Auburn School District #408 Framework: Computer Systems Engineering 3

Course: Computer Installation and Repair Technology/Technician
Total Framework Hours: 90 Hours

CIP Code: 470104
Type: Preparatory

Career Cluster: Information Technology
Date Last Modified: Friday, April 15, 2016

Resources and Standard used in Framework Development:

Standards used for this framework are from the OSPI Model Framework for 470104 Computer Installation and Repair Technology/Technician

Unit 1 NETWORKING BASICS — Hours: 10

Performance Assessment(s):

Testout LabSim Net Pro Unit 1 Exams
Testout LabSim Net Pro Unit 1 Lab Simuilations
Testout LabSim Net Pro Unit 1 Final Assessment
Shop Safety Assessment

Leadership Alignment:

SkillsUSA Internetworking
WORK 1.0: Explain common networking concepts and terminology
WORK 2.0: Install and troubleshoot basic hardware and software required to communicate in a simple network and test for connectivity
WORK 3.0: Compare and contrast various types of media used for networking
WORK 4.0: Explain the fundamental concepts associated with media access techniques (Ethernet operation, MAC, LLC, CSMA/CD)
WORK 8.0: Define the Layers of the OSI model
WORK 15.0: Configure routing protocols

SkillsUSA Committee Identified Academic Skills:
Math Skills: Binary number systems
Language Arts Skills:
- Organize and synthesize information for use in written and oral presentations
- Demonstrate knowledge of appropriate reference materials
- Use print, electronic databases and online resources to access information in books
and articles
Implement Innovations
1.C.1 Act on creative ideas to make a tangible and useful contribution to the field in which the innovation will occur
Works Independently
8.B.1 Monitor, define, prioritize and complete tasks without direct oversight

Standards and Competencies

Standard: General and Computer Safety

- Understand and apply concepts related to computers and electronics
- Identify general safety hazards and correctly report them
- Identify and resolve electrical equipment safety hazards.
- Describe symptoms of and treatment for electrical shock, burns.
- React safely during an emergency by quickly following procedures and verbal instructions
- Adhere to established safety & security policies/procedures (e.g. firewalls, web page policies, internet & student photo policies, etc.)
- Understand and implement general classroom safety regarding: Horse Play, Throwing Items, Safety Glasses, Lifting

Standard: Networking

- Summarize the basics of networking fundamentals, including technologies, devices and protocols
- Compare and contrast the different network types
- Interpret basic networking terminology.
- Differentiate between LANs, MANs and WANs.
- Identify the basic point-to-point network topologies (e.g., star, ring, tree, network, irregular).
- Identify the basic broadcast topologies (e.g., star ring, bus).
- Differentiate between a physical and logical topology.
- Demonstrate knowledge of LAN transmission methods, standards and protocols.

Standard: Network Media and Topologies
- Identify common physical network topologies
- Explain common logical network topologies and their characteristics

Aligned to Washington State Standards

Arts

Communication - Speaking and Listening

Health and Fitness

Language

Mathematics

Reading

CC: Reading Informational Text

4 - Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the cumulative impact of specific word

2 - Determine two or more central ideas of a text and analyze their development over the course of the text, including how they interact and build on one another to provide a complex

3 - Analyze a complex set of ideas or sequence of events and explain how specific individuals, ideas, or events interact and develop over the course of the text.

CC: Reading for Literacy in Science and Technical Subjects

3 - Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks attending to special cases or exceptions

4 - Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9–10

6 - Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, defining the question the author seeks to address.

7 - Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically

10 - By the end of grade 10, read and comprehend science/technical texts in the grades 9–10 text complexity band independently and proficiently

1 - Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the

3 - Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on

4 - Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11–12

6 - Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, identifying important issues that remain unresolved.
7 - Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a

10 - By the end of grade 12, read and comprehend science/technical texts in the grades 11–12 text complexity band independently and proficiently.

Science

Social Studies

Writing

CC: Writing for Literacy in History/Social Studies, Science, and Technical Subjects (9-10)

CC: Writing for Literacy in History/Social Studies, Science, and Technical Subjects (11-12)

21st Century Skills

LEARNING AND INNOVATION

Creativity and Innovation
- [x] Think Creatively
- [ ] Work Creatively with Others
- [x] Implement Innovations

Creative Thinking and Problem Solving
- [ ] Reason Effectively
- [ ] Use Systems Thinking
- [ ] Make Judgements and Decisions
- [x] Solve Problems

Communication and Collaboration
- [ ] Communicate Clearly
- [ ] Collaborate with Others

INFORMATION, MEDIA AND TECHNOLOGY SKILLS

Information Literacy
- [x] Access and Evaluate Information
- [x] Use and Manage Information

Media Literacy
- [ ] Analyze Media
- [ ] Create Media Products

Information, Communications, and Technology (ICT Literacy)
- [x] Apply Technology Effectively

LIFE AND CAREER SKILLS

Flexibility and Adaptability
- [ ] Adapt to Change
- [ ] Be Flexible

Initiative and Self-Direction
- [x] Mange Goals and Time
- [x] Work Independently
- [ ] Be Self-Directed Learners

Social and Cross-Cultural
- [ ] Interact Effectively with Others
- [ ] Work Effectively in Diverse Teams

Productivity and Accountability
- [ ] Manage Projects
- [ ] Produce Results

Leadership and Responsibility
- [ ] Guide and Lead Others
- [x] Be Responsible to Others

Unit 2 CABLES AND CONNECTORS — Hours: 10

Performance Assessment(s):

Testout LabSim Net Pro Unit 2 Exams
Testout LabSim Net Pro Unit 2 Lab Simuilations
Testout LabSim Net Pro Unit 2 Final Assessment
Create and test Cat 5 Ethernet cables

Leadership Alignment:

SkillsUSA Internetworking
WORK 1.0: Explain common networking concepts and terminology
WORK 3.0: Compare and contrast various types of media used for networking
SkillsUSA Committee Identified Academic Skills:
Math Skills: Binary number systems
Language Arts Skills:
- Organize and synthesize information for use in written and oral presentations
- Demonstrate knowledge of appropriate reference materials
- Use print, electronic databases and online resources to access information in books and articles
2.C.5 Reflect critically on learning experiences and processes
8.A.2 Balance tactical (short-term) and strategic (long-term) goals

Standards and Competencies

Standard: Networking
- Categorize network cables and connectors and their implementations
- Interpret basic networking terminology.

Standard: Network Media and Topologies
- Categorize standard cable types and their properties
- Identify common connector types

Standard: Network tools
- Given a scenario, utilize the appropriate hardware tools

Standard WR 4: Problem Solving

Aligned to Washington State Standards

Arts

Communication - Speaking and Listening

Health and Fitness

Language

Mathematics

Reading

Science

Social Studies

Writing

21st Century Skills

LEARNING AND INNOVATION

Creativity and Innovation
- ☐ Think Creatively
- ☐ Work Creatively with Others
- ☐ Implement Innovations

Creative Thinking and Problem Solving
- ☐ Reason Effectively
- ☐ Use Systems Thinking
- ☑ Make Judgements and Decisions
- ☑ Solve Problems

Communication and Collaboration
- ☐ Communicate Clearly
- ☑ Collaborate with Others

INFORMATION, MEDIA AND TECHNOLOGY SKILLS

Information Literacy
- ☐ Access and Evaluate Information
- ☐ Use and Manage Information

Media Literacy
- ☐ Analyze Media
- ☑ Create Media Products

Information, Communications, and Technology (ICT Literacy)
- ☑ Apply Technology Effectively

LIFE AND CAREER SKILLS

Flexibility and Adaptability
- ☐ Adapt to Change
- ☐ Be Flexible

Initiative and Self-Direction
- ☑ Mange Goals and Time
- ☑ Work Independently
- ☑ Be Self-Directed Learners

Social and Cross-Cultural
- ☑ Interact Effectively with Others
- ☐ Work Effectively in Diverse Teams

Productivity and Accountability
- ☐ Manage Projects
- ☐ Produce Results

Leadership and Responsibility
- ☐ Guide and Lead Others
- ☑ Be Responsible to Others

Unit 3 NETWORKING DEVICES — Hours: 25

Performance Assessment(s):

Testout LabSim Net Pro Unit 3 Exams
Testout LabSim Net Pro Unit 3 Lab Simuilations
Testout LabSim Net Pro Unit 3 Final Assessment

Leadership Alignment:

SkillsUSA Internetworking
WORK 1.0: Explain common networking concepts and terminology
WORK 2.0: Install and troubleshoot basic hardware and software required to communicate in a simple network and test for connectivity

SkillsUSA Committee Identified Academic Skills:
Language Arts Skills:
- Students use spoken, written and visual language to accomplish their own purposes
(e.g., for learning, enjoyment, persuasion and the exchange of information)
2.D.2 Identify and ask significant questions that clarify various points of view and lead to better solutions
Works Independently
8.B.1 Monitor, define, prioritize and complete tasks without direct oversight

Standards and Competencies

Standard: Networking
- Interpret basic networking terminology.
- Demonstrate knowledge of the characteristics and uses of network components (e.g., hub, switches, routers, firewall).

Standard: Network Devices
- Install, configure and differentiate between common network devices
- Identify the functions of specialized network devices

Standard: Network tools
- Given a scenario, utilize the appropriate hardware tools

Aligned to Washington State Standards

Arts

Communication - Speaking and Listening

Health and Fitness

Language

Mathematics

Reading

CC: Reading Informational Text

CC: Reading for Literacy in Science and Technical Subjects

Science

Social Studies

Writing

CC: Writing for Literacy in History/Social Studies, Science, and Technical Subjects (9-10)

CC: Writing for Literacy in History/Social Studies, Science, and Technical Subjects (11-12)

21st Century Skills

LEARNING AND INNOVATION

Creativity and Innovation
- ☐ Think Creatively
- ☐ Work Creatively with Others
- ☑ Implement Innovations

Creative Thinking and Problem Solving
- ☐ Reason Effectively
- ☐ Use Systems Thinking
- ☐ Make Judgements and Decisions
- ☑ Solve Problems

Communication and Collaboration
- ☐ Communicate Clearly
- ☐ Collaborate with Others

INFORMATION, MEDIA AND TECHNOLOGY SKILLS

Information Literacy
- ☑ Access and Evaluate Information
- ☑ Use and Manage Information

Media Literacy
- ☐ Analyze Media
- ☐ Create Media Products

Information, Communications, and Technology (ICT Literacy)
- ☑ Apply Technology Effectively

LIFE AND CAREER SKILLS

Flexibility and Adaptability
- ☐ Adapt to Change
- ☐ Be Flexible

Initiative and Self-Direction
- ☑ Mange Goals and Time
- ☑ Work Independently
- ☐ Be Self-Directed Learners

Social and Cross-Cultural
- ☐ Interact Effectively with Others
- ☐ Work Effectively in Diverse Teams

Productivity and Accountability
- ☑ Manage Projects
- ☐ Produce Results

Leadership and Responsibility
- ☐ Guide and Lead Others
- ☑ Be Responsible to Others

Unit 4 ETHERNET — Hours: 20

Performance Assessment(s):

Testout LabSim Net Pro Unit 4 Exams
Testout LabSim Net Pro Unit 4Lab Simuilations
Testout LabSim Net Pro Unit 4Final Assessment

Leadership Alignment:

SkillsUSA Internetworking
WORK 1.0: Explain common networking concepts and terminology
WORK 2.0: Install and troubleshoot basic hardware and software required to communicate in a simple network and test for connectivity

SkillsUSA Committee Identified Academic Skills:
Language Arts Skills:
- Students use spoken, written and visual language to accomplish their own purposes
(e.g., for learning, enjoyment, persuasion and the exchange of information)
Solve Problems
2.D.1 Solve different kinds of non-familiar problems in both conventional and innovative ways
Use and Manage Information
4.B.1 Use information accurately and creatively for the issue or problem at hand

Standards and Competencies

Standard: Networking

Standard: Network Media and Topologies

Standard: Network tools

- Given a scenario, utilize the appropriate hardware tools

Aligned to Washington State Standards

Arts

Communication - Speaking and Listening

Health and Fitness

Language

Mathematics

Reading

CC: Reading Informational Text

CC: Reading for Literacy in Science and Technical Subjects

Science

Social Studies

Writing

CC: Writing for Literacy in History/Social Studies, Science, and Technical Subjects (9-10)

CC: Writing for Literacy in History/Social Studies, Science, and Technical Subjects (11-12)

21st Century Skills

LEARNING AND INNOVATION

Creativity and Innovation
- [x] Think Creatively
- [ ] Work Creatively with Others
- [x] Implement Innovations

Creative Thinking and Problem Solving
- [ ] Reason Effectively
- [ ] Use Systems Thinking
- [ ] Make Judgements and Decisions
- [x] Solve Problems

Communication and Collaboration
- [ ] Communicate Clearly
- [ ] Collaborate with Others

INFORMATION, MEDIA AND TECHNOLOGY SKILLS

Information Literacy
- [x] Access and Evaluate Information
- [x] Use and Manage Information

Media Literacy
- [ ] Analyze Media
- [ ] Create Media Products

Information, Communications, and Technology (ICT Literacy)
- [x] Apply Technology Effectively

LIFE AND CAREER SKILLS

Flexibility and Adaptability
- [ ] Adapt to Change
- [ ] Be Flexible

Initiative and Self-Direction
- [x] Mange Goals and Time
- [x] Work Independently
- [ ] Be Self-Directed Learners

Social and Cross-Cultural
- [ ] Interact Effectively with Others
- [ ] Work Effectively in Diverse Teams

Productivity and Accountability
- [ ] Manage Projects
- [ ] Produce Results

Leadership and Responsibility
- [ ] Guide and Lead Others
- [x] Be Responsible to Others

Unit 5 IP CONFIGURATION Hours: 15

Performance Assessment(s):

Testout LabSim Net Pro Unit 5 Exams
Testout LabSim Net Pro Unit 5 Lab Simuilations
Testout LabSim Net Pro Unit 5 Final Assessment

Leadership Alignment:

SkillsUSA Internetworking
WORK 1.0: Explain common networking concepts and terminology
WORK 6.0: Implement and correct problems associated with basic IP addressing and sub netting schemes
WORK 8.0: Define the Layers of the OSI model
SkillsUSA Committee Identified Academic Skills:
Language Arts Skills:
- Students use spoken, written and visual language to accomplish their own purposes
(e.g., for learning, enjoyment, persuasion and the exchange of information)
1.A.3 Elaborate, refine, analyze and evaluate their own ideas in order to improve and maximize creative efforts
4.A.2 Evaluate information critically and competently

Standards and Competencies

Standard: Networking

- Summarize the basics of networking fundamentals, including technologies, devices and protocols

Standard: Network Devices

Standard WR 3: Employability and Entrepreneurship

Aligned to Washington State Standards

Arts

Communication - Speaking and Listening

Health and Fitness

Language

Mathematics

Reading

CC: Reading Informational Text

CC: Reading for Literacy in Science and Technical Subjects

Science

Social Studies

Writing

CC: Writing for Literacy in History/Social Studies, Science, and Technical Subjects (9-10)

CC: Writing for Literacy in History/Social Studies, Science, and Technical Subjects (11-12)

21st Century Skills

LEARNING AND INNOVATION

Creativity and Innovation
- [x] Think Creatively
- [ ] Work Creatively with Others
- [x] Implement Innovations

Creative Thinking and Problem Solving
- [ ] Reason Effectively
- [ ] Use Systems Thinking
- [ ] Make Judgements and Decisions
- [x] Solve Problems

Communication and Collaboration
- [ ] Communicate Clearly
- [ ] Collaborate with Others

INFORMATION, MEDIA AND TECHNOLOGY SKILLS

Information Literacy
- [x] Access and Evaluate Information
- [x] Use and Manage Information

Media Literacy
- [ ] Analyze Media
- [ ] Create Media Products

Information, Communications, and Technology (ICT Literacy)
- [x] Apply Technology Effectively

LIFE AND CAREER SKILLS

Flexibility and Adaptability
- [ ] Adapt to Change
- [ ] Be Flexible

Initiative and Self-Direction
- [x] Mange Goals and Time
- [x] Work Independently
- [ ] Be Self-Directed Learners

Social and Cross-Cultural
- [ ] Interact Effectively with Others
- [ ] Work Effectively in Diverse Teams

Productivity and Accountability
- [ ] Manage Projects
- [ ] Produce Results

Leadership and Responsibility
- [ ] Guide and Lead Others
- [x] Be Responsible to Others

Unit 6 WIRELESS NETWORKING — Hours: 10

Performance Assessment(s):

Testout LabSim Net Pro Unit 6 Exams
Testout LabSim Net Pro Unit 6 Lab Simuilations
Testout LabSim Net Pro Unit 6 Final Assessment

Leadership Alignment:

SkillsUSA Internetworking
WORK 1.0: Explain common networking concepts and terminology
WORK 2.0: Install and troubleshoot basic hardware and software required to communicate in a simple network and test for connectivity
WORK 3.0: Compare and contrast various types of media used for networking
WORK 7.0: Describe fundamental concepts of switching and routing
WORK 25.0: Understand how switching operates switching concepts

SkillsUSA Committee Identified Academic Skills:
Language Arts Skills:
- Students use spoken, written and visual language to accomplish their own purposes
(e.g., for learning, enjoyment, persuasion and the exchange of information)
6.A.2 Use digital technologies (computers, PDAs, media players, GPS, etc.), communication/networking tools and social networks appropriately to access, manage, integrate, evaluate and create information to successfully function in a knowledge economy
8.A.3 Utilize time and manage workload efficiently

Standards and Competencies

Standard: Networking
Standard: Network Devices
Standard WR 2: Personal Success
Standard WR 4: Problem Solving

Aligned to Washington State Standards

Arts

Communication - Speaking and Listening

Health and Fitness

Language

Mathematics

Reading

CC: Reading Informational Text

CC: Reading for Literacy in Science and Technical Subjects

Science

Social Studies

Writing

CC: Writing for Literacy in History/Social Studies, Science, and Technical Subjects (9-10)

CC: Writing for Literacy in History/Social Studies, Science, and Technical Subjects (11-12)

21st Century Skills

LEARNING AND INNOVATION

Creativity and Innovation
- [x] Think Creatively
- [ ] Work Creatively with Others
- [x] Implement Innovations

Creative Thinking and Problem Solving
- [ ] Reason Effectively
- [ ] Use Systems Thinking
- [ ] Make Judgements and Decisions
- [x] Solve Problems

Communication and Collaboration
- [ ] Communicate Clearly
- [ ] Collaborate with Others

INFORMATION, MEDIA AND TECHNOLOGY SKILLS

Information Literacy
- [x] Access and Evaluate Information
- [x] Use and Manage Information

Media Literacy
- [ ] Analyze Media
- [ ] Create Media Products

Information, Communications, and Technology (ICT Literacy)
- [x] Apply Technology Effectively

LIFE AND CAREER SKILLS

Flexibility and Adaptability
- [ ] Adapt to Change
- [ ] Be Flexible

Initiative and Self-Direction
- [x] Mange Goals and Time
- [x] Work Independently
- [ ] Be Self-Directed Learners

Social and Cross-Cultural
- [ ] Interact Effectively with Others
- [ ] Work Effectively in Diverse Teams

Productivity and Accountability
- [ ] Manage Projects
- [ ] Produce Results

Leadership and Responsibility
- [ ] Guide and Lead Others
- [x] Be Responsible to Others