

**CS 80.15 Course Outline as of Spring 2020****CATALOG INFORMATION**

Dept and Nbr: CS 80.15 Title: IT ESSENTIALS 1

Full Title: IT Essentials 1: PC Hardware and Software

Last Reviewed: 8/14/2023

| Units   |      | Course Hours per Week |      | Nbr of Weeks | Course Hours Total |       |
|---------|------|-----------------------|------|--------------|--------------------|-------|
| Maximum | 4.00 | Lecture Scheduled     | 4.00 | 17.5         | Lecture Scheduled  | 70.00 |
| Minimum | 4.00 | Lab Scheduled         | 0    | 8            | Lab Scheduled      | 0     |
|         |      | Contact DHR           | 0    |              | Contact DHR        | 0     |
|         |      | Contact Total         | 4.00 |              | Contact Total      | 70.00 |
|         |      | Non-contact DHR       | 0    |              | Non-contact DHR    | 0     |

Total Out of Class Hours: 140.00

Total Student Learning Hours: 210.00

Title 5 Category: AA Degree Applicable

Grading: Grade or P/NP

Repeatability: 00 - Two Repeats if Grade was D, F, NC, or NP

Also Listed As:

Formerly: CIS 56.11

**Catalog Description:**

Information Technology (IT) Essentials curriculum provides an introduction to the computer hardware and software skills needed to help meet the growing demand for entry-level Information Communication Technology (ICT) professionals. The curriculum covers the fundamentals of computer hardware and software as well as advanced concepts such as security, networking, and the responsibilities of an ICT professional. The IT Essentials (ITE) curriculum emphasizes practical experience to help students develop fundamental computer and career skills. ITE helps students prepare for entry-level career opportunities in ICT and the CompTIA A+ certification. The course also provides a learning pathway to Cisco Certified Network Associate (CCNA).

**Prerequisites/Corequisites:****Recommended Preparation:**

Eligibility for ENGL 100 or ESL 100

**Limits on Enrollment:****Schedule of Classes Information:**

**Description:** Information Technology (IT) Essentials curriculum provides an introduction to the computer hardware and software skills needed to help meet the growing demand for entry-level Information Communication Technology (ICT) professionals. The curriculum covers the fundamentals of computer hardware and software as well as advanced concepts such as security, networking, and the responsibilities of an ICT professional. The IT Essentials (ITE) curriculum emphasizes practical experience to help students develop fundamental computer and career skills. ITE helps students prepare for entry-level career opportunities in ICT and the CompTIA A+ certification. The course also provides a learning pathway to Cisco Certified Network Associate (CCNA). (Grade or P/NP)

**Prerequisites/Corequisites:**

**Recommended:** Eligibility for ENGL 100 or ESL 100

**Limits on Enrollment:**

**Transfer Credit:** CSU;

**Repeatability:** Two Repeats if Grade was D, F, NC, or NP

## **ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:**

|                   |                      |                   |                  |
|-------------------|----------------------|-------------------|------------------|
| <b>AS Degree:</b> | <b>Area</b>          | <b>Effective:</b> | <b>Inactive:</b> |
| <b>CSU GE:</b>    | <b>Transfer Area</b> | <b>Effective:</b> | <b>Inactive:</b> |

|               |                      |                   |                  |
|---------------|----------------------|-------------------|------------------|
| <b>IGETC:</b> | <b>Transfer Area</b> | <b>Effective:</b> | <b>Inactive:</b> |
|---------------|----------------------|-------------------|------------------|

|                      |              |                   |             |                  |
|----------------------|--------------|-------------------|-------------|------------------|
| <b>CSU Transfer:</b> | Transferable | <b>Effective:</b> | Spring 2009 | <b>Inactive:</b> |
|----------------------|--------------|-------------------|-------------|------------------|

|                     |                   |                  |
|---------------------|-------------------|------------------|
| <b>UC Transfer:</b> | <b>Effective:</b> | <b>Inactive:</b> |
|---------------------|-------------------|------------------|

**CID:**

**Certificate/Major Applicable:**

Certificate Applicable Course

## **Approval and Dates**

|                                |                           |                                 |            |
|--------------------------------|---------------------------|---------------------------------|------------|
| <b>Version:</b>                | 04                        | <b>Course Created/Approved:</b> | 9/29/2008  |
| <b>Version Created:</b>        | 7/23/2019                 | <b>Course Last Modified:</b>    | 12/30/2023 |
| <b>Submitter:</b>              | Josh Adams                | <b>Course last full review:</b> | 8/14/2023  |
| <b>Version Status:</b>         | Approved (Changed Course) | <b>Prereq Created/Approved:</b> | 8/14/2023  |
| <b>Version Status Date:</b>    | 8/26/2019                 | <b>Semester Last Taught:</b>    | Fall 2023  |
| <b>Version Term Effective:</b> | Spring 2020               | <b>Term Inactive:</b>           | Fall 2024  |

## **COURSE CONTENT**

### **Student Learning Outcomes:**

At the conclusion of this course, the student should be able to:

1. Describe the internal components of a computer.
2. Assemble the hardware components of a computer system and install an operating system.
3. Troubleshoot computers using system tools and diagnostic software.

### **Objectives:**

At the conclusion of this course, the student should be able to:

1. Integrate the components of a personal computer.

2. Describe and implement procedures to protect themselves against accidents and injury and protect equipment from damage.
3. Specify the purpose of computer preventive maintenance.
4. Coordinate the installation of an operating system and upgrade components based on customer needs.
5. Manage the removal and replacement of select components of a laptop and upgrade components based on customer needs.
6. Manage the removal and replacement of select components of a printer/scanner.
7. Design and install a simple computer network based on customer needs.
8. Utilize project-management concepts for computer preventive maintenance and advanced troubleshooting.
9. Demonstrate good communication skills and professional behavior while working with customers.
10. Coordinate security upgrades based on customer needs.

## **Topics and Scope:**

Topics will include but not be limited to:

### **I. Introduction to the Personal Computer**

#### **A. The Information Technology (IT) industry**

1. Identify the education and certifications required
2. Describe the A+ certification
3. Identify advanced careers

#### **B. Differences between PCs based on implementation needs**

#### **C. Determine the type of computer based on customer needs**

### **II. Safe Lab Procedure and Tool Use**

#### **A. Safe working conditions and procedures**

#### **B. Identify tools and software used with PC components and their purpose**

#### **C. Proper tool use**

### **III. Computer Assembly Step by Step**

### **IV. Preventive Maintenance and Troubleshooting**

#### **A. Purpose of preventive maintenance**

#### **B. The elements of the troubleshooting process**

### **V. Operating Systems (OS)**

#### **A. The purpose, limitations, and compatibilities of operating systems**

#### **B. Determine operating system based on customer needs**

#### **C. Install an operating system**

#### **D. Navigate a Windows Graphical User Interface (GUI)**

#### **E. Identify and apply common preventive maintenance techniques for OS**

#### **F. Troubleshoot operating systems**

### **VI. Laptops and Portable Devices**

#### **A. Laptops and the various portable devices currently available**

#### **B. Identify the names, purposes, and characteristics of laptops**

#### **C. Compare and contrast desktop and laptop components**

#### **D. Explain how to configure laptops**

#### **E. Define the various mobile phone standards**

#### **F. Troubleshoot laptops and portable devices**

### **VII. Printers and Scanners**

#### **A. Describe the types of printers currently available**

#### **B. Describe the installation and configuration process for printers**

#### **C. Describe the types of scanners currently available**

#### **D. Describe the installation and configuration process for scanners**

- E. Identify and apply common preventive maintenance techniques for printers and scanners
- F. Troubleshoot printers and scanners

#### VIII. Networks

- A. Explain the principles of networking
- B. Describe types of networks
- C. Describe basic networking concepts and technologies
- D. Describe physical components of a network
- E. Explain Open Systems Interconnections (OSI) and Transmission Control Protocol/Internet Protocol (TCP/IP) Data Models
- F. Identify names, purposes, and characteristics of other technologies for establishing connectivity
  - 1. Describe telephone technologies
  - 2. Define Electronic Wireline
  - 3. Define Broadband
  - 4. Define Voice Over Internet Protocol (VoIP)
- G. Identify and apply common preventive maintenance techniques for networks

#### IX. Security

- A. Why security is important
- B. Security threats
  - 1. Viruses, worms, and Trojan horses
  - 2. Internet security
  - 3. Adware, spyware, and grayware
  - 4. Denial of service
  - 5. SPAM and pop-ups
  - 6. Social engineering
- C. Identify security procedures
- D. Identify common preventive maintenance techniques for security
- E. Troubleshoot security threats

#### X. Communication Skills

- A. The relationship between communications and troubleshooting
- B. Good communication skills and professional behavior
- C. Ethics and legal aspects of working with computer technology

#### XI. Advanced Personal Computers Topics

- A. Overview of field, remote, and bench technician jobs
- B. Explain safe lab procedure and tool use
- C. Describe situations requiring replacement of computer components
- D. Upgrade and/or configure PC components and peripherals
- E. Identify and apply common preventive maintenance techniques for PC components

#### XII. Advanced Operating Systems Topics

- A. Select the appropriate OS based on the customer's needs
- B. Install, configure and optimize OS based on the customer's needs
- C. Describe how to upgrade operating systems
- D. Describe preventive maintenance procedures for operating systems
- E. Troubleshoot operating systems

#### XIII. Advanced Laptops and Portable Devices Topics

- A. Describe wireless communication methods for laptops and portable devices
- B. Describe repairs for laptops and portable devices
- C. Select laptop components
- D. Describe preventive maintenance procedures for laptops
- E. Describe troubleshooting laptops

#### XIV. Advanced Printers and Scanners Topics

- A. Describe potential safety hazards and safety procedures associated with printers and

scanners

- B. Install and configure a printer/scanner locally
- C. Describe how to share a printer/scanner on a network
- D. Upgrade and configure printers and scanners
- E. Describe preventive maintenance techniques used with printers and scanners
- F. Describe troubleshooting printers and scanners

#### XV. Advanced Networks Topics

A. Identify potential safety hazards and implement proper safety procedures associated with networks

- 1. Explain fiber optics safety hazards
- 2. Explain cable, cable cutter, and cable cuttings safety hazards

B. Design and implement a network based on the customer's needs utilizing project management methodologies

- C. Upgrade the customer's network
- D. Describe installation, configuration, and management of a simple mail server
- E. Describe preventive maintenance procedures for networks

#### XVI. Advanced Security Topics

A. Outline security requirements for customer's needs

B. Select security components based on customer's needs

- 1. Describe and compare security techniques
- 2. Describe and compare access control devices
- 3. Describe and compare firewall types

C. Implement customer's security plan

D. Perform preventive maintenance on security risks

E. Troubleshoot security risks

### Assignment:

Reading assignments may include:

- 1. Online research of best practices and current equipment
- 2. Approximately 40 pages weekly from the textbook

Homework problems may include

- 1. Creation of network design diagrams and layouts
- 2. Online multiple choice, true/false, matching items, completion quizzes and simulated equipment configuration

Other assignments may include:

- 1. 9 to 15 quizzes and exams
- 2. Skill demonstration examinations of computer and network device installation configuration
- 3. Classroom scenario based exercises of computer and network device installation configuration

### Methods of Evaluation/Basis of Grade:

**Writing:** Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

None, This is a degree applicable course but assessment tools based on writing are not included because skill demonstrations are more appropriate for this course.

Writing  
0 - 0%

**Problem Solving:** Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

Homework problems, creation of network design diagrams and layouts

Problem solving  
15 - 30%

**Skill Demonstrations:** All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

Computer and network device installation configuration

Skill Demonstrations  
20 - 30%

**Exams:** All forms of formal testing, other than skill performance exams.

9 to 15 quizzes and exams

Exams  
20 - 30%

**Other:** Includes any assessment tools that do not logically fit into the above categories.

Attendance and participation in scenario based exercises

Other Category  
10 - 25%

### **Representative Textbooks and Materials:**

IT Essentials Companion Guide (5th). Cisco Networking Academy. Cisco Press: 2014

## **OTHER REQUIRED ELEMENTS**

### **STUDENT PREPARATION**

|                                     |    |                                     |
|-------------------------------------|----|-------------------------------------|
| Matric Assessment Required:         | E  | Requires English Assessment         |
| Prerequisites-generate description: | NP | No Prerequisite                     |
| Advisories-generate description:    | A  | Auto-Generated Text                 |
| Prereq-provisional:                 | N  | NO                                  |
| Prereq/coreq-registration check:    | N  | No Prerequisite Rules Exist         |
| Requires instructor signature:      | N  | Instructor's Signature Not Required |

### **BASIC INFORMATION, HOURS/UNITS & REPEATABILITY**

|                        |    |  |
|------------------------|----|--|
| Method of instruction: | 02 | Lecture                                  |
|                        | 72 | Internet-Based, Delayed Interaction      |
|                        | 99 | Credit by Exam                           |
|                        | 71 | Internet-Based, Simultaneous Interaction |
| Area department:       | CS | Computer Studies                         |
| Division:              | 72 | Arts & Humanities                        |
| Special topic course:  | N  | Not a Special Topic Course               |
| Program status:        | 1  | Certificate Applicable Course            |
| Repeatability:         | 00 | Two Repeats if Grade was D, F, NC, or NP |
| Repeat group id:       |    |  |

### **SCHEDULING**

|                        |      |                                |
|------------------------|------|--------------------------------|
| Audit allowed:         | N    | Not Auditable                  |
| Open entry/exit:       | N    | Not Open Entry/Open Exit       |
| Credit by exam:        | Y    | Credit by examination allowed  |
| Budget code: Program:  | 0000 | Unrestricted                   |
| Budget code: Activity: | 0701 | Computer & Information Science |

### **OTHER CODES**

|                                 |                              |  |
|---------------------------------|------------------------------|--|
| Discipline:                     | Computer Information Systems |  |
| Basic skills:                   | N                            | Not a Basic Skills Course                                |
| Level below transfer:           | Y                            | Not Applicable   |
| CVU/CVC status:                 | Y                            | Distance Ed, Not CVU/CVC Developed                       |
| Distance Ed Approved:           | Y                            | Exclusively online or other technology based instruction |
| Emergency Distance Ed Approved: | N                            | None   |
| Credit for Prior Learning:      | N                            | Agency Exam  |
|                                 | N                            | CBE  |
|                                 | N                            | Industry Credentials                                     |
|                                 | N                            | Portfolio  |
| Non-credit category:            | Y                            | Not Applicable, Credit Course                            |
| Classification:                 | Y                            | Career-Technical Education                               |
| SAM classification:             | C                            | Clearly Occupational                                     |
| TOP code:                       | 0708.20                      | Computer Support   |
| Work-based learning:            | N                            | Does Not Include Work-Based Learning                     |
| DSPS course:                    | N                            | Not a DSPS Course  |
| In-service:                     | N                            | Not an in-Service Course                                 |