



**CAREER AND TECHNICAL EDUCATION**

**The future of career success starts here.**

*Welding*  
16/17

CTE is a Division of the WSWHE BOCES

CTE COURSE SYLLABUS

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# Welding



<b>Course Description:</b>	The Welding program is based on the American Welding Society (AWS) curriculum, which provides broad exposure to the operation, standards, and current practices in the field of welding and fabrication. Students learn through classroom instruction, demonstrations, field trips, guest speakers, and hands-on practice of welding techniques.	
<b>Prerequisites:</b>	Students must have an interest in applying welding principles to real-world challenges. They must be willing and able to follow safety guidelines. Math background is recommended.	
<b>1 Year/2 Years:</b>	Two year program	
<b>Location:</b>	F. Donald Myers Education Center, Southern Adirondack Education Center	
<b>Course Objective:</b>	<ol style="list-style-type: none"><li>1. Provide a broad-based exposure to the operation, standards and current practices in the field of welding and fabrication.</li><li>2. Provide students with a project based learning program that stresses the practical methods necessary for success in the field and the necessary knowledge and understanding for practical applications.</li><li>3. Provide the students with the opportunity to obtain employment in the field and the skills to engage in continued life long learning the field.</li></ol>	
<b>Course Topic Outline:</b>	<ol style="list-style-type: none"><li><b>1. Introduction/Safety</b><ul style="list-style-type: none"><li>Identify Welding Processes</li><li>Identify Equipment</li><li>Personal Protective Equipment</li><li>Safety Agencies</li></ul></li><li><b>2. Arc Welding Principles and Applications</b><ul style="list-style-type: none"><li>Shielded Metal Arc Welding</li><li>Gas Metal Arc Welding</li><li>Flux Cored Arc Welding</li><li>Gas Tungsten Arc Welding</li></ul></li><li><b>3. Oxygen/Acetylene Principles and Applications</b><ul style="list-style-type: none"><li>Manual Oxygen/Acetylene Gas Cutting</li><li>Machine Oxygen/Acetylene Gas Cutting</li><li>Oxygen/Acetylene Welding</li><li>Oxygen/Acetylene Brazing</li></ul></li><li><b>4. Arc Cutting</b><ul style="list-style-type: none"><li>Air Carbon Arc Cutting</li><li>Plasma Arc Cutting</li></ul></li><li><b>5. Blueprint Reading</b><ul style="list-style-type: none"><li>Introduction to shop equipment</li><li>Measurement for layout</li><li>Layout tools</li></ul></li></ol>	<ol style="list-style-type: none"><li><b>6. Introduction to Welding Metallurgy</b><ul style="list-style-type: none"><li>Welding Inspection and Testing</li><li>Visual Examination</li><li>Destructive/Non-Destructive Testing</li></ul></li><li><b>7. Orbital Welding</b><ul style="list-style-type: none"><li>Equipment set-up</li><li>Creating weld schedules</li></ul></li></ol>

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<b>Student Course Requirements:</b>	<ol style="list-style-type: none"><li>1. Successful completion of projects as evaluated by project rubric</li><li>2. Acceptable knowledge of material presented as evaluated by quizzes, exams, and practical application</li><li>3. Successful completion of WBL experience</li><li>4. Professional portfolio</li></ol>
<b>Textbooks/Materials Resources:</b>	<i>Welding- Principles and Applications</i> by Larry Jeffus
<b>Assessments/Technical Assessments:</b>	Weekly Quizzes Unit Test Mid-term Exam Final Exam American Welding Society Qualification (2nd year) In class Assignments Portfolio Projects Homework
<b>Grading System:</b>	Tests 25%   Quizzes 10%   In-Class Assignments 20%   Project(s) 35%   Homework 10%
<b>Attendance &amp; Class Participation:</b>	WSWHE BOCES has an attendance policy that requires students to miss no more than 18 days across the school year. For those times when it is necessary to be absent, a written note from the parent/guardian will be expected the next class day.
<b>Activities/Labs/Projects/Clinics:</b>	Basic fill-it welds Groove welds Live work projects Minor repairs to welding related equipment Moving welding related equipment
<b>Student Provided Material List:</b>	Leather work boots Work shirt Work pants Slipjoint Pliers Measuring tape Notebook Pencil/pen
<b>Industry Certification:</b>	American Welding Society
<b>Articulation Agreements:</b>	Each Career and Technical Education (CTE) program is geared to ready students for the world of work and for the rigors of post-secondary coursework. To that end, each program has worked with area colleges to obtain articulation agreements that allow for advance standing or the issuance of credit to those CTE students meeting all program requirements and articulation agreement standards. Our participating colleges are: Alfred State College, Lincoln Institute of Technology, Mohawk Valley Community College and SUNY Delhi.

**ELA/Math Credit  
Integrated Academic  
Overview:**

Each Career and Technical Education (CTE) program offered at the WSWHE BOCES has five (5) major curriculum elements that students will acquire over a one year or two year period. Two (2) of the five (5) curriculum elements include English Language Arts and Mathematics. These program elements are taught using a co-teaching model, which teams the CTE subject experts and certified English and Math instructors. Topics in English and Math are tied to specific business and industry course content, which illustrates to students how academic material and business knowledge and skill relate to one another. English and Math elements are taught at the commencement level and meet NYS Standards for students to obtain one (1) credit for each over a two-year period. Program specifics are as follows:

Commencement Level Math . . . . .	54 hours/yr
English Language Arts . . . . .	54 hours/yr
<i>1 credit = 108 hours</i>	

**Career & Financial  
Management Credit  
Overview**

Each Career and Technical Education (CTE) program offered at the WSWHE BOCES offers a Career & Financial Management credit to all students who successfully complete a CTE program. This curriculum element is comprised of two major parts; (A) Introduction to Occupations and (B) Nature of Industry. Part A is delivered through integrated class assignments, while Part B is automatically delivered due to the nature of CTE.

**NTHS Nominations  
Requirements:**

1. Maintain a cumulative CTE average of 92% or higher based upon 1st & 2nd quarter grades.
2. Maintain a record of excellent attendance in CTE (9 days per year).
3. Plan to pursue a career in their field of training.
4. Maintain an outstanding record of employability skills as judged by the CTE instructor.
5. Nomination by the CTE instructor with no reservations.
6. Instructor nomination must include a yes answer to the following characteristics established by the national office: follows instructions, safety conscious, works well with others, is dependable, trustworthy, responsible, honest, takes pride in work, exhibits a good attitude, exhibits leadership, exhibits good citizenship.

**Student Affiliated  
Organizations:**

National Technical Honor Society, American Welding Society, SkillsUSA

**WBL Experiences/  
Requirements:**

Each Career and Technical Education (CTE) program has a Work-Based Learning experience more commonly referred to as an internship. This means that all students prior to the end of the second year are given the opportunity to be exposed to the operation of a business and specific job duties related to careers in their CTE area. This internship is designed to connect the skills and knowledge learned in the CTE classroom with the real world requirements of a business. Students must demonstrate good attendance, attitude, internship records, and work ethics, as well as respect for others and property.

The Washington-Saratoga-Warren-Hamilton-Essex BOCES does not discriminate in its employment and admission to programs and activities as applicable, on the basis of actual or perceived race, color, creed, sex, sexual orientation, national origin, religion, age, economic status, marital status, veterans' status, political affiliation, domestic victim status, use of a guide dog, hearing dog or service dog, disability, or other classifications protected under federal or state law, and provides equal access to the Boy Scouts and other designated youth groups. The designated district compliance officers will coordinate compliance with the nondiscrimination requirements of Title VI and Title VII of the Civil Rights Act of 1964, Title IX of the Education Amendments of 1972, Section 504 of the Rehabilitation Act of 1973, the Age Discrimination Act of 1975, the Americans with Disabilities Act of 1990, as amended, the Boy Scouts of America Equal Access Act, and the New York State Human Rights Law. The BOCES Compliance Officers are: Donna J. Wisenburn, Director of Human Resource Services or Timothy G. Place, Deputy District Superintendent, Washington-Saratoga-Warren-Hamilton-Essex BOCES, 1153 Burgoyne Avenue, Suite 2, Fort Edward, NY 12828, phone (518) 581-3310 or 746-3310. Complaints may also be filed with the Office for Civil Rights, New York Office, U.S. Department of Education, 32 Old Slip, 26th Floor, New York, NY 10005-2500, phone (646) 428-3800, fax (646) 428-3843, email: OCR.NewYork@ed.gov.