



Attitude – Respect – Responsibility

HVAC

2022-2023 Syllabus

Building Location: Industrial Arts Building

8140 Auburn Road,

Concord Twp., Ohio

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Welcome

HVACR is a \$200-billion-a-year U.S. industry, and second only to transportation as the largest consumer of energy. The HVACR industry has thousands of Green Collar jobs that need someone right here in the United States to perform them. The HVACR industry is part of a career cluster that is a top ten (10) industry for employment. Those entering the field will be working on complex systems that require a unique combination of hands-on skill and problem-solving intelligence.

There is an immediate need for qualified service technicians as new buildings are being built and older buildings require more service and maintenance. Developing areas of the field, such as indoor air quality and energy efficiency, means a need for more skilled technicians. (www.hvacexcellence.com)

Auburn Career Center's Mission

Auburn Career Center provides an innovative career and technical education that empowers all learners to excel in the emerging workplace and enrich their community.

Auburn Career Center's Core Values

We believe that:

- People are personally responsible for their choices and actions
- Treating people with dignity and respect will enhance learning
- Attitude and goals drive achievement
- All people can learn
- All people can make positive contributions
- Change is exciting and essential for growth

Course Information/ Contact Information

Instructor: Mr. Wayne Reed

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Course Schedule

First Year Schedule: 8:15am to 10:53am

Second Year Schedule: 11:00am to 2:28pm

Course Credits:

Auburn Career Center provides an extended curriculum for our eleven participating school districts. Students attending Auburn Career Center may earn multiple elective and academic credits each year. Following successful completion, these credits are certified by the high school in which the student is enrolled. High school students can also earn several college credits while attending Auburn Career Center.

Course Materials

Class materials:

- Spiral bound notebook
- 2 GB (minimum) Flash drive
- Pencils
- Pens
- 1 box of Kleenex with student's name on it
- 1 box of Band-Aids with student's name on it
- Uniform: \$50 - \$58 (two shirts)
- Class fee \$25

Total approximate cost \$130

All fees are due by October 31, 2022. Fees will be waived for students who qualify for free meals. Accounts will be adjusted after the approval of free/reduced lunch applications.

Program Scope:

Students will receive web access training in class. Student grades are available online to parents. Videos and more are on Blackboard.

ELECTRICITY

- Use basic electrical hand tools
- Proper use of electrical meter and testing equipment
- Make basic electrical connections
- Make continuity tests
- Measure voltage
- Measure current
- Measure resistance
- Wire low voltage control system
- Make various electrical connections
- Wire and test single-phase transformers

ELECTRIC HEATING SYSTEMS

- Electrical safety procedures
- Electric heat equipment
- Electric heat components
- Electric heat installation
- Electric heat start-up
- Electric heat Btuh heat calculation
- Electric heat adjustments

GAS HEATING SYSTEMS

- Gas heating safety procedures
- Gas heating equipment
- Gas heating components
- Gas heating installation
- Gas heating start-up
- Gas heating system adjustments

OIL HEATING SYSTEMS

- Oil heating safety procedures
- Oil heating equipment
- Oil heating components
- Oil heating installation
- Oil heating start-up
- Oil heating system adjustments

HYDRONIC HEATING SYSTEMS

- Hydronic heating safety procedures
- Hydronic heating equipment
- Hydronic heating components
- Hydronic heating installation
- Hydronic heating start-up
- Hydronic heating system adjustments

AIR DISTRIBUTION SYSTEMS

- Air distribution safety and handling procedures
- Air distribution equipment
- Air distribution components
- Air distribution installation
- Air distribution system adjustments

AIR CONDITIONING SYSTEMS

- Refrigerant safety and handling procedures
- Air conditioning equipment
- Air conditioning components
- Air conditioning installation
- Air conditioning start-up
- Air conditioning system adjustments

HEAT PUMP SYSTEMS

- Refrigerant safety and handling procedures
- Heat pump components
- Air to air and geothermal heat pump systems
- Heat pump installation
- Heat pump start-up
- Heat pump system adjustments

REFRIGERATION SYSTEMS

- Refrigerant safety and handling procedures
- Refrigeration equipment
- Refrigeration components
- Refrigeration system installation
- Refrigeration system start-up
- Refrigeration system adjustment

Auburn Certificates

In addition to earning academic credit toward graduation, students may earn the following certificates of achievement from Auburn Career Center:

- Honors
- Distinction
- Merit
- Completion

These certificates are placed in the student's portfolio and awarded at the Completion Ceremony. See APPENDIX for additional information on certificates

Instructional Philosophy

In this program, students will be introduced to theory concepts in a classroom setting and hands-on activities in a lab setting. Students will learn the related theory by listening to lectures, note-taking, homework, research projects and reports, group activities and will be evaluated by quiz and test taking. Academics are a daily part of this course and include writing assignments and reports. Math skills are practiced on a regular basis and employability skills, such as attendance, teamwork etc., are a daily reality. Homework assignments are expected to be turned in on time and are an important method of reinforcement of the current subject matter; they are not just busy work. In the lab, students will learn and practice the hands-on skills needed to gain entry-level employment. Work sheets and work orders are also an important part of the laboratory experience and should be done on an individual basis without copying the answers from another student. The instructor, observing the students performing these activities, will do assessment.

Assessment Plan

Performance Standards: Grades for the course will be based on the following levels of performance:

Grading Scale

Grade

Performance standard

A	90% -100%	Independent Learner — Student is able to research, design, test and apply related theory to successfully construct a project or demonstrate a skill with no assistance from the instructor.
B	80% - 89%	Semi-independent Learner – Student is able to research, design, test and apply related theory to successfully construct a project or demonstrate a skill with little assistance from the Instructor.
C	70% - 79%	Dependent Learner – Student is able to research, design, test and apply related theory to successfully construct a project or demonstrate a skill with moderate assistance from the instructor.
D	60% - 69%	Very Dependent Learner – Student is able to construct a project and/or demonstrate a skill with considerable coaching and assistance from the instructor.
F	0% - 59%	Unsuccessful — Student is unable to complete projects or demonstrate skills even with coaching and assistance of the instructor.

Grading Policies

These are some, but not all, of the Evaluation Criteria for students:

Professionalism, safety, team-work, on task, participation, prepared, punctual, theory, quizzes, tests, homework, personal skills and lab work.

Note: Additional school rules may impact your grade.

Extra Credit work is available in limited amount, not to exceed 5% of total points.

Late work, unless excused, is reduced by 50% on next day.

Grades will be computed weekly and available to the parents on line.

You must maintain a passing grade in Lab & Related classes in order to pass each six and nine week grading periods. An F in either Lab or Related for a nine week grading period will result in a failing grade for both in that grading period. Industry standards require an employee to be punctual, dress in proper attire and be ready to work at the prescribed starting time, in order to perform his or her job. All aspects of the job are required, not just some, in order to expect continuous employment. Continuous education and additional certification is a normal condition of employment and students need to exhibit the traits of an employee who is willing to be part of self-improvement that will benefit both the employee and the employer. A dress code and uniform are part of the program and you must be in proper uniform and attire every day.

Employability Skills

- Investigate career options
- Analyze potential barriers to employment
- Apply decision-making techniques in the workplace
- Apply problem-solving techniques in the work place
- Evaluate the relationship of self-esteem to work ethic
- Analyze the relationship of personal values and goals to work ethic both in and out of the workplace
- Demonstrate work ethic
- Analyze the organizational structure of the workplace
- Maintain positive relations with others
- Analyze opportunities for personal and career growth
- Exhibit characteristics needed for advancement
- Assess the impact of technology in the workplace
- Use a variety of technological applications
- Apply lifelong learning to individual situations
- Adapt to change
- Exercise the rights and responsibilities of citizenship in the workplace
- Cooperate with others in the workplace
- Evaluate leadership styles appropriate for the workplace
- Demonstrate effective teamwork skills
- Utilize effective communication skills
- Evaluate the role of small business in the economy
- Examine considerations of starting a business

Course Assignments, Labs and Projects

Course Outcomes

- Demonstrate safe work practices
- Be able to wire basic series and parallel circuits
- Be able to solder and braze tubing to industry standards
- Read basic schematic diagrams
- Understand direct and alternating current
- Understand Ohms Law
- Maintain 95% or better attendance.
- Maintain a 2.5 or better G.P.A. at Auburn
- Have a current valid driver's license by 2nd quarter senior year
- Be able to use hand tools and testing equipment correctly and safely
- Be able to make duct connections: trunk line and heat runs
- Be able to set registers
- Be able to install various HVACR equipment
- Be able to construct and test pneumatic circuits
- Understand service techniques and troubleshooting procedures
- Be able to complete a work order to industry standards
- Be able to perform start-up procedures on various HVACR equipment
- Understand basic service techniques and practices
- Become proficient in the use of Ohms Law
- Become competent in math and writing skills

HVAC COURSE PROJECTS AND ASSIGNMENTS:

- Participate in team building exercises
- Learn how to properly use electrical testing equipment
- Become competent at silver soldering tubing
- Become competent at brazing tubing
- Become competent at swaging and flaring tubing
- Learn how to properly use electrical testing equipment
- Participate in team building exercises
- Be an active part of improving and maintaining lab
- Construct functional various electrical wiring projects
- Pass EPA Section 608 Certification & OSHA 10hr Training
- Pass final exam
- Construct various tubing and piping projects
- Properly fill out necessary paper work
- Construct functional HVAC models
- Participate in Skills USA activities
- Participate in Internship program in second year
- Create and maintain a resume
- Pass Webexam assessment
- Be on time for all course activities
- Learn to research job opportunities in local news media
- Understand and use current technologies
- Pass at least one additional Certification (HVAC Excellence, NATE, etc.)
- Present an oral report regarding the design and development of a project
- Participate in the installation of the heating and air conditioning system in the Auburn student built home
- Earn NCCER (The National Center for Construction Education and Research) Core Certification
- Earn NCCER (The National Center for Construction Education and Research) HVAC-1 Certification

Course Policies

- Daily grade refers to attending class and participating in class activities. (Not disruptive) There are many elements to this part of your grade.
- Food and beverage are not allowed in the classroom or the lab.
- Some homework will be assigned as a regular part of the course and is expected to be on time.
- Attendance is not an option; it is part of your grade. Employers want people who show up for work every day!!
- Failure to have proper safety equipment will result in loss of points for that day and work may not be available for make-up. Come to class prepared!! Three or more safety violations may result in you being disqualified for these classes. Students must be willing to wear any necessary safety equipment when required and must display a safety attitude at all times for himself and all others around him. Horseplay will not be tolerated at any time.
- Class materials must be brought to class every day. (Pen/pencil, notebook paper, text book, and calculator) No cell phones or other un-needed electronic equipment.
- All students must treat each other, and the instructor, with dignity and respect.

- Each student must do his part to maintain cleanliness and order in the classroom and laboratory.
- All of the school rules apply in this class and lab, and students should be well versed on all of them because they apply to all, not just some students.
- Attendance is important. Please review the school handbook on this subject and make sure you are well versed on the subject. Due to the nature and order of lessons, make up work may not be available.
- Missed quizzes and exams can be made up as soon as possible if the absence is excused, as per the handbook.
- Academic dishonesty is never a good idea. You only cheat yourself, not anyone else.
- Extra help is always available, just ask and some arrangement will be worked out.

Emergency Response

If there is an emergency in the lab or class room, inform the instructor. If the emergency involves the instructor, contact the reception office by using the telephone in the Instructors office.

Pick up the phone and dial “0” for the Reception Office.

Remain calm, explain the situation.

If there is no immediate answer, send someone to the nearest classroom or office and notify an adult of the incident and request additional help by calling 911. *If the victim is conscious, it is best to have them lie still until qualified emergency response personnel arrive on the scene. Do not move a victim unless there is risk of additional immediate danger to them and you. You can cause additional severe injury by unnecessarily moving a victim. There is the possibility of the victim going into a state of physiological shock -- a condition of insufficient blood circulation different from electrical shock -- and so they should be kept as warm and as comfortable as possible.*

Program Apparel

The class uniform is a requirement at Auburn Career Center and is not optional. Our uniform is a collared button up shirt with the student’s trade program monogrammed on the front of the shirt. Students must wear full length pants without holes or tears. A belt **MUST** be worn and pants **MUST** stay where they belong. No shorts will be allowed due to the safety factor when working in our lab and classroom. The school is air conditioned. This is a mandatory uniform and must be on at all times while attending Auburn Career Center (including any academics). A dressing room is available. Hoodies are not allowed under the shirt and undergarments with unacceptable visuals should be left at home. Your shirt shall be buttoned, clean and neat looking at all times. The same goes for your pants.

At the Auburn Career Center, our mission is to guarantee that all students empower themselves, excel in the emerging workplace, and enrich their community. These are not just words, they are your future. Make the best of what this school has to offer **you!** Your attitude, goals, values, and desires are part of the total educational experience. You will be amazed at what you can do!

Classroom Exit – Dismissal

Students are dismissed by the teacher not the bell. Do not line up at the door waiting to leave.

Mobile Technology Policy

It is the policy of the HVAC class that no cell phones or electronic devices are allowed in the HVAC Classroom and/or the HVAC Lab at any time, without prior permission from the instructor. A stand-alone calculator may be used in both the HVAC Classroom and/or the HVAC Lab if desired.

Classroom Rules, Consequences and Rewards

Any Violation may cause you to lose points for that day.

1. No CD, MP3 (or similar) players, pagers, cell phones or similar devices allowed in the classroom.
2. No newspapers or magazines allowed in the classroom or the lab.
3. Do not throw anything at anytime, anywhere.
4. Do not touch the teacher's computers or items on his desk.
5. Do not open windows or rap on them. Do not rap either.
6. No lying down or sitting on workbenches, floor, etc., or sleeping in this class.
7. Do not touch any other student, teacher. Keep your hands to yourself.
8. No horseplay or other physical activity that may be harmful to others or unsafe to class.
9. No dice or other gambling devices are allowed anywhere.
10. Do not go out of the classroom without signing out and the teacher's knowledge.
11. Stay out of the stock rooms and tool crib unless you have the teacher's permission.
12. When you make a mess, you clean it up.
13. No food or drink allowed in the classroom or lab.
14. No "hoodies" - put outerwear in your locker. Class uniform must be worn and kept neat.
15. Computers, if made available to the student, are for school work only, not personal use.
16. Safety equipment should be worn any time conditions warrant it.
17. Come prepared to class with pencils, calculators, and paper. Keep your notebooks current.
18. Your tools are your responsibility.
19. Wear your school ID badge always.
20. Professionalism is expected every hour of every day. Watch your language and gestures.
21. You will lose points for cheating, tampering with others work, and not doing assignments.
22. All other school rules apply to this classroom and some are duplicated here for clarity.
23. Remember the Golden Rule.

Overview of SkillsUSA

SkillsUSA is a partnership of students, teachers and industry working together to ensure America has a skilled workforce. We help each student excel. A nonprofit national education association, SkillsUSA serves middle-school, high-school and college/postsecondary students preparing for careers in trade, technical and skilled service (including health) occupations.

Membership:

SkillsUSA serves more than 333,527 students and instructors annually. This includes 19,019 instructors who join as professional members. Including alumni, Skills USA membership totals over 394,000. SkillsUSA has served nearly 14 million annual members cumulatively since 1965 and is recognized by the U.S. Department of Education and the U.S. Department of Labor as a successful model of employer-driven workforce development.

Mission:

SkillsUSA empowers its members to become world-class workers, leaders and responsible American citizens. We improve the quality of our nation's future skilled workforce through the development of Framework skills that include personal, workplace and technical skills grounded in academics. Our vision is to produce the most highly skilled workforce in the world, providing every member the opportunity for career success.

APPENDIX

AUBURN CERTIFICATES

Auburn Honors Certificate Requirements

- 95% Attendance rate for two years at Auburn (no more than 18 days over two years)
- Earned a 3.5 or higher grade point average in their career tech program over two years
- Safety certification earned in career tech program
- Employability skills earned in career tech program
- Passage of four (4) Ohio Career Technical Competency Analysis exams and/or earning twelve (12) points of Industry Recognized Credentials in the program's Career Field
- Active participation in the program's Career Technical Student Organization
- High school diploma for Seniors

Auburn Distinction Certificate Requirements

- 93% Attendance rate for two years at Auburn (no more than 26 days over two years)
- Earned a 3.0 or higher grade point average in their career tech program over two years
- Safety certification earned in career tech program
- Employability skills earned in career tech program
- Passage of three (3) Ohio Career Technical Competency Analysis exams and/or earning six (6) points of Industry Recognized Credentials in the program's Career Field
- Active participation in the program's Career Technical Student Organization
- High School Diploma for Seniors

Auburn Merit Certificate Requirements

- Earned high school credit for their career tech program over two years
- Safety certification earned in career tech program
- Employability skills earned in career tech program
- Overall passage of Ohio Career Technical Competency Analysis exams and/or earning three (3) points of Industry Recognized Credentials in the program's Career Field

Auburn Completion Certificate Requirements

- Earned high school credit for their career tech program over two years
- Safety certification earned in career tech program
- Employability skills earned in career tech program

BUSINESS PARTNERSHIPS AND STUDENT INTERNSHIPS

The Business Partnership program is an educational opportunity that prepares a student for workforce employment and transition to post-secondary education. During the program, students will apply academic, employability, and technical skills in the workplace. There are three levels students can participate in including:

- Internship
- Mentorship
- Career Field Experience

Students must meet specific criteria in order to participate. Additional information is available in the Auburn Student/Parent Handbook.

CAREER SAFE PROGRAM/OSHA 10-HOUR GENERAL INDUSTRY TRAINING

Description of Program

The OSHA Outreach Training Program for General Industry provides training for students, entry level workers, and employers on the recognition, avoidance, abatement, and prevention of safety and health hazards in workplaces in general industry. The program also provides information regarding workers' rights, employer responsibilities, and how to file a complaint. Through this training, OSHA helps to ensure that workers are more knowledgeable about workplace hazards and their rights. Each module contains a brief assessment, which must be successfully completed before the student can move on to the next module. Once all modules have been viewed and the corresponding assessments are passed, there is a comprehensive final assessment.

Purpose

The purpose of the program is to provide students with basic safety awareness training so they will be able to recognize, avoid and prevent safety and health hazards in the workplace. Young workers develop a safety mindset and acquire marketable skills for a competitive edge.

Credential Earned

Students who successfully complete the CareerSafe OSHA 10-Hour course receive an OSHA 10-Hour General Industry wallet card from the OSHA Training Institute (OTI). As a result, they become more employable, gaining a competitive advantage in the job market.

Student Support Services:

- Special Education Department: Intervention Specialist.
- Student Services: Counseling and Career Development Services.
 - You can make an appointment to see a counselor or recruitment specialist by visiting the Student Services office.

Symplicity

It is with great enthusiasm that I want to announce an opportunity for students to participate in an on-line job match software program. The online job match software, Symplicity, allows students to develop an online profile and to upload a resume and cover letter in order to apply for employment. Once students choose to apply to job opportunities posted by local employers interested in Auburn students, those employers can contact students directly for interviews.

If you would prefer your son or daughter not to participate in our on-line job board or at in school job fairs, please contact the high school office or send in a note.

TECHNOLOGY LITERACY PROGRAM

Description of Course

Technology Literacy is offered to first and second year students at Auburn Career Center. In the first year, the course provides an overview of the basic fundamentals of working with computers. Students will study computer basics such as computer hardware, software, and operating systems. The course introduces basic use of Windows 10 and productivity programs such as Gmail and Microsoft Office 2019 including Word, PowerPoint, and Excel. Students will also begin to use and navigate e-learning environments using Schoology, Internet navigation, and ever-changing technology will also be overviewed within the course.

In the second year, students focus on creating a portfolio that showcases their work over the last two years at Auburn. It includes their resume, three references, a cover letter, a transition plan and samples of the projects they have completed. Also included are the certificates they have earned in their program of study.

Purpose

The purpose of the Technology Literacy course is to provide students with the basic knowledge of working with computers in ways beneficial in their career paths of choice. The course will give them an overview of online communication, email, word processing, spreadsheets, presentation programs, internet navigation, computer security and our technologically evolving world.

Mastery Learning

Grades in the Technology Literacy course will be based on Mastery Learning. Students will be required to achieve 80% on each assignment. Additional attempts will be provided if the 80% benchmark is not achieved.

HVAC

Cell Phone and Electronic Device Use Policy

It is the policy of the HVAC class that no cell phones or electronic devices are allowed in the HVAC Classroom and/or the HVAC Lab at any time, without prior permission from the instructor. A stand-alone calculator may be used in both the HVAC Classroom and/or the HVAC Lab if desired.

Any cell phones or electronic devices that are brought to Auburn must be placed into the designated container or holding device at the beginning of class. There are to be no cell phones or electronic devices at any time in the HVAC Classroom and/or HVAC Lab. In the event of an emergency call the school and they will promptly page me and I will take the appropriate action. A stand-alone calculator may be used in both the HVAC Classroom and/or the HVAC Lab if desired.

Anyone that has a cell phone or electronic device, whether they are using it or not, without prior permission from the instructor can have the device confiscated and/or be referred to the office for discipline and **WILL** lose all class/lab points available for that day.

I have read and understand the above policy and stipulations,

Student (printed): _____

Signed: _____

Parent/Guardian (printed): _____

Signed: _____

After reviewing the HVAC Cell Phone and Electronic Device Use Policy, please sign and return this agreement page to the HVAC Instructor.

Auburn Career Center – HVAC

Syllabus Agreement

After reviewing the HVAC Syllabus, please sign and return this agreement page to the HVAC Instructor.

I have read and understand all of the information included in the Auburn Career Center HVAC Syllabus.

Student Name: _____
(Please print)

Student Signature: _____

Date: _____

Parent/Guardian Name: _____
(Please print)

Parent/Guardian Signature: _____

Date: _____