RARITAN VALLEY COMMUNITY COLLEGE
ACADEMIC COURSE OUTLINE

NTWK 113 Desktop Computer Hardware & Software

I. Basic Course Information

A. Course Number and Title: NTWK 113 Desktop Computer Hardware & Software

B. New or Modified Course: Modified

C. Date of Proposal: Semester: Fall Year: 2024

D. Effective Term: Fall 2025

E. Sponsoring Department: Math & Computer Science

F. Semester Credit Hours**:** 3

G. Weekly Contact Hours**:** 4 Lecture**:** 2
Laboratory**:** 2
Out of class student work per week: 5

H. ☐ Prerequisite (s):
☐ Corequisite (s):

I. Additional Fees**:** None

II. Catalog Description

(Prerequisites: None) This course is based on the industry performance based COMPTIA A+ certification. It allows a student to install, manage, repair and troubleshoot PC hardware and Windows, Linux, and MAC operating systems. This course has been designed to help a student gain real-world skill that they will use every day as a PC technician.

III. Statement of Course Need

A. To compete in today's job market, students need to understand the theory of operation of basic desktop computer hardware and operating environments beyond basic application software

literacy. This course provides students with the foundational understanding necessary for the basic support of administrative, maintenance and troubleshooting tasks associated with Desktop Computer Support. Since Desktop Computers are commonplace both at home and in business, there is an increasing need for people who can assist in the support of hardware and software for individual needs and for small business environments.

B. Students attain hands-on experience in a computer classroom that has access to special hardware and software. This may include but not limited to TestOut LabSim emulation package, scenario-based problem-solving exercises, industry videos, lectures, demonstrations, software-based emulations, and self-test programs.
C. Although this course is not designed for transfer, it can be used as a computer elective or as a free elective to selected colleges and universities dependent on the institution. See NJTransfer for details.

IV. Place of Course in College Curriculum

A. Free Elective

B. This course serves as a program requirement in:
   a. Information Systems & Technology A.S.
   b. Computer Support Certificate

C. This course serves as a Computer Elective on the Computer and Programming Electives List.

D. To see course transferability: a) for New Jersey schools, go to the NJ Transfer website, www.njtransfer.org; b) for other colleges and universities, go to the individual websites for those schools

V. Outline of Course Content

This course measures the student ability to install, manage, repair troubleshoot and maintain a personal PC. Basic computer networking, security and mobile devices will also be explored.

Topics Include:

A. Computing Overview

1. Course Introduction
2. Windows Basics
3. Hardware Basics
4. Linux Basics
5. MAC OS Basics

B. PC Technician

1. Protection and Safety
2. Professionalism
3. PC Tools
4. PC Maintenance
5. Troubleshooting Overview

C. System Components

1. Cases and Form Factors
2. Power Supplies
3. Motherboards and Busses
4. Motherboard Troubleshooting
5. Processors
6. Processor Troubleshooting
7. Memory
8. Memory installation
9. Memory Troubleshooting
10. BIOS/UEFI
11. Expansion Cards
12. Video
13. Audio
14. Cooling

D. Peripheral Devices

1. Peripheral Devices
2. USB
3. IEEE 1394 (FireWire)
4. Display Devices
5. Video troubleshooting
6. Device Driver Management
7. Device Power Troubleshooting

E. Storage

1. Storage Devices
2. SATA
3. Optical Media
4. RAID
5. File Systems
6. File System Creation
7. Storage Management
8. Storage Spaces
9. Disk Optimization
10. Storage troubleshooting

F. Networking

1. Networking Overview
2. Network Hardware
3. Ethernet
4. IP Networking
5. IP Configuration
6. IPv6
7. 802.11 Wireless
8. Infrared, Bluetooth, and NFC
9. Internet Connectivity
10. SOHO Configuration
11. Network Utilities

12. HomeGroup Networking
13. Network Troubleshooting

G. Printing

1. Printers
2. Printer Configurations
3. Network Printing
4. Printing Management
5. Printer Maintenance
6. Printer Troubleshooting

H. Mobile Devices

1. Notebook Computers
2. Notebook Components
3. Notebook Power Management
4. Notebook Troubleshooting
5. Mobile Devices
6. Mobile Device Security
7. Mobile Device Networking
8. Mobile Device troubleshooting

I. System Management

1. Windows System Tools
2. Preferences and Settings
3. Performance Monitoring
4. Users and Groups
5. Remote Services
6. Windows Application Management
7. Linux Application Management
8. Digital Content Management
9. Updates
10. System Backup
11. System Protection
12. System Recovery
13. System Memory
14. Virtual Memory
15. Operating System Troubleshooting
16. Windows Boot Errors

J. System Implementation

1. Component Selection
2. Windows Pre-installation
3. Windows installation
4. Post installation
5. Virtualization

K. File Management

1. Windows File Locations
2. Managing Files on Windows
3. NTFS Permissions
4. Shared Folders

5. Linux File Management

L. Security

1. Best Practices
2. Incident Response
3. Physical Security
4. Social Engineering
5. BIOS/UEFI Security
6. Malware Protection
7. Authentication
8. File Encryption
9. Network Security
10. Firewalls
11. Proxy Servers
12. VPN
13. Security Troubleshooting
14. Capstone Exercises

VI. A. Course Learning Outcomes

At the completion of this course, the student will be able to:

1. Apply critical thinking to the troubleshooting of various Desktop Computer Hardware and Software problems (GE- 4*)
2. Describe the basic hardware components of a PC (GE-1)
3. Identify, compare, and contrast the respective architectures of various PC system boards. (GE-4*)
4. Install and configure a Windows operating system. (GE-4)
5. Describe the fundamental principles of using peripheral devices, demonstrate how to install, configure, optimize and upgrade peripheral devices. (GE-4)
6. Explain how computers are connected to a network (GE-1)
7. Describe diagnostic and troubleshooting techniques and outline preventive maintenance steps (GE-1, 4)

B. Assessment Instruments

1. Exam – Periodic exams covering the major topics in the course
2. Exam – Final Examination
3. Laboratory Exercises assigned by the Instructor for in-class execution
4. Quiz – Optional quizzes at the discretion of the Instructor
5. Online discussions of timely topics
6. Short Research papers to supplement in-class

VII. Grade Determinants

A. Major Class Participation

B. Periodic Examinations and optional Quizzes
C. Final Examination
D. In-class exercises or laboratories assigned by the Instructor
E. Research Papers

Methods for teaching and learning that may be used in the course:

A. Lecture/Discussion – Traditional in-class lecture and classroom discussion
B. Laboratory – Detailed LAB assignments involving hardware and software installation, configuration, management and troubleshooting
C. Online collaboration – utilize online systems for collaborative discussion and to synthesize approaches to problem-solving
D. Case studies and research – to provide outside-the-classroom supplemental learning and discovery activities

VIII. Texts and Materials

A. Suggested Textbook

A. Suggested textbook: Mike Meyers, COMPTIA A+ Certifications- Ninth Edition- McGraw Hill Education- 2016
B. Suggested textbook: Jean Andrews, A+ Guide to IT Technical Support (Hardware and Software, - 9th Edition - Cengage learning- 2017
C. TestOut: TestOut PC Pro

(Please note: The course outline is intended only as a guide to course content and resources. Do not purchase textbooks based on this outline. The RVCC Bookstore is the sole resource for the most up-to-date information about textbooks.)

IX. Resources

A. Access to General Purpose Computers with Internet Access
B. Access to Cisco Routers and Switches as specified in the Academy Program
C. Access to the Cisco Networking Academy Lab which can be isolated from the RVCC Network

X. Check One: ☐Honors Course ☐Honors Options ☒ N/A