

SYLLABUS
HVAC TECHNICIAN
RALPH R. WILLIS CAREER AND TECHNICAL CENTER

INSTRUCTOR: William Wilcox

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OFFICE HOURS: 11:30 a.m. – 12:00 p.m. | 2:30 p.m. – 3:00 p.m.

COURSES:

- 1752 HVAC I
- 1753 HVAC II
- 1754 HVAC III
- 1755 HVAC IV

ELECTIVE COURSES:

- 1602 Air Conditioning Applications
- 1607 AC Heat Systems
- 1608 Commercial Air Conditioning

COURSE PHILOSOPHY

The HVAC Technician Department's philosophy is to provide and educate students in as many aspects of the heating and cooling industry as possible and to provide them the opportunities to become skilled, successful citizens of the global community. The instructor is committed in providing a safe, industry-standard learning environment that promotes commitment, teamwork, communication skills, strong work ethic and responsibility. Students are encouraged to pursue work in a related field, continuous education and industry related training upon successful graduation from the department. During the senior year SkillsUSA competitions and championships reward students for excellence and keep training relevant to employers' needs. An important part of the program is the PORTFOLIO. It provides students an experience that actively engages students in reflective exploration of self and to help students to make a smooth transition from high school to their post high school experience with resume development and interview skills.

The goal of this program is not only to produce skilled HVAC technicians who are ready to complete the 608 EPA Test, ESCO, ICE, NCCER and other licensures, but to give students the ability to adapt their talents to the ever-changing technologies in the job market.

PROGRAM OF STUDY DESCRIPTION:

The HVAC Technician Program of Study focuses on careers that will build a knowledge base and technical skills in all aspects of the Heating, Ventilation, and Air Conditioning industry. Students will have the opportunity to earn NCCER certification for each skill set mastered and be exposed to skills to develop positive work ethics.

COURSE DESCRIPTIONS:

○ **1752 HVAC I**

This course introduces the student to the knowledge base and technical skills of the HVAC industry. HVAC I begins with the NCCER Core curriculum which is a prerequisite to all Level I completions. The students will complete modules in Basic Safety; Introduction to Construction Math; Introduction to Hand Tools; Introduction to Power Tools; Introduction to Construction Drawings; Basic Rigging; Basic Communication Skills; Basic Employability Skills; and Introduction to Materials Handling. Students will then begin developing skill sets related to the fundamentals of HVAC such as Introduction to HVAC; and Trade Mathematics. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organization, WV SkillsUSA. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools, and skill sets.

○ **1753 HVAC II**

HVAC II will continue to build student skill sets in areas such as Copper and Plastic Piping Practices; Soldering and Brazing; Ferrous Metal Piping Practices; Basic Electricity; Introduction to Cooling; Introduction to Heating; and Air Distribution Systems. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organization, WV SkillsUSA. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools, and skill sets.

○ **1754 HVAC III**

HVAC III will continue to build student skill sets in areas of Commercial Airside Systems; Chimneys, Vents, and Flues; Introduction to the Hydronic Systems; Air Quality Equipment; Leak Detection, Evacuation, Recovery, and Charging; Alternating Current; Basic Electronics; and Introduction to Control Circuit Troubleshooting. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organization, WV SkillsUSA. All West Virginia teachers are responsible for classroom instruction that integrates

learning skills, technology tools, and skill sets.

- **1755 HVAC IV**

HVAC IV will continue to build student skill sets in areas of Troubleshooting Gas Heating; Troubleshooting Cooling; Heat Pumps; Basic Installation and Maintenance Practices; Sheet Metal Duct Systems; and Fiberglass and Flexible Duct Systems. Students utilize problem-solving techniques and participate in hands-on activities to develop an understanding of course concepts. Teachers should provide each student with real world learning opportunities and instruction. Students are encouraged to become active members of the student organization, WV SkillsUSA. All West Virginia teachers are responsible for classroom instruction that integrates learning skills, technology tools, and skill sets.

- **1602 AIR CONDITIONING APPLICATIONS**

This course introduces the student to the knowledge base and technical skills for concepts in Air Conditioning Applications. Areas of study include mathematical concepts, technical writing skills, technical reading comprehension, career opportunities, personal and equipment safety, fabrication operations and basic compression refrigeration. Emphasis will be placed on career exploration, job seeking skills and personal and professional ethics. Safety instruction is integrated into all activities. Students will utilize problem-solving techniques and participate in laboratory activities to develop an understanding of course concepts and teachers should provide each student with real world learning opportunities and instruction related to air conditioning occupations.

- **1607 AC HEAT SYSTEMS**

This course introduces the student to the knowledge base and technical skills for concepts in Heating Systems. Areas of study include mathematical concepts, technical writing skills, technical reading comprehension, career opportunities and personal and equipment safety. Emphasis will be placed on career exploration, job seeking skills and personal and professional ethics. Safety instruction is integrated into all activities. Students will utilize problem-solving techniques and participate in laboratory activities to develop an understanding of course concepts, and teachers should provide each student with real world learning opportunities and instruction.

- **1608 COMMERCIAL AIR CONDITIONING**

This course introduces the student to the knowledge base and technical skills for all courses in the Commercial Air Conditioning Program of Study. Areas of study include mathematical concepts, technical writing skills, technical reading comprehension, career opportunities, personal and equipment safety, fabrication operations and compression refrigeration. Emphasis will be placed on career exploration, job seeking skills and personal and professional ethics. Safety instruction is integrated into all activities. Students will utilize problem-solving

techniques and participate in laboratory activities to develop an understanding of course concepts, and teachers should provide each student with real world learning opportunities and instruction related to air conditioning occupations.

COURSE ASSESSMENT PLAN

Students are assessed in a variety of ways. Each student is assessed on attendance and participation on a daily basis. There is also a weekly assessment based on quantity of work, quality of work, effort and problem solving ability. (Please see grading criteria). WIN testing is a computer-based program that measures basic skills for the workplace and is used in the current job market and the WV Workforce Investment program. The Portfolio Project product is graded for its adherence to the rubric as well as for the quality of workmanship. The project is graded by both the instructor and business representatives from the field. Report cards are issued quarterly and serve as a guideline for students and parents to measure achievement. Parents are encouraged to contact instructors to ensure a continuing participation in student progress. Parents can visit the Ralph R. Willis website found on the Logan County website and locate more information and instructor contact info. Progress reports are issued three times a year in the middle of each quarter to provide students and parents a timely update on progress and achievement. Live Grades is a useful tool for both parents and students to monitor progress. Please contact administration if you have questions about accessing Live Grades.

GRADING SCALE

100 – 90 = A

89 – 80 = B

79 – 70 = C

69 – 60 = D

59 – 0 = F

GRADING POLICY

Students will be graded on the following: weekly performance and participation, competency of skill, quantity of work, quality of work, and WIN testing, portfolio.

TIMELINE FOR PROGRAM ACTIVITIES

GRADE 11-12

- First Quarter: Safety and Simulated Workplace Introductions and Testing; Work projects as appropriate; Portfolio Development and WIN for Seniors. Approved projects may begin with teaching and mentoring of exploratory students. NCCER Core development.
- Second Quarter: Skills USA, Portfolio Development and Senior WIN Testing. Projects will follow Skill Set Checklists provided by the WVDE. NCCER Core Development.
- Third Quarter: Portfolio Development; various projects and testing according to Skill Sets. Junior WIN testing. NCCER Core Development.
- Fourth Quarter: Senior Portfolio Completion. Junior Portfolio Development. Skill Set Checklists from WVDE to ensure following standards and guidelines. Industry standard

testing for Seniors. Junior WIN Testing. NCCER Core Development and testing evaluations.

SKILL SETS LINKS

All skill set links can be found under the Architecture and Construction Links at the WVDE. Click on Secondary Programs of Study. Follow the blue links to all information.

<http://careertech.k12.wv.us/OCTIWebsiteRevisions/16Clusters/ArchitectureAndConstructionMainPage.html>

A hard copy of this information is included following this syllabus. However for individual course links. Please see the page above.