Course ID: CNIT R101
Curriculum Committee Approval Date: 09/27/2017
Catalog Start Date: Fall 2018

COURSE OUTLINE

OXNARD COLLEGE

I. Course Identification and Justification:

A. Proposed course id: CNIT R101
Banner title: IT Essentials
Full title: IT Essentials

Previous course id: CNIT R101
Banner title: IT Essentials
Full title: IT Essentials

B. Reason(s) course is offered:
This is an introductory computer networking course that is required for the Computer Networking A.S. Degree and Certificate of Achievement and will help to prepare students for a career in computer networking/information technology.

C. Reason(s) for current outline revision:
Change to catalog description, new textbook, and update to course content.

D. C-ID:
1. C-ID Descriptor:
2. C-ID Status:

E. Co-listed as:
Current: None
Previous:

II. Catalog Information:

A. Units:
Current: 3.00
Previous: 3.00

B. Course Hours:
1. In-Class Contact Hours:
Lecture: 43.75 Activity: 0 Lab: 26.25
2. Total In-Class Contact Hours: 70
3. Total Outside-of-Class Hours: 87.5
4. Total Student Learning Hours: 157.5

C. Prerequisites, Corequisites, Advisories, and Limitations on Enrollment:
1. Prerequisites
Current:
Previous:

2. Corequisites
   Current:
   Previous:

3. Advisories:
   Current:
   Previous:

4. Limitations on Enrollment:
   Current:
   Previous:

D. Catalog description:
Current:
This course is a technical introduction to the personal computer and mobile devices as well as computer networks and how they function. Students will gain a solid foundation in information technology that will help prepare them for entry-level positions in IT as well as the more advanced computer networking courses in the CNIT program. Additional course topics include operating systems, wireless, security, and printers. This course also covers soft skill topics such as customer service and communication.

Previous, if different:
This course is a technical introduction to the personal computer and computer networking and is designed for students who desire to become computer literate and potentially continue to more advanced computer networking courses. Topics include the personal computer, hardware, application software, operating systems, data communications infrastructure and the Internet. Additionally, web communication will be explored including e-mail, IM, chat, blogs, wikis, VoIP, podcasts, and social networking websites.

E. Fees:
Current: $ None
Previous, if different: $

F. Field trips:
Current:
Will be required: [ ]
May be required: [X]
Will not be required: [ ]

Previous, if different:
Will be required: [ ]
May be required: [ ]
Will not be required: [X]

G. Repeatability:
Current:
A - Not designed as repeatable
Previous:
1 -

H. Credit basis:
Current:
Letter graded only [X]
Pass/no pass [ ]
Student option [ ]

Previous, if different:
Letter graded only [ ]
Pass/no pass [ ]
Student option [ ]

I. Credit by exam:
Current:
Petitions may be granted: [X]
Petitions will not be granted: [ ]

Previous, if different:
Petitions may be granted: [ ]
Petitions will not be granted: [ ]

III. Course Objectives:
Upon successful completion of this course, the student should be able to:
- A. Explain the importance of computer literacy in the workplace.
- B. List and define the main components of a personal computer.
- C. Demonstrate the ability to communicate through the Internet using email, instant messaging, and discussion boards.
- D. Describe the difference between application software and operating system software.
- E. Summarize the difference between proprietary software and open source software.
- F. Describe the differing characteristics between a peer-to-peer network and a client/server network.
- G. Create a functional Ethernet and wireless network using a network virtualization program.
- H. Analyze methods to protect a PC and computer network and make recommendations about a security solution for a small network.
- I. List the different type of communications media that are currently popular and summarize the advantages and disadvantages of each.
- J. Demonstrate the ability to use a bottom-up, layered approach to troubleshooting the most common PC and computer networking problems.
- K. List the different types of wide area networks (WANs) of an Internet service provider (ISP) and summarize the advantages and disadvantages of each.
- L. Describe tools used for computer service and explain how to use those tools safely.
- M. Describe the differences between printers used for small office/home office and enterprise networks.
- N. List and describe the most common wireless security protocols.

IV. Student Learning Outcomes:
- A. Students will be able to identify the main components of a personal computer including the CPU, ram, hard drive, network interface card, CMOS, bios, and specific expansion slots.
- B. Students will demonstrate the ability to build a functional pc using a simulator. Steps include the following: installing the motherboard onto the case, adding the power supply, and installing all of the components onto the motherboard that are necessary to create a functional pc that can be connected to a network.
- C. Students will demonstrate the proper use of TCP/IP utilities to gather configuration information including the IP address, subnet mask, gateway, DNS as well as the commands necessary to check for network connectivity between host devices such as Ping and Tracert.

V. Course Content:

Topics to be covered include, but are not limited to:

A. Computer Literacy
   1. Careers and computer literacy
   2. Internet of things (IoT)

B. Personal Computer Components
   1. Power supply, RAM, CPU, motherboard, system bus, video card
   2. Case and ports
   3. Peripherals
   4. Setting up a PC
   5. Ergonomics

C. Internet
   1. Origin of the Internet
   2. Web browsers
   3. Search engines and techniques
   4. Third party plugins
   5. Connecting to the Internet and choosing an ISP
   6. Chat, blogs, webcasts, e-mail, podcasts, and VoIP
   7. Social networking websites

D. Application Software and the Operating System
   1. Types of application productivity software
   2. Types of multimedia and entertainment software
   3. Operating systems
   4. Proprietary versus open source software
   5. Software updates and patches

E. Computer Networking
   1. Advantages of networking
   2. Peer-to-peer versus client/server networking
   3. Components of a network
   4. Ethernet and TCP/IP
   5. Wireless networking

F. PC and Computer Network Security
   1. PC and network threats
   2. Malware types
   3. Firewalls and anti-virus solutions
   4. Updating and patching the OS and applications
   5. Social engineering, spam, phishing, ransomware, password cracking
   6. Next generation anti-virus and firewalls

G. Networking Media and Standards
   1. Coaxial, copper, fiber, 802.11 wireless, and Bluetooth
   2. Classes of cable and connectors
   3. IEEE networking standards

H. Troubleshooting
   1. Open system interconnection (OSI) model
   2. Troubleshooting using a bottom-up approach
   3. Help resources
   4. Documentation during the troubleshooting process

I. Wide Area Networks (WANs)
   1. Cable
   2. DSL and dial-up
   3. T1, T3, and optical carrier networks
   4. FIOS
   5. Satellite
   6. Cellular networks: 3G, 4G/LTE, 5G
   7. Internet Service Providers

J. Mobile Devices

1. Smartphones
2. Tablets
3. Laptops

K. Soft skills
1. Work order
2. Trouble ticket and documentation
3. Customer communication
4. Teamwork

VI. Lab Content:

A. Computer Assembly
1. Open the case and install the power supply
2. Install the motherboard
3. Install RAM
4. Install the drives
5. Install the adapter cards
6. Install internal cables
7. Close case and connect peripherals
8. Boot and test PC

B. Install Windows Operating System
1. Partition and format hard drive
2. Install Windows OS
3. Answer setup questions using a script
4. Update Windows OS using Windows Update

C. Create an Ethernet Network
1. Create an Ethernet network using a star topology
2. Connect host PCs to an Ethernet switch
3. Select the appropriate Ethernet cable
4. Connect to the appropriate network card
5. Configure IP address, subnet mask, and gateway for each host
6. Verify connectivity using ping command

D. Create a Wireless Network
1. Create an 802.11 wireless network using an access point and wireless clients
2. Configure access point with appropriate SSID and WPAII encryption key
3. Configure wireless clients with the SSID and WPAII encryption key
4. Verify connectivity between wireless clients and access point with the ping command

E. Troubleshoot Network
1. Troubleshoot a network problem using the OSI Model in a bottom-up approach
2. Document troubleshooting process starting with Layer 1 (Physical Layer) up to higher layers of the OSI Model until the problem has been solved
3. Demonstrate the proper use of TCP/IP utilities such as ipconfig, tracert, ping, nslookup, etc. during troubleshooting
4. Test and document solution

F. Anti-Virus Software
1. Download an AV software suite
2. Update AV with latest definitions
3. Setup automatic scanning
4. Run scan and document results
5. Research and summarize the difference bet ween next generation AV software and current AV software that is based on signature definitions

G. Configure Host Based Firewall
1. Block specific applications

2. Permit and block specific ports
3. Allow exceptions through the firewall
4. Verify and test firewall configuration

H. Printer
1. Connect a host to a printer
2. Configure driver
3. Configure printer for network connectivity using IP address
4. Configure different print options
5. Verify proper operation of printer

I. Mobile Operating Systems
1. Mobile device features
2. Android configuration options
3. iOS configuration options
4. Passcode locks
5. Mobile WiFi configuration
6. Saving data in the cloud

VII. Methods of Instruction:
Methods may include, but are not limited to:

A. Lecture and class discussions on topics ranging from PC hardware, operating systems, cabling, networking, TCP/IP protocols, troubleshooting utilities, malware and anti-virus solutions, security vulnerabilities and threats, and jobs in the IT industry.

B. Evaluation and constructive feedback provided to students on performance based labs such as building a PC, installing an operating system, networking hosts together, and monitoring and troubleshooting networks.

C. Internet research on current IT topics such as comparing and contrasting features of Android based tablet computers, Apple iOS tablet computers, and the Microsoft Surface tablet computer. Also, Internet research on current security threats and methods to mitigate those threats.

D. Demonstrations using networking gear such as copper and fiber cable, crimper, cable tester, PC hardware components, hub, switch, router, wireless AP, various operating systems, and TCP/IP troubleshooting utilities.

VIII. Methods of Evaluation and Assignments:

A. Methods of evaluation for degree-applicable courses:
Essays [X]
Problem-solving assignments (Examples: Math-like problems, diagnosis & repair) [X]
Physical skills demonstrations (Examples: Performing arts, equipment operation) [ ]

For any course, if "Essays" above is not checked, explain why.

B. Typical graded assignments (methods of evaluation):
1. Online assignments distributed and collected via the course management system including but not limited to listing and defining PC components, listing media types and summarizing the advantages and disadvantages of each, and recommending a security solution for a home and small business network.
2. Chapter exam at the conclusion of every chapter. There will be a midterm and final exam.
3. Participation in online correspondence including e-mail, live chat, and discussion forums that will be evaluated by the instructor.

4. Students will implement a network solution to a given scenario using a network simulation program and submit the file to the instructor for evaluation and grading.
5. Short essays at the conclusion of specific lab assignments describing how the knowledge and skills gained from a particular lab can be applied to a new networking or troubleshooting scenario.

C. Typical outside of classroom assignments:
   1. Reading
      a. Reading of IT Essentials curriculum at cisco.netacad.net
      b. Completion of embedded lab activites in the curriculum
      c. Viewing multimedia using links embedded in the IT Essentials curriculum
      d. Completion of certification preparation exams at cisco.netacad.com and www.comptia.org.
   2. Writing
      a. Students will be required to complete written assignments summarizing technology and making recommendations given a scenario. An example would be identifying the different types of WAN connections that an ISP provides and recommending a solution for a company with specific Internet needs.
      b. Students will be required to write a paper identifying security threats to a PC and computer network and recommend best practices for a home or small business.
      c. Students will be required to research social networking websites and summarize potential productivity benefits of these sites and security and privacy concerns.
   3. Other
      a. Students will have the opportunity to build and test networks utilizing a virtualization program developed by the Cisco Networking Academy called Packet Tracer.

IX. Textbooks and Instructional Materials:
   A. Textbooks/Resources:
      1. Cisco Press (2016). *IT Essentials Course Booklet, Version 6th* (1st/e). Cisco Press.
      2. Cisco Press. IT Essentials Lab Manual, Version 6. Cisco Press , 01-01-2016.
   B. Other instructional materials:
      1. Articles and help features on applications; operating system websites; update and patch review at software websites.
      2. Social networking sites including www.facebook.com and www.twitter.com.

X. Minimum Qualifications and Additional Certifications:
   A. Minimum qualifications:
      1. Computer Information Systems
   B. Additional certifications:
      1. Description of certification requirement:
         CompTIA A+ certification

2. Name of statute, regulation, or licensing/certification organization requiring this certification:
   CompTIA

XI. Approval Dates
Curriculum Committee Approval Date: 09/27/2017
Board of Trustees Approval Date: 09/27/2017
State Approval Date: 01/04/2018
Catalog Start Date: Fall 2018

XII. Distance Learning Appendix

A. Methods of Instruction
Methods may include, but are not limited to:

1. A VCCCD approved learning management system (LMS) will be utilized to facilitate synchronous and asynchronous communication which includes but is not limited to the following: Live chat, asynchronous discussion forums, direct messages, grading assignments and providing feedback to students regarding performance on the assignments. The instructor may also utilize the LMS to provide course progress updates.

B. Information Transfer
Methods may include, but are not limited to:

1. Chat/IM
2. Course announcements
3. Discussion boards
4. E-Mail
5. Instructor-provided online materials
6. Messaging via the LMS
7. Modules on the LMS
8. Personalized feedback