## COMPUTER TECHNOLOGY (CTEC)

### PROGRAMMING ESSENTIALS

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>CTEC 112</td>
<td>INTRO TO PROGRAMMING &amp; PROBLEM SOLVING</td>
<td>5 Credits/Units</td>
</tr>
</tbody>
</table>

55 hours of lecture

**Prerequisite:** Eligibility for ENGL 101 or PTWR 135 and a "C" or better in PTCS 110 or a MATH course with a prerequisite of MATH 096 or higher.

Course provides a participatory overview of essential foundational information technology and computer programming concepts. Topics include computing as a creative activity, abstraction, principles of computer operations, debugging, algorithmic thinking and problem solving, programming functions and operations, iteration principles, ethics in computing and the limitations of computing. Students will design and code simple programs. [GE]

### INTERNET RESEARCH AND LIVING ONLINE

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
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</thead>
<tbody>
<tr>
<td>CTEC 115</td>
<td>EXPLORE THE DIGITAL ENVIRONMENT</td>
<td>3 Credits/Units</td>
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</table>

33 hours of lecture

**Prerequisite:** Eligibility for ENGL 098.

Introduction to global networking and the Internet with an emphasis on the basic skills for interacting and utilizing the Internet for research. Topics include strategies for locating, analyzing and evaluating information, as well as network fundamentals, Internet origins, social, legal and ethical issues regarding Internet interactions. [GE]

### USER EXPERIENCE DESIGN

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
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</thead>
<tbody>
<tr>
<td>CTEC 117</td>
<td>USER EXPERIENCE DESIGN</td>
<td>4 Credits/Units</td>
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</table>

22 hours of lecture / 44 hours of lab

**Prerequisite:** Eligibility for ENGL 098.

Investigation into the field of user experience design, web usability and interaction design. Focus on strategies and best practices to better understand how to create successful user experiences. Topics include fundamentals of user centered design, user research, the role of design thinking in user experience design, user testing, information architecture and interface design. Students will design and conduct usability testing. [GE]

### INFORMATION TECHNOLOGY FUNDAMENTALS

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<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
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</thead>
<tbody>
<tr>
<td>CTEC 106</td>
<td>INTRODUCTION TO INFORMATION TECHNOLOGY</td>
<td>5 Credits/Units</td>
</tr>
</tbody>
</table>

55 hours of lecture

**Prerequisite:** Eligibility for ENGL 098.

Introduction to basic skills and problem solving involved with computer hardware, operating systems, and application programs with a special emphasis on conventions and skills universal to a variety of computing settings and skills which promote portability between systems and applications. Provides an overview of key skills in a variety of operating system environments and digital interactive settings. Skills and topics include: essential interactions in major operating system environments, basic hardware components of a personal computer system, an overview of file formats and management with an emphasis on backup and portable document strategies, basic interactions in e-mail and worldwide web including how to document and save web pages, and a survey of the purposes of various types of application programs. [GE]

### IT SUPPORT

<table>
<thead>
<tr>
<th>Course Code</th>
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<th>Units</th>
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<tbody>
<tr>
<td>CTEC 104</td>
<td>INTRODUCTION TO IT SUPPORT</td>
<td>3 Credits/Units</td>
</tr>
</tbody>
</table>

33 hours of lecture

**Prerequisite:** Eligibility for ENGL 098.

Communication skills for working in a technical environment. Topics covered: professional ethics and behavior, health and safety issues, and developing a service attitude. [GE, HR]

### COMPTIA IT Fundamentals

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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
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</thead>
<tbody>
<tr>
<td>CTEC 105</td>
<td>INTRODUCTION TO COMPTIA IT FUNDAMENTALS</td>
<td>5 Credits/Units</td>
</tr>
</tbody>
</table>

33 hours of lecture

**Prerequisite:** Eligibility for ENGL 098.

Introduction to basic skills and problem solving involved with computer hardware, operating systems, and application programs with a special emphasis on conventions and skills universal to a variety of computing settings and skills which promote portability between systems and applications. Provides an overview of key skills in a variety of operating system environments and digital interactive settings. Skills and topics include: essential interactions in major operating system environments, basic hardware components of a personal computer system, an overview of file formats and management with an emphasis on backup and portable document strategies, basic interactions in e-mail and worldwide web including how to document and save web pages, and a survey of the purposes of various types of application programs. [GE]

### WEB DEVELOPMENT ESSENTIALS

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
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</thead>
<tbody>
<tr>
<td>CTEC 113</td>
<td>INTRODUCTION TO WEB DEVELOPMENT ESSENTIALS</td>
<td>3 Credits/Units</td>
</tr>
</tbody>
</table>

33 hours of lecture

**Prerequisite:** Eligibility for ENGL 098.

Provides foundational skills utilized in information and computer technology and a functional understanding of information technology-related careers. Topics include hardware and software technologies, configuring and setting up workstations, network fundamentals and computer security. Course is based on ComptIA IT Fundamentals certification. [GE]

### POWERSHELL FUNDAMENTALS

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<tr>
<th>Course Code</th>
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<th>Units</th>
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<tbody>
<tr>
<td>CTEC 111</td>
<td>INTRODUCTION TO POWERSHELL FUNDAMENTALS</td>
<td>3 Credits/Units</td>
</tr>
</tbody>
</table>

33 hours of lecture

**Prerequisite:** Eligibility for ENGL 098.

Provides skills and experience in the Windows PowerShell command line environment for preparation towards careers in computer and information technology related fields. Topics include command line syntax, file system interactions and managing network systems in PowerShell, scripting, functions and using PowerShell with Active Directory.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits/Units</th>
<th>Prerequisites</th>
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<tbody>
<tr>
<td>CTEC 130</td>
<td>MICROSOFT WINDOWS OS FUNDAMENTALS</td>
<td>3</td>
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<tr>
<td>CTEC 131</td>
<td>MICROSOFT NETWORKING FUNDAMENTALS</td>
<td>3</td>
<td>Eligibility for ENGL 098</td>
</tr>
<tr>
<td>CTEC 132</td>
<td>MICROSOFT WINDOWS SERVER FUNDAMENTALS</td>
<td>4</td>
<td>A grade of “C” or better in NTEC 103 or consent of Instructional Unit</td>
</tr>
<tr>
<td>CTEC 133</td>
<td>MICROSOFT SECURITY FUNDAMENTALS</td>
<td>3</td>
<td>Eligibility for ENGL 098</td>
</tr>
<tr>
<td>CTEC 134</td>
<td>MICROSOFT DATABASE ADMIN</td>
<td>5</td>
<td>Eligibility for ENGL 098</td>
</tr>
<tr>
<td>CTEC 135</td>
<td>MICROSOFT SOFTWARE DEVELOPMENT WITH C#</td>
<td>5</td>
<td>Eligibility for ENGL 098</td>
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</table>

**JavaScript**

CTEC 126  5 Credits/Units

- **Prerequisite:** A grade of "C" or better in CTEC 112, CTEC 121, or CSE 121 and a grade of "C" or better in CTEC 122.

Introduction to the fundamentals and concepts of JavaScript including web scripting with jQuery, AJAX, and related libraries. Student will create dynamic websites and code demonstrating for debugging and testing JavaScript based design and code functionality. [GE]

**PHP with SQL I**

CTEC 127  5 Credits/Units

- **Prerequisite:** A grade of "C" or better in CTEC 112, CTEC 121 or CSE 121 and a grade of "C" or better in CTEC 122.

This course is an introduction to the server-side programming language PHP and its use in creating dynamic web applications, providing students with a functional knowledge of database design, SQL statements, dynamic web applications, and the methods implemented in PHP for manipulating MySQL databases. [GE]

**Microsoft Windows Operating System Fundamentals**

CTEC 130  3 Credits/Units

- **Prerequisite:** Eligibility for ENGL 098.

Fundamental Windows interactions and key skills and issues important in providing support for Windows users. Topics include basic interactions with Windows, system configuration, installing and upgrading systems, managing devices, system maintenance and other support issues.

Course is based on the Windows Operating System Microsoft Technology Associate (MTA) Certification, which students will have an opportunity to earn as a component of the course curriculum. [GE]

**Microsoft Networking Fundamentals**

CTEC 131  3 Credits/Units

- **Prerequisite:** Eligibility for ENGL 098.

Foundational concepts and skills associated with computer networking. Topics include basics of local area networking and wide area networks, the OSI Model, wired and wireless networks, Internet Protocol/Transmission Control Protocol (TCP/IP), and network security. Course is based on the Networking Fundamentals Microsoft Technology Associate (MTA) Certification which students will have an opportunity to earn as a part of the course curriculum. [GE]

**Microsoft Windows Server Fundamentals**

CTEC 132  4 Credits/Units

- **Prerequisite:** A grade of "C" or better in NTEC 103 or consent of Instructional Unit.

Foundational skills associated with Windows server installation, performance management and server maintenance. Topics include roles of servers, active directory and storage. Course is based on the Windows Network Administration Server Microsoft Technology Associate (MTA) Certification, which students will have an opportunity to earn as a component of the course curriculum. Cannot get credit for both NTEC 132 and CTEC 132. [GE]

**Microsoft Security Fundamentals**

CTEC 133  3 Credits/Units

- **Prerequisite:** Eligibility for ENGL 098.

Introduces concepts and fundamentals of network security. Topics include security layers, operating system security, network security and security software. Course is based on the Security Fundamentals Microsoft Technology Associate (MTA) Certification, which students will have an opportunity to earn as a component of the course curriculum. [GE]

**Microsoft Database Admin**

CTEC 134  5 Credits/Units

- **Prerequisite:** Eligibility for ENGL 098.

Provides a foundational overview of concepts, practices, and operation associated with designing, developing and administrating a database. Topics include core database concepts, creating database objects, manipulating data, data storage, and administering a database. Students will have an opportunity to earn the Microsoft Database Administration Fundamentals Microsoft Technology Associate (MTA) certification as a component of the course curriculum. Familiarity with Windows and MS Office highly recommended. [GE]

**Microsoft Software Development with C#**

CTEC 135  5 Credits/Units

- **Prerequisite:** Eligibility for ENGL 098.

Fundamental concepts related to developing desktop and web applications with the Microsoft C# programming language including the use of Microsoft SQL relational database management system. Topics covered include: program design, object-oriented and procedural coding, debugging, testing and documentation. Opportunity to earn the Microsoft Software Development Fundamentals Microsoft Technology Associate (MTA) certification as a component of the curriculum. Grade of "C" or better in CTEC 112, CTEC 121, CSE 121, or consent of Instructional Unit. [GE]

**Unix Power Tools**

CTEC 143  5 Credits/Units

- **Prerequisite:** A grade of "C" or better CTEC 121 and CTEC 140, or consent of Instructional Unit.

Continuing skills development using various basic UNIX tools in the shell environment; building on skills developed in prerequisite courses, students learn about shell scripts, sed, awk, and regular expressions; preparation for using UNIX or UNIX-like system power tools. [GE]

**Web Server Technology**

CTEC 145  5 Credits/Units

- **Prerequisite:** Eligibility for ENGL 098.

Foundations of web server technologies with a focus on skills useful for web development. Topics include installation and configuration of Apache, MySQL, and PHP and best practices in security. Interact with UNIX using basic commands in command line and GUI environments, administrate and maintain web hosting accounts. [GE]
An overview of the WordPress platform for individuals seeking to create websites for personal or professional use. Basics on WordPress use, installation, content management, and configuration as well as intermediate and more advanced areas such as WordPress Themes, Plugins, and use of advanced settings. Prior web publishing experience not required. Familiarity with web browsers and email is highly recommended. [GE]

Prerequisite: A grade of "C" or better in PTWR 135, ENGL 101 or consent of Instructional Unit.

Exploration and survey of best practices relating to the creation, curation and promotion of web content. Topics include: audience analysis, interaction design, content strategy and marketing, legal and ethical consideration, social media interactions, web accessibility and professional standards for written communications and design.

Prerequisite: A grade of "C" or better in ENGL 101 or PTWR 135; A grade of "C" or better in CTEC 122 and CTEC 160.

Overview of the role of management information systems in business by supporting a wide range of organizational functions from routine organizational transactions to managerial strategic decision making. Emphasis is on terminology associated with IT and hands-on labwork utilizing common business and IT applications. Familiarity and prior experience with Microsoft Excel spreadsheets and Access databases is highly recommended. [GE]

Prerequisite: Eligibility for ENGL 098, a grade of "C" or better in CTEC 106 or instructor consent.

Covers the skills required to install, configure and troubleshoot PC operating systems and networking software for desktop computers and mobile devices. Course is based on outcomes and objectives related to the CompTIA A+ certifications. [GE] [PNP]

Prerequisite: Eligibility for ENGL 098, a grade of "C" or better in CTEC 106 or instructor consent.

Covers the skills required to install, configure and troubleshoot PC operating systems and networking software for desktop computers and mobile devices. Course is based on outcomes and objectives related to the CompTIA A+ certification. [GE] [PNP]

Prerequisite: A grade of "C" or better in CTEC 127, or consent of Instructional Unit.

A continuation of the CTEC 127, PHP I course, extending PHP skills with object-oriented programming, API management, PHP security, AJAX integration, and version control. Current best practices in the commercial web industry will be emphasized. [GE]
COMPTIA  SECURITY+
CTEC 233  5 Credits/Units
55 hours of lecture
Prerequisite: Eligibility for ENGL 098, a grade of "C" or better in CTEC 131, or consent of Instructional Unit.
Covers the essential principles for network security and risk management. Topics include cloud security, expansion of Virtualization and how to secure it, mobile device security and analysis of metrics obtained from monitoring and tracking tools. Course is based on, and is intended for, students to prepare for the CompTIA Security+ certification. [GE]

COMPTIA  CYBERSECURITY
CTEC 235  5 Credits/Units
55 hours of lecture
Prerequisite: Eligibility for ENGL 098, a grade of "C" or better in CTEC 233 or consent of Instructional Unit.
Covers critical knowledge and skills that are required to prevent, detect and combat cybersecurity threats. Covers tools such as packet sniffers, intrusion detection systems (IDS) and security information and event management (SIEM) systems. The class is based on the CompTIA Cybersecurity Analyst (CSA+) certification. [GE]

UNIX NETWORK ADMINISTRATION & SECURITY
CTEC 240  5 Credits/Units
55 hours of lecture
Prerequisite: A grade of "C" or better in CTEC 141, or consent of Instructional Unit.
Skills development for configuring and administering a TCP/IP network. Topics include configuring basic networking, client services, file sharing services, major network services, cryptography, user, file, and network security, and other relevant topics. [GE]

APPLIED WEB DEVELOPMENT
CTEC 265  5 Credits/Units
55 hours of lecture
Prerequisite: A grade of "C" or better in CTEC 127 and CTEC 126 or consent of Instructional Unit.
The skills and knowledge to interact, use and create Application Programming Interfaces (APIs) and provide integration between programs and services on the web. Content management system programming skills and best practices will also be addressed. [GE]

WEB AND INTERFACE DESIGN I
CTEC 270  4 Credits/Units
22 hours of lecture / 44 hours of lab
Prerequisite: A grade of "C" or better in CTEC 122.
Fundamentals of web design and site development. Students learn web authoring standards, tools and techniques to conceive, design, produce and publish web sites. Topics include client and marketing analysis, information architecture, conceptual and visual design, workflow and team process, coding, content integration and website testing.

WEB AND INTERFACE DESIGN II
CTEC 271  4 Credits/Units
22 hours of lecture / 44 hours of lab
Prerequisite: A grade of "C" or better in CTEC 270.
Further study in web design and site development. Focus on web authoring trends and strategic methodology to better understand how to extend website functionality and value. Topics include strategies such as cross platform and browser compatibility, content management, search engine optimization, site statistics, accessibility, project management and maintenance planning. [GE]

SELECTED TOPICS
CTEC 280  6 Credits/Units
66 hours of lecture
Varying topics. May be repeated for credit. [GE]

SPECIAL PROJECTS
CTEC 290  5 Credits/Units
Prerequisite: Consent of instructional unit.
Opportunity to plan, organize, and complete special projects approved by the department. [GE]

WEB SKILLS PORTFOLIO
CTEC 293  3 Credits/Units
99 hours of clinical
Prerequisite: Concurrent enrollment in, or completion of CTEC 265 with a grade of "C" or better.
Development of applied web programming skills and a coding portfolio website that will demonstrate a student's proficiency in various aspects of web development. [GE]

CAPSTONE EXPERIENCE
CTEC 295  3 Credits/Units
33 hours of lecture
Prerequisite: Consent of Instructional Unit.
Capstone experience for CTEC degree and certificate, to assess and refine final skill set. Focus on developing and engaging in learning experiences to demonstrate and expand workplace skills and abilities. Development of employment package resources and job-acquisition strategies. [GE]