

Networking II

Syllabus | 2020-2021 | #520022 - One Credit



Instructor: Carmanita Monroe **Email:** cmonroe@bessk12.org **Phone:** 205-432-3777

COURSE DESCRIPTION:

Networking II is a one-credit advanced Information Technology course designed for students with a high degree of interest in advanced networking topics. Topics addressed in this course will be a continuation of those covered in Networking I at a more detailed level.

PREREQUISITES: None **CAREER CLUSTER:** Information Technology
COURSE FEE: \$40 **CAREER PROGRAM:** Networking & Computer Services

LAB APPLICATION:

TestOut LabSim: Network Pro
Students will access this through Schoology

WEBSITE:

Links to all course technologies will be available on the Bessemer Center for Technology website here:
<https://bessemer.bcst.schoolinsites.com/>

SUPPLEMENTARY TEXTBOOK:

Jill West; Tamara Dean; Jean Andrews, *Network+ Guide to Networks, 8th Edition*. Cengage, MindTap.

EMAIL:

All students are required to use their school email to access the course technologies we will use.

GENERAL SUPPLIES:

- Notebook
- Pencil (Mechanical or Standard)
- Highlighters

ADDITIONAL RECOMMENDED SUPPLIES: These supplies would be used to organize lessons, fact sheets further, and lab printouts from TestOut LabSim to use for test preparation and as a reference in an IT career.

- 5" or 6" Three-Ring Binder
- Dividers
- Sheet Protectors
- College ruled filler paper

CAREER AND TECHNICAL STUDENT ORGANIZATION (CTSO):

SkillsUSA - \$15 Membership Fee (included in Course Fee)

All Networking II students are required to join and participate in SkillsUSA. SkillsUSA is a professional organization that is designed to be run by students as an integral, co-curricular component of career and technical courses. SkillsUSA members develop leadership abilities, expand workplace-readiness skills, and broaden opportunities for professional growth. Through chapter meetings, contests, leadership conferences, and activities, students will build these skills. Each chapter chooses plans and conducts its operations.

AVAILABLE INDUSTRY CREDENTIALS:

TestOut Network Pro

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GRADING AND EVALUATION CRITERIA:

Assessments: Grades will be based on quizzes, midterm, and final examinations. Exams are cumulative and given in a variety of formats. An in-class review will be held before each exam.

Classwork: Grades will be based on keyword terms, review questions, A+, critical thinking, weekly objectives, projects, labs, bell ringers, etc.

Miscellaneous: Grades will be based on homework, bonuses, etc.

The following scale will be used in assessing the student’s content knowledge and skills during the course:

<u>EVALUATION CRITERIA:</u>	<u>PERCENTAGE:</u>	<u>GRADING SCALE:</u>	<u>LETTER GRADE:</u>
Assessments	50	100 – 90	A
Classwork/Participation	40	89 – 80	B
Miscellaneous	10	79 – 70	C
TOTAL	100	69 – 60	D
		Below 59	F

CLASS POLICIES:

1. Eating and drinking are NOT permitted in the computer lab or classroom.
2. Students are not to tamper with computers in any way nor to make changes in setup unless directed by the instructor. Any students performing unauthorized actions on computers will be subject to disciplinary action.
3. Sufficient time will be allowed in the classroom to complete the work assigned.
4. Students must leave the work area clean, neat, and ready for the next class. Also, students are to return any textbooks to the book bin and shut down the computer before leaving the classroom.
5. School policies will be followed.

MAKE-UP POLICY:

You are responsible for informing the instructor within one week after you return that you need to make up assignments or tests. Failure to do so will result in a zero being assigned for the missed work.

COURSE GOALS:

1. Describe the structure of the Internet and how it affects communication between hosts, including installing, configuring, and troubleshooting network devices for Internet and server connectivity.
2. Design a basic wired infrastructure to support network traffic, shared resources, and Web services.
3. Utilize mathematics skills to implement basic wide area network (WAN) connectivity using Telco services.
4. Justify the use of Network Address Translation (NAT) and Port Address Translation (PAT).
5. Describe the Open System Interconnection (OSI) model and the process of encapsulation.
6. Demonstrate proper disaster recovery procedures.
7. Perform server backups.
8. Interpret various Transmission Control Protocol (TCP) and Internet Protocol (IP) messages.
9. Isolate system failures to improve network performance.
10. Utilize an organized, layered procedure to troubleshoot problems.
11. Utilize research results to assist in selecting a network monitoring system
12. Evaluate network security considerations for improved network security.

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13. Determine career and entrepreneurial opportunities, responsibilities, and educational and credentialing requirements related to small to medium business or Internet Service Provider (ISP) professions.

ESSENTIAL QUESTIONS:

- How do we determine the amount of traffic a small, medium or enterprise network can support?
- Why don't network devices communicate over every layer of the OSI model each time they transmit?
- How could a log of system failures be used to streamline network maintenance?
- What factors determine which information should get backed up?
- How can you make a network 100 percent secure?
- How can we calculate the cost of security breaches to large corporations?
- What are the dominant jobs within the region?
- How do you evaluate degree/experience/certification employment requirements?
- How important is your skill level?

COURSE OUTLINE:

1. **Advanced Networking**
 - A. Overview of the network layer function
 - B. IP Routing
 - C. Enable WAN Connections
 - D. NAT and PAT
 - E. OSI Model
2. **Troubleshooting and Maintenance**
 - A. Disaster Recovery Procedures
 - B. Layer 3 and 4 messaging
 - C. Debugging device communication
 - D. Improving network performance
3. **Security**
 - A. Network Security
 - B. Security Tools
 - C. Intrusion detection and prevention
 - D. Virtual private networks
4. **Career Opportunities**
 - A. Job Types
 - B. Network Analyst
 - C. Network Technician
 - D. Technical Support
 - E. Helpdesk Technician
 - F. Network Specialist
 - G. Technical Writer
 - H. Job Demand by Industry
 - I. Educational
 - J. Legal
 - K. Financial

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- L. Government
- M. Non-Profit
- N. Automotive
- O. Communications
- P. Health
- Q. Roles and Responsibilities
- R. Administration
- S. Personnel Management
- T. Documentation
- U. Supervision
- V. Travel
- W. Work Independently
- X. Customer Facing
- Y. Time Management
- Z. Accountability
- AA. Availability
- BB. Professional Credentials
- CC. Certificates of Completion
- DD. Associate Degrees
- EE. 4+ year Degrees
- FF. Industry Certifications
- GG. Work Experience
- HH. Career Pathways
- II. Interests
- JJ. Self-Discipline
- KK. Options

CULMINATING PRODUCTS:

1. Students will configure WAN interfaces and explain why NAT/PAT is used at domain gateways.
2. Students will perform data backups to the local machine and across the network.
3. Students will design an end-to-end network security plan.
4. Students will create a graph to show the long-term earning potential of 10-15 job titles related to small and medium business or Internet Service Provider (ISP) professions.