
<td>INTRO TO JAVA PROGRAMMING</td>
<td>4</td>
<td>(P/T)</td>
<td>Java language and concepts of object oriented programming to solve business problems. Create classes, objects, and applications using JAVA. Prerequisites: CIS 140.</td>
</tr>
<tr>
<td>CIS 133 VB</td>
<td>INTRO TO VISUAL BASIC.NET</td>
<td>4</td>
<td>(P/T)</td>
<td>Software design and development in an event-driven Windows user interface using Visual Basic. Includes BASIC syntax, data structures, user interface, modular design techniques, and file handling. Prerequisites: CS 140.</td>
</tr>
<tr>
<td>CIS 240 U</td>
<td>UNIX,LINUX SERVER OPERATIONS</td>
<td>4</td>
<td>(P/T)</td>
<td>Introduces CDE, GNOME, and KDE graphical user interfaces with overview of the Sun Solaris and Linux versions of the UNIX operating system. Discusses fundamental command-line features of UNIX including file system navigation, changing file permissions, the vi and emacs text editors, Korn and Bash shell features, and basic network use. Prerequisites: CIS 240.</td>
</tr>
<tr>
<td>CIS 100</td>
<td>CYBERSECURITY AND NETWORKING</td>
<td>3</td>
<td>(P/T)</td>
<td>Concepts covered in the course include computer hardware components, data center technologies, virtualization software, troubleshooting processes, and the foundational concepts of networking and cybersecurity, such as DNS, DHCP, IP addressing and the OSI model of communications. Students will have an opportunity to work with networking hardware to build a Local Area Network and have hands on experience with routing simulation software.</td>
</tr>
<tr>
<td>CIS 101</td>
<td>INTRODUCTION TO NETWORK</td>
<td>4</td>
<td>(P/T)</td>
<td>This course is an introduction to networks. Students will be introduced to the architecture, structure, functions, components and models of the Internet and other computer networks. The principles and structure of IP addressing and the fundamentals of Ethernet concepts, media and operations are introduced to provide a foundation for the curriculum. By the end of the course, students will be able to build simple LAN's, perform basic configurations for routers and switches, and implement IP addressing schemes. Prerequisites: CIS 100</td>
</tr>
<tr>
<td>CIS 102</td>
<td>ROUTING AND SWITCHING ESSENTIALS</td>
<td>4</td>
<td>(P/T)</td>
<td>This course describes the architecture, components, and operations of routers and switches in a small network. Students learn how to configure a router and a switch for basic functionality. By the end of this course, students will be able to configure and troubleshoot routers and switches, and resolve common issues with virtual LAN's and inter-VLAN routing in both IPv4 and IPv6 networks. Some sections may have a no-cost text book option. Prerequisites: CIS 101</td>
</tr>
<tr>
<td>CIS 103</td>
<td>SCALING NETWORKS</td>
<td>4</td>
<td>(P/T)</td>
<td>This course describes the architecture, components, and operations of routers and switches in larger and more complex networks. Students learn how to configure routers and switches for advanced functionality. By the end of this course, students will be able to configure and troubleshoot routers and switches and resolve common issues with OSPF, EIGRP, and STP in both IPv4 and IPv6 networks. Students will also develop the knowledge and skills needed to implement a WLAN in a small-to-medium network. Prerequisites: CIS 102</td>
</tr>
<tr>
<td>CIS 104</td>
<td>CONNECTING NETWORKS</td>
<td>4</td>
<td>(P/T)</td>
<td>This course focuses on the WAN technologies and network services required by converged applications in a complex network. By the end of this course, students will be able to configure PPPoE, GRE, single-homed eBGP, extended IPv4 and IPv6 ACLs. Students will also develop the knowledge and skills needed to implement a WLAN in a small-to-medium network. For LANs, students will be able to configure SNMP and Cisco SPAN. Students will also develop knowledge about QoS and the trends in networking including Cloud, virtualization, and SDN. Prerequisites: CIS 103.</td>
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<tr>
<td>Course Code</td>
<td>Course Title</td>
<td>Credits</td>
<td>Quarters/Remarks</td>
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<tr>
<td>CIS 110</td>
<td>INFORMATION TECHNOLOGY ESSENTIALS I</td>
<td>3</td>
<td>Fall</td>
<td></td>
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<tr>
<td></td>
<td>Fundamentals and advanced concepts of computer hardware and software. Assembly and installation of computer components and operating systems. Troubleshooting with system tools and diagnostic software. Includes laptops, portable devices.</td>
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<tr>
<td>CIS 111</td>
<td>INFORMATION TECHNOLOGY ESSENTIALS 2</td>
<td>3</td>
<td>Winter</td>
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<td></td>
<td>Install network operating systems, and troubleshoot using system tools and diagnostic software. Connect to the internet and share resources in a network environment. Prerequisites: CIS 110</td>
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<tr>
<td>CIS 120</td>
<td>INTRO TO COMPUTER INFO SYSTEMS</td>
<td>4</td>
<td>Fall</td>
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<td></td>
<td>Overview of the computing field, possible career paths, and typical applications. Covers key terminology and components of computer hardware, software, and operating systems. Other topics include computer concepts, hardware, software, database, data communications, networks, the internet, systems analysis and design, and computer applications.</td>
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<tr>
<td>CIS 122</td>
<td>INTRO SQL AND DATABASE DEVELOPMENT</td>
<td>4</td>
<td>Fall</td>
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<td>This course introduces the student to the concepts of structured query language (SQL) used to retrieve records from a relational database. Among covered concepts are set theory, Boolean logic, data normalization and table structure, SQL keywords and operators, primary and foreign keys, retrieval wildcards, and join types. At the conclusion of the course, students will be able to write complex queries which filter and summarize retrieved records. Course Note: Experience with spreadsheets and mathematical formulae will be helpful.</td>
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<tr>
<td>CIS 123</td>
<td>INTER SQL AND DATABASE DEVELOPMENT</td>
<td>4</td>
<td>Winter</td>
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<td>This course is the second in a series which covers the concepts of structured query language (SQL) used to retrieve records from a relational database. Among covered concepts are creating tables, inserting, updating and deleting records, using views, stored procedure, cursors, triggers and tools to facilitate transactional processing. At the conclusion of the course, students will be able to write complex queries controlling Data Definition and Data Manipulation, and will have been exposed to the beginning principles of programming in SQL. Prerequisites: CIS 122</td>
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<tr>
<td>CIS 124</td>
<td>ADV SQL AND APPLIED DATABASE DEVELOP</td>
<td>4</td>
<td>Spring</td>
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<td>This course is the third in a series which covers the concepts of structured query language (SQL) and the development of relational database applications. This course serves as a capstone to the course sequence, and is devoted to the development of a database application. Students will be given examples of a business process that would benefit from a dedicated database application, and then design and develop the application to meet the identified need. Prerequisites: CIS 122, CIS 123 Previous experience with Microsoft Access is desirable, but not required.</td>
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<tr>
<td>CIS 140</td>
<td>INTRO TO OPERATING SYSTEMS</td>
<td>4</td>
<td>Offered as needed</td>
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<td></td>
<td>Broad survey of beginning to advanced operating system topics for both the end user and administrator. Introduces history, theory, and various types of operating systems such as Microsoft, MacOSX, and Linux.</td>
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<tr>
<td>CIS 225</td>
<td>END USER SUPPORT</td>
<td>4</td>
<td>Offered as needed</td>
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<td>Effective communication with end users. Training and support functions within Information Systems. Offers an in-depth study of all the functions and features of installing, configuring, and maintaining Windows 7. The class provides detailed activities that let you experience firsthand the processes involved in Windows 7 configuration and management.</td>
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<tr>
<td>CIS 244</td>
<td>PROJECT MANAGEMENT-ANALYSIS AND DESIGN</td>
<td>4</td>
<td>Offered as needed</td>
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<td>Computer systems development process, covering aspects of project initiation, analysis, and design. Includes introduction to project management techniques in business environments. Prerequisites: CS 101</td>
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<tr>
<td>CIS 280</td>
<td>COMPUTER INFO SYSTEM COOP WK EXP</td>
<td>3</td>
<td>Offered as needed</td>
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<td>Provides an opportunity to acquire actual work experience in the CIS field. An on-site supervisor will guide and evaluate student. Instructor approval of work setting and placement is required. For each credit earned, the student will need to document 36 hours at the work site. Prerequisites: CIS 120.</td>
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</table>
CIS 283  (P/T)  4 Credits  
CYBERSECURITY FOUNDATION AND GATEWAY  
Quarters: Fall  
This course provides the student with an understanding of the fundamentals of cybersecurity, the concepts that help IT personnel recognize and potentially mitigate attacks against enterprise networks. Students will learn the basics of networking and the general concepts involved in maintaining a secure network computing environment. Upon successful completion of this course, students will be able to examine, describe general networking fundamentals and implement basic networking configuration techniques. Prerequisites: CIS 102, or demonstrate working knowledge of how to implement basic networking configuration.

CIS 284  (P/T)  4 Credits  
CYBERSECURITY ESSENTIALS  
Quarters: Winter, Spring  
This course evaluates cybersecurity principles and demonstrates how to secure a network computing environment through the application of security controls. Students will learn the nature and scope of today's cybersecurity challenges, strategies for network defense, as well as detailed information about next-generation cybersecurity solutions. Students will also deploy a variety of security methodologies as well as technologies and concepts used for implementing a secure network environment. Prerequisites: CIS 283

CIS 285  (P/T)  4 Credits  
CYBERSECURITY INFRASTRUCTURE CONFIG  
Quarters: Spring  
This course provides the student with a general understanding of how to install, configure, and manage firewalls for defense of enterprise network architecture. Students will learn the theory and configuration steps for setting up the security, networking, threat prevention, logging, and reporting features of next generation firewall technologies. Prerequisites: CIS 284

CIS 286  (P/T)  4 Credits  
CYBERSECURITY PREVENTION COUNTERMEASURES  
Quarters: Offered as needed  
This course provides the student with advanced information for how to install, configure, and manage firewalls for defense of enterprise network architecture. Students will learn the theory and extended configuration features necessary for setting up traffic handling, advanced content/user identification, quality of service, global protect, monitoring/reporting and high availability of next generation firewall technologies. Prerequisites: CIS 285

CIS 296  (P/T)  1 Credit  
CAPSTONE PROJECT I  
Quarters: Offered as needed  
The combination of this course and CS 297 represent the conclusion of the AAS degree in Cybersecurity and Network Administration. Over the course of two terms, the student will identify, design and produce a complete client project in one or more aspects of the degree's technology strands (networking, cybersecurity, database development, or server administration). Depending on the scope of the project, this work may be completed individually or in a team with other students. During the first term, students will identify their client, conduct client interviews and business process analyses, and prepare a proposal for a project to be completed during the following term in CIS 297. In addition to the technical aspect of the capstone project, significant attention will be given to topics such as professionalism, job interviewing, project management and interpersonal communication skills. Prerequisites: Instructor approval

CIS 297  (P/T)  3 Credits  
CAPSTONE PROJECT II  
Quarters: Offered as needed  
This course is a continuation of a two-term sequence begun in CIS 296, where students identify, design and produce a complete client project in one or more aspects of the degree's technology strands (networking, cybersecurity, database development, or server administration). Depending on the scope of the project, this work may be completed individually or in a team with other students. During the second term, students will complete the development work identified in their project proposal completed in CIS 296, and then prepare project documentation once the project has been accepted by the client. Prerequisites: Instructor approval

Computer Science

CS 133 CP  4 Credits  
COMPUTER PROGRAMMING: C++  
Quarters: Offered as needed  
Introduces computer programming using the C++ languages, including the structure of the language; manipulation of data, arrays and objects; and how to handle input and output functions. Uses well structured program designs and object oriented programming. Prerequisites: BA 131, or CS 120 or 160, or instructor approval.

CS 133 JA  4 Credits  
INTRO TO JAVA PROGRAMMING  
Quarters: Offered as needed  
Introduces Java language and concepts of object oriented programming. Prerequisites: BA 131, or CS 120 or 160, or instructor approval.

CS 133 VB  4 Credits  
INTRO TO VISUAL BASIC PROGRAMMING  
Quarters: Offered as needed  
Explores software design and development in an event-driven windowing user-interface environment using Visual Basic. Includes BASIC syntax, data structures, user interface, modular design techniques, file handling. Prerequisites: BA 131, or CS 120 or 160, or instructor approval.
CS 140 L  
4 Credits  
OP. ENVIRONMENTS: LINUX  
Quarters: Offered as needed  
Introduces installing and using the Linux operating system on PC-compatible computers. Covers installing Linux on a dedicated computer, in a Unix partition of a non-dedicated computer, and a MS-DOS partition of a non-dedicated computer. Includes basic Linux/Unix console commands, X-Windows, and some Linux/Unix application programs. Prerequisites: BA 131, or CS 101, or instructor approval.

CS 233 CP  
4 Credits  
ADV COMPUTER PROGRAMMING: C++  
Quarters: Offered as needed  
Explores advanced computer programming using the C++ language, including functions, operator overload, arrays, inheritance, polymorphism, derived classes, special classes and functions, and exceptions and error handling. Prerequisites: CS 133 CP.

CS 240 L  
4 Credits  
ADV OP: LINUX SYSTEM ADMINISTRATOR  
Quarters: Offered as needed  
Introduces Linux System administration, including how to install, expand, configure, manage, and network Linux systems. Prerequisites: CS 140L, or equivalent.

CS 260 B  
3 Credits  
DATA STRUCTURES II  
Quarters: Offered as needed  
Continues the analysis of algorithms is used in many computer applications written in high level programming language, including algorithms for sorting, searching, graphs, dynamic programming, and more. Prerequisites: CS 260.

CS 295 A (P/T)  
3 Credits  
WEB DESIGN II  
Quarters: Offered as needed  
 Presents the techniques and methods that lead the developer from the conception through the design, development, installation and support of a business Web site. Provides application of these techniques and methods through hands-on lab experiences using appropriate software. Prerequisites: CS 195.

CS 295 B (P/T)  
3 Credits  
WEB DYNAMICS  
Quarters: Offered as needed  
 Presents the fundamentals of creating dynamic interactive web pages. Provides hands-on experience creating dynamic text and images, positioning and data binding. Uses scripting to enhance the functionality of Web pages. Prerequisites: CS 295A.

CS 101  
4 Credits  
COMPUTER FUNDAMENTALS I  
Quarters: Summer, Fall, Winter, Spring  
Introduction to computer concepts to include the following areas; computer fundamentals, key applications, and living online. Basic introduction to computer hardware, computer software, and manipulating an operating system. An elementary summary of common program functions and office suites. A straightforward overview of networks, the internet, email, and social impact of networking technologies.

CS 160  
4 Credits  
ORIENTATION TO PROGRAMMING  
Quarters: Fall  
Explores the field of computer science, providing an overview of machine architecture, software development and engineering, data organization, problem-solving strategies, ethics, and theory of computation. Explores career options and develops rudimentary software development skills using (OOP) Object Oriented. Prerequisites: MATH 60 or suitable placement score.

CS 161  
4 Credits  
COMPUTER SCIENCE I  
Quarters: Winter  
Introduces structured methods, including program design concepts, algorithm development, use of pseudo code in designing algorithms, elementary data types, and write code using an (OOP) Object Oriented Programming language. Some sections may have a no-cost text book option. Prerequisites: CS 160.

CS 162  
4 Credits  
COMPUTER SCIENCE II  
Quarters: Offered as needed  
Continues the study of computer science, including linear data structures, file access, recursion, and object oriented programming. Prerequisites: CS 161.

CS 194 (P/T)  
3 Credits  
WEB ESSENTIALS  
Quarters: Offered as needed  
In this course students will learn to use, edit, secure and extend a Content Management System (CMS) for the development of a webpage. Best practices in Search Engine Management and Optimization. Secure Sockets Layer (SSL) and web publishing will also be explored. Students will be introduced to the basics of web development coding as well, through a practical approach of how to modify existing code within CMS's rather than building code from scratch. The course begins with the setup of a web server and domain names, then transitions into a project lasting the entire term with continual improvements to a webpage based on student interest. There will be an emphasis on modern phot-heavy page structure and design.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Credits</th>
<th>Course Title</th>
<th>Quarters</th>
<th>Description</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS 195</td>
<td>3</td>
<td>WEB DESIGN</td>
<td>Fall, Winter</td>
<td>Presents the fundamental concepts and techniques used for the design, development, and implementation of web pages using (HTML) Hyper Text Markup Language and (CSS) Cascading Style Sheets.</td>
<td></td>
</tr>
<tr>
<td>CS 196</td>
<td>(P/T) 3</td>
<td>WEB AUTHORING II</td>
<td>Offered as needed</td>
<td>This course will work with intermediate concepts in CSS to frame webpage layout and enhancement with multimedia. Students will also explore an introduction to JavaScript application and use on mobile-enabled webpages.</td>
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<tr>
<td>CS 197</td>
<td>3</td>
<td>WEB AUTHORING III</td>
<td>Offered as needed</td>
<td>In this course, students will learn how to use, edit, and extend a Content Management System (CMS) for the development of a webpage. Best practices in Search Engine Management, Secure Sockets Layer (SSL) and web publishing will also be explored. Elements from CS 195 and CS 196 (HTML, CSS and JavaScript) will continually be used in this course. Prerequisites: CS 196</td>
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</tr>
<tr>
<td>CS 240</td>
<td>(P/T) 4</td>
<td>SERVER OPERATING SYSTEMS 1</td>
<td>Fall</td>
<td>Microsoft Windows Server 2008 Active Directory Configuration prepares students to develop the skills needed to manage a Windows Server 2008 system and to prepare to pass the MCTS 70-640 certification exam. While the focus of topics is on the configuration of Active Directory and related services, coverage of Windows foundational topics such as the file system and networking are also included. Extensive coverage begins with an introduction to Windows Server 2008 and goes on to active directory design, account management, group policy management and configuration, certificate services, AD LOS, AD RMS, AD FS, server core, Windows Hyper-V virtualization, and server management.</td>
<td>CS 196</td>
</tr>
<tr>
<td>CS 241</td>
<td>(P/T) 4</td>
<td>SERVER OPERATING SYSTEMS 2</td>
<td>Winter</td>
<td>This course prepares students to configure networks using the Microsoft Windows Server platform operating system and to be prepared to take the Windows Server certification exams. The course focuses on updates to the software and in-depth coverage of the network aspects of Windows Server, this course includes topics such networking in a Windows environment, configuring DHCP, implementing DNS, and securing a Windows Server.</td>
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<tr>
<td>CS 242</td>
<td>(P/T) 4</td>
<td>SERVER OPERATING SYSTEMS 3</td>
<td>Spring</td>
<td>Microsoft Windows Server 2008, Server Administration prepares students to administer networks using the Microsoft Windows Server 2008 operating system and to pass the MCITP 70-646 certification exam. Focusing on updates to the software and in-depth coverage of the administration aspects of Windows Server 2008, this course includes topics such as installing, configuring, managing and troubleshooting. In addition, the book includes fundamental coverage of topics from other MCTS certifications.</td>
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<tr>
<td>CS 244</td>
<td>(P/T) 4</td>
<td>SYSTEM ANALYSIS AND DESIGN</td>
<td>Offered as needed</td>
<td>This course covers topics of system analysis. The task of an analyst is to develop a precise set of specifications describing the group of procedures in a complete information system. Prerequisites: BA 131, or CS 101, or instructor approval.</td>
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</tr>
<tr>
<td>CS 248</td>
<td>3</td>
<td>UNIX PROGRAMMING</td>
<td>Offered as needed</td>
<td>Covers the essentials of Unix tool programming with the use of high-level programming languages, utilities, and tool kits, including Unix shells and essential utilities and network security issues, and high-level networking and protocol basics. Provides students with an opportunity to team the tools and programming languages that will help them make the best use of Unix. Prerequisites: CS 101 and CS 162</td>
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</tr>
<tr>
<td>CS 253</td>
<td>(P/T) 3</td>
<td>WEB SERVER</td>
<td>Offered as needed</td>
<td>The purpose of this course is to give Windows NT administrators and webmasters a sound knowledge base for administering and managing Microsoft Internet Information Server 4.0. The text is also a great reference tool for experienced administrators, and is also an excellent resource for those students preparing to take Microsoft Exam 701-087, ITS 4.0. Prerequisites: CS 101 and CIS 295B</td>
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<tr>
<td>CS 260</td>
<td>4</td>
<td>DATA STRUCTURES I</td>
<td>Offered as needed</td>
<td>Modify and or create common data structures. Data abstraction from several aspects. Explores stacks, queues, lists, vectors, hash tables, graphs, trees and algorithms including sorting, searching, iterating over data structures and recursion. Prerequisites: CS 101</td>
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</tbody>
</table>
CS 275
INTRODUCTION TO DATABASES
4 Credits
Quarters: Spring
Design and implementation of relational databases, including data modeling with ER or UML diagrams, relational schema, SQL queries, relational algebra, user interfaces, and administration.

CS 280
COMPUTER SCIENCE COOP WK EXP
1 Credit
Quarters: Summer, Fall, Winter, Spring
Designed to give students an opportunity to acquire actual work experience in their chosen field. An on-site supervisor will supervise and evaluate the work experience student. Instructor approval of work setting and placement is required. For each credit earned, the student will need to document 36 hours at the work site. Some sections may have a no-cost textbook option.

CS 281
INTRO TO ROBOTS
4 Credits
Quarters: Offered as needed
Introduces the field of robotics and explores the problems of programming robots. Prerequisites: BA 131, or CS 120 or 160, or instructor approval.

Criminal Justice

CJ 100
INTRO TO CRIMINAL JUSTICE
3 Credits
Quarters: Fall, Spring
Introduces the philosophy, history, objectives and functions of the American criminal justice system. Focuses on crime in America and policing.

CJ 111
CONCEPTS OF ENFORCEMENT SERVICES
3 Credits
Quarters: Fall
Studies the concepts, theories, and principles of police operation and behavior in an era of changing community attitudes, special interest groups, and minority relations.

CJ 112
PATROL PROCEDURES
(P/T) 3 Credits
Quarters: Summer, Fall, Winter
Describes the nature and purpose of patrol activities for law enforcement officers. Includes routine and emergency procedures and types of controls.

CJ 113
ACCIDENT INVESTIGATION/TRAFFIC LAWS
(P/T) 3 Credits
Quarters: Spring
Studies the principles and procedures used to investigate and report traffic accidents. Includes basic traffic laws.

CJ 120
INTRO TO JUDICIAL PROCESS
3 Credits
Quarters: Fall
Studies the basic processes in the criminal justice system, covering the steps in a criminal prosecution from the decision to prosecute through sentencing.

CJ 130
INTRO TO CORRECTIONS
3 Credits
Quarters: Summer, Fall, Spring
Surveys the history and evolution of corrections, law and legal processes, and the correctional process.

CJ 132
INTRO TO PAROLE AND PROBATION
3 Credits
Quarters: Fall
Introduces the use of parole and probation as a means of controlling criminal offenders within the community. Includes the philosophy, historical development and contemporary functioning of parole and probation agencies and officers.

CJ 140
U.S. CRIMINAL JUSTICE SYSTEM
3 Credits
Quarters: Summer, Winter
Emphasizes the adjudication and correctional aspects of the criminal justice system. Prerequisites: CJ 100.

CJ 200
COMMUNITY RELATIONS
(P/T) 3 Credits
Quarters: Summer, Fall, Spring
Examines how the relationship between the community and the criminal justice system is clarified and enhanced. Investigates how community misunderstandings, lack of cooperation, and mistrust may paradoxically be generated by the system’s efforts to make the community a safer place.
CJ 201  INTRO TO JUVENILE JUSTICE SYSTEM
Quarters: Winter
Presents the concept of delinquency, the history and development of the juvenile justice system, theories of delinquency, environmental influences on delinquency, and controlling juvenile offenders.

CJ 202  VIOLENCE AND AGRESSION
Quarters: Winter
Explores the causes and extent of violence in society and the family, and examines preventative measures available to reduce violence in society.

CJ 203  CRISIS INTERVENTION
Quarters: Spring
Presents techniques and approaches to crisis intervention for entry level criminal justice professionals. Covers initial intervention, defusing and assessment, resolution and/or referral, with emphasis on safety. Includes personal effectiveness, recognition of threat levels, voluntary compliance, verbal and non-verbal communication, active listening, and mediation.

CJ 205  VICTIMS OF CRIME
Quarters: Spring
Examines the role of victims of crime in the justice system and their treatment by different criminal justice agencies, national and state data on victimization by types of crime, psychology trauma suffered by victims of violent crimes and paths to recovery, programs available to victims, and victim-related legislation.

CJ 206  CRIMINAL JUSTICE DOCUMENTATION
Quarters: Winter
This course is designed to provide the necessary information to become a knowledgeable and skillful writer of narrative reports which document original crimes and follow-up investigations for students entering the Criminal Justice field. The class will focus on the skills needed to write a report that is complete, clear, accurate, and convincing. The actual writing of reports will be a major component of the course. Specialized formats which meet the needs of various types of investigative activities including crime scene processing, interviews with suspects and witnesses, undercover operations, and the execution of search warrants will be explored. Basic writing skills such as grammar and spelling accuracy related to Criminal Justice terminology will be emphasized. Prerequisites: CJ 100, WR 115 or higher, or professional in the field, or consent of instructor. All prerequisite courses must be completed with a grade of "C" or better.

CJ 208  ETHICS IN CRIMINAL JUSTICE
Quarters: Spring
This course examines the many difficult decisions that criminal justice professionals make in an environment of competing interests. The decision-making of criminal justice professionals is often impacted by their ethical dilemmas. Emphasis is placed on addressing moral issues and concerns of our justice process in personal, social, and criminal justice contexts.

CJ 209  INTRO TO CAREERS IN CRIM JUSTICE
Quarters: Fall
Surveys careers in law, law enforcement, courts, and corrections. Includes facility visitation and contact with persons working in the criminal justice system.

CJ 210  CRIMINAL INVESTIGATION I
Quarters: Summer, Fall
Introduces the fundamentals, theory, and history of criminal investigation in the justice system. Describes crime scene-to-courtroom aspects with emphasis on techniques to specific crimes. Co-requisite: CJ 216

CJ 211  CRIMINAL INVESTIGATIONS II
Quarters: Offered as needed
Continues the study and application of investigative techniques for various offenses. Includes collection and preservation of physical evidence, scientific aids, modus operandi, sources of information, interview and interrogation, follow up and case preparation. Prerequisites: CJ 210. Co-requisite: CJ 226.

CJ 212  CRIMINAL INVESTIGATIONS III
Quarters: Offered as needed
Continues the study and application of investigative techniques for various crimes. Stresses scientific method, thoroughness and presentation of evidence. Explores follow up case preparation, including familiarization with the state crime lab facilities and its assistance to law enforcement agencies. Prerequisites: CJ 211. Co-requisite: CJ 236.

CJ 216  CRIME SCENE TECHNICIAN I
Quarters: Offered as needed
Presents techniques of locating, collecting, and identifying physical evidence. Includes the use of fingerprinting, casts and molds, photography, and sketching. Uses basic laboratory aids and scientific equipment in the evidence process. Co-requisite CJ 210
CJ 220  3 Credits
CRIMINAL LAW
Quarters: Winter
Examines the basic concepts of criminal law through studying the essential elements of a crime, the defenses to criminal conduct, and the justifications for criminal laws and punishment. Familiarizes the student with the various crimes against persons and property.

CJ 222  3 Credits
PROCEDURAL LAW
Quarters: Spring
Examines the United States Constitution and Bill of Rights and their impact upon law enforcement, with emphasis on search warrants, interviews, arrest and booking, search and seizure issues, 5th Amendment rights, right to counsel, evidentiary issues and the criminal trial.

CJ 223  3 Credits
RULES OF EVIDENCE
Quarters: Spring
Reviews basic concepts of the requirements for admissibility of evidence, the various burdens of proof, how evidence is used at trial, relevance, competency, privileges, opinion and expert testimony, the hearsay rule and its exceptions, and an introductory review of evidence obtained in violation of the Constitution.

CJ 225  3 Credits
CORRECTIONS LAW
Quarters: Winter
Explores several historical and current cases involving inmate crimes and malpractice with inmates. Examines prisoner’s rights, correctional staffs’ rights, and emerging trends resulting from recent court cases.

CJ 226  (P/T)  1 Credit
CRIME SCENE TECHNICIAN II
Quarters: Offered as needed
Presents techniques of locating, collecting, and identifying physical evidence. Includes the use of fingerprinting, casts and molds, photography and sketching. Uses basic laboratory aids and scientific equipment in the evidence process. Co-requisite: CJ 211.

CJ 232  (P/T)  3 Credits
CORRECTIONS CASEWORK
Quarters: Fall, Winter, Spring
Studies the basic concepts of interviewing and counseling techniques used by correctional officers in one-to-one contacts with clients. Builds rudimentary skills through role-playing and demonstration in preparation for practice in the field and to foster an appreciation for further training. Prerequisites: CJ 132

CJ 236  (P/T)  1 Credit
CRIME SCENE TECHNICIAN III
Quarters: Offered as needed
Presents techniques of locating, collecting and identifying physical evidence. Includes the use of fingerprinting, casts and molds, photography and sketching. Uses basic laboratory aids and scientific equipment in the evidence process. Co-requisite: CJ 212.

CJ 280  1 Credit
CRIMINAL JUSTICE COOP WK EXP
Quarters: Summer, Fall, Winter, Spring
Provides work-related experience and study in selected Criminal Justice environments. Some sections may have a low-cost text book option.

### Crop Science

CSS 200  4 Credits
PRINCIPLES OF CROP SCIENCE
Quarters: Spring
Studies the origin and adaptability of crops important in world food production. Emphasizes production and management of food and forage crops important to US Agriculture. Includes field trips to area farms, experiment stations and marketing facilities to augment classroom instruction. Lab required.

CSS 205  3 Credits
GENERAL SOILS
Quarters: Fall
Studies basic soil science, including genesis and morphology of soils, and their physical and chemical properties. Covers soil-water relationships, diagnosis, classification, management, essential nutrients, erosion, and soil as a medium for plant growth. Students use soil survey reports. Lab required.

CSS 210  3 Credits
FORAGE PRODUCTION
Quarters: Winter
Identifies the annual feed requirements for a livestock operation and the selection and management of feed and forage crops to meet these needs. Studies grazing and harvest systems and alternatives, and plant growth characteristics in the development of practical farm and ranch programs. Lab required.
<table>
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<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
<th>Quarters</th>
<th>Description</th>
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<tbody>
<tr>
<td>CSS 215</td>
<td>SOIL NUTRIENTS AND FERTILIZER</td>
<td>3</td>
<td>Winter</td>
<td>Addresses the 9 macronutrients and 6 micronutrients essential for plant growth. Instructs students in fertilizer selection as well interpreting soil sample analysis in making fertilizer recommendations. Prerequisites: CSS 205</td>
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<tr>
<td>CSS 217</td>
<td>PESTICIDE SAFETY AND USE</td>
<td>1</td>
<td>Winter</td>
<td>Presents federal and state pesticide laws and regulations, and the practices necessary for safe, effective handling and distribution of pesticides. Prepares for the &quot;Laws and Safety Examination&quot; for those wanting either a public or commercial license; and the &quot;Private Applicator Examination&quot; administered by the Oregon/Idaho State Department of Agriculture.</td>
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<tr>
<td>CSS 240</td>
<td>INTRO TO NOXIOUS WEEDS</td>
<td>3</td>
<td>Spring</td>
<td>Presents elements needed for a basic understanding of the life cycles, spread, and destructive nature of noxious weeds, including how to distinguish a noxious weed from a weed and identification of the more common noxious weeds found in the Pacific Northwest. This course also serves to address management of noxious weeds through biological controls, chemical applications, and mechanical removal. Lab required. Some sections may have a no-cost text book option.</td>
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