Vocational Training

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COURSE NUMBER 761

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Purpose: Vocational training is a year long hands on course. It is specifically geared for students who will be entering a trade related career right after High School.

High Point Regional High School's curriculum and instruction are aligned to the State's Core Curriculum Content Standards and address the elimination of discrimination by narrowing the achievement gap, by providing equity in educational programs and by providing opportunities for students to interact positively with others regardless of race, creed, color, national origin, ancestry, age, marital status, affectional or sexual orientation, gender, religion, disability or socioeconomic status.

Method of Instruction:
The curriculum is addressed through a series of teacher guided lessons and demonstrations. The instructor will seek to engage students in assignments meant to reinforce concepts critical to efficiency in vocational trades.

General Objectives:
At the conclusion of this curriculum, students will be able to:

- Prepare technical drawings in accordance to formal technical drawing rules
- Define and practice safety rules for various hand and power tools.
- Define components of residential and commercial structures.
- Define components of residential wiring systems.
- Define components of residential plumbing systems.
- Apply critical thinking and manipulative skills.
- Assemble and make adjustments to a model.
- Solve a technological problem.

Standards Targeted Throughout The Curriculum

New Jersey Core Curriculum Content Standards and Cumulative Progress Indicators

- Understand and use the concept of significant digits. (NJ CCCS 4.2 ,D,#1)
- Choose appropriate tools and techniques to achieve the specified degree of precision and error needed in a situation. (NJ CCCS 4.2 ,D,#2)
- Create and use representations to organize, record, and communicate mathematical ideas. (NJ CCCS 4.5,E,#1)
- Apply mathematics in practical situations and in other disciplines. (NJ CCCS 4.5,C,#4)
- Learn mathematics through problem solving, inquiry, and discovery. (NJ CCCS 4.5,A,#1)
- Assess personal qualities that are needed to obtain and retain a job related to career clusters. (NJ CCCS 9.1,B,#1)
- Explore and reflect on ideas while hearing and focusing attentively. (NJ CCCS 3.4,A,#1)
- Listen to, summarize, make judgments, and evaluate. (NJ CCCS, 3.4,B,#1)

Standards of Technological Literacy from the Technology for All Americans Project (TFAA)

- In order to select, use, and understand information and communication technologies, students should learn that information and communication systems can be used to inform, persuade, entertain, control, manage, and educate. (TFAA #17, N)
- In order to select, use, and understand information and communication technologies, students should learn that information and communication systems allow information to be transferred from human to human, human to machine, machine to human, and machine to machine. (TFAA #17, M)
- In order to select, use, and understand information and communication technologies, students should learn that there are many ways to communicate information, such as graphic and electronic means. (TFAA #17, P)
- In order to select, use, and understand information and communication technologies, students should learn that technological knowledge and processes are communicated using symbols, measurement, conventions, icons, graphic images, and languages that incorporate a variety of visual, auditory, and tactile stimuli. (TFAA #17, Q)
- In order to select, use, and understand information and communication technologies, students should learn that intermodalism is the use of different modes of transportation, such as highways, railways, and waterways as part of an interconnected system that can move people and goods from one mode to another. (TFAA#18, K)
- In order to select, use, and understand construction technologies, students should learn structures are constructed using a variety of processes and procedures. (TFAA#20, K)
- In order to select, use, and understand construction technologies, students should learn the design of structures includes a number of requirements. (TFAA#20, L)

- In order to select, use, and understand construction technologies, students should learn structures can include prefabricated materials. (TFAA#20, N)
- In order to select, use, and understand construction technologies, students should learn structures require maintenance, alteration, or renovation periodically to improve them or alter their intended use. (TFAA#20, M)

New Jersey Core Curriculum Content Standards for Technological Literacy

- Identify new technologies, and other organizational tools to use in personal, home, and/or work environments for information retrieval, entry, and presentation. (NJ CCCS 8.1,B,#7)
- Create and manipulate information independently and/or collaboratively to solve problems, to design and to develop products. (NJ CCCS 8.1,B,#10)
- Analyze the factors that influence design of products, systems and environments. (NJ CCCS 8.2,C,#2)

- Compare and contrast the effectiveness of various products, systems, and environments associated with technological activities in energy, transportation, manufacturing, and information and communication. (NJ CCCS 8.2,C,#3)

Unit 1- Course Introduction- Time- 5 days

Goal:

- For students to realize the role and importance of manipulative and critical thinking skills necessary to a variety of careers.

Behavioral Objectives:

Students will be able to:

- Define the terms: graphic communication, spoken language, writing, technical graphics, and technical drawing.
- Identify occupations that require the ability to read and understand graphic information such as drawings, charts, and diagrams.
- Evaluate the importance of manipulative and critical thinking skills to careers in the trades industry.
- Identify common tools and practices for the careers related to the trades industry.

Assignments:

- Word or Symbol
- Different drawing styles

Audio-Visual Needs:

- Television/ VCR

Computer Needs/Use:

- Teacher workstation

Assessment Method:

- Teacher observation
- Quiz
- Presentation

Standards Targeted via this unit:

- NJCCCS 9.1, A#1
- NJCCCS 9.1, B#1
- NJCCCS 4.2,D,#1
- TFAA#17, P

Unit 2- Residential Construction- Time- 25 days

Goal:

- For students to realize the components of residential construction.
- For students to realize the role of codes in residential and commercial construction.

Behavioral Objectives:

Students will be able to:

- Define the terms: stud, collar tie, rafter, joist, sheathing, insulation, moisture barrier, roof, subfloor, finished floor.

- Identify occupations that require the ability to read and understand graphic information such as drawings, charts, and diagrams.

Assignments:

- Build a stud wall

Audio-Visual Needs:

- Television/ VCR

Computer Needs/Use:

- None

Assessment Method:

- Teacher observation
- Quiz
- Presentation

Standards Targeted via this unit:

- TFAA#20, M
- TFAA#20, N
- TFAA#20, L
- TFAA#20, K
- CCCS 3.4, A, #1

Unit 3- Residential Wiring Systems- Time- 25 days

Goal:

- For students to realize the components and practices of residential electrical wiring.

Behavioral Objectives:

Students will be able to:

- Define terms common to basic electrical theory.
- Identify occupations that require the ability to read and understand graphic information such as drawings, charts, and diagrams.
- Demonstrate electrical safety.
- Demonstrate components of residential house wiring.
- Apply wiring codes to a model wall section.

Assignments:

- Wire a residential stud wall with a switch, outlet and electrical boxes.

Audio-Visual Needs:

- Television/ VCR

Computer Needs/Use:

- Internet Research

Assessment Method:

- Teacher observation
- Quiz
- Presentation

Standards Targeted via this unit:

- NJ CCCS 8.1, B, #10
- NJ CCCS 8.2, C, #3

- TFAA #17, Q

Unit 4- Residential Plumbing Systems- Time- 25 days

Goal:
- For students to realize the components and practices of residential plumbing.

Behavioral Objectives:
Students will be able to:
- Define terms common to basic plumbing theory.
- Identify occupations that require the ability to read and understand graphic information such as drawings, charts, and diagrams.
- Demonstrate plumbing safety.
- Apply plumbing codes to a model wall section.

Assignments:
- Cut, sweat and assemble copper tubing for a model wall section.

Audio-Visual Needs:
- Television/ VCR

Computer Needs/Use:
- Teacher workstation

Assessment Method:
- Teacher observation
- Quiz
- Presentation

Standards Targeted via this unit:
- TFAA#217, Q
- NJ CCCS 4.2, A, #3

Unit 5- General Woodworking- Time- 25 days

Goal:
- For students to realize the tools and procedures common to finish carpentry and general woodworking.

Behavioral Objectives:
Students will be able to:
- Define and identify the following tools: file, flat screwdriver, Phillips screwdriver, awl, plane, try square, combination square,
- Define and identify the following power machines: scroll saw, band saw, radial arm saw, belt sander, drill press.
- Define safe practices for using power tools and hand tools.
- Identify occupations that require the ability to read and understand graphic information such as drawings, charts, and diagrams.

Assignments:
- Hand tool identification
- Hand tool safety quizzes
- Power tool safety quizzes

Audio-Visual Needs:

- Television/ VCR

Computer Needs/Use:

- None

Assessment Method:

- Teacher observation
- Quiz
- Presentation

Standards Targeted via this unit:

- NJ CCCS 4.5,C, #4
- NJ CCCS 4.2, P, #1
- NJ CCCS 8.2, C, #3

Unit 6- Flight- Time- 25 days

Goal:

- For students to realize forces and aerodynamics as related to flight.

Behavioral Objectives:

Students will be able to:

- Define the terms: airfoil, lift drag, wings, rudder, turbulence.
- Identify occupations that require the ability to read and understand graphic information such as drawings, charts, and diagrams.
- Assemble a model.

Assignments:

- Build a model

Audio-Visual Needs:

- Television/ VCR

Computer Needs/Use:

- Teacher workstation

Assessment Method:

- Teacher observation
- Quiz
- Presentation

Standards Targeted via this unit:

- NJ CCCS 8.2, C, #3
- NJ CCCS 8.1, B, #10
- TFAA #18, K

Unit 7- Drafting- 25 days

Goal:

- For students to learn to communicate through a formal system of drawing symbols, rules and drawing styles.

Behavioral Objectives:

Students will be able to:

- Define the terms: graphic communication, spoken language, writing, technical graphics, and technical drawing.
- Identify occupations that require the ability to read and understand graphic information such as drawings, charts, and diagrams.
- Evaluate the importance of technical graphics to a real world problem.
- Explain the importance of spatial cognition to people in today's world.
- Classify drawings and models into similar categories.

Assignments:

- Orthographic drawing rules
- Orthographic drawing

Audio-Visual Needs:

- Television/ VCR

Computer Needs/Use:

- Teacher workstation

Assessment Method:

- Teacher observation
- Quiz
- Presentation

Standards Targeted via this unit:

- TFAA #17, Q
- TFAA #17, P
- TFAA #17, N

Assessment:
The assessment of student progress in the objectives cited on the previous pages will be primarily by, but not limited to, the following criteria:

Drawings	40%
Class Participation	40%
Tests/quizzes	20%

MIDTERM AND FINAL LAST UPDATED 7/2008

Homework, Extra Credit Policy:
Homework will not be accepted late. Extra credit will be given from time to time for extra effort or successful mastery of the behavioral objectives.

Special Course Policies:
A typical week in this course includes teacher guided instruction and demonstration. Students will also given time to complete assignments alone or in groups.

Periodic evaluation of objectives and this curriculum guide:
Rewrite in 2009, Administration request.

Lab/ Classroom set up and special needs:
The recommended maximum class size is 15 students.

- Drafting tools
- Drafting supplies
- Overhead projector
- Printer
- Woodworking tools and machines
- Plumbing tools and supplies

Supplementary Readings and Instructors Bibliography:

- Bertoline, Gary and Eric Wiebe. Technical Graphics Communications. (McGraw-Hill, Burr Ridge, Illinois.) 2003. ISBN 0-07-119925-x.
- Walker, John. Exploring Drafting. (Goodheart-Wilcox, Tinley Park, Illinois.) 2003. ISBN 1-59070-178-x.

Web pages that support learning:

- http://usa.autodesk.com
- http://www.adda.org/
- http://www.theplumber.com/
- http://www.hometips.com/hyhw/structure/structure1.html