



CAREER AND TECHNICAL EDUCATION

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Heavy Equipment Operation & Maintenance

16/17

CTE is a Division of the WSWHE BOCES

CTE COURSE SYLLABUS

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Heavy Equipment Operation & Maintenance



Course Description: A two-year program that trains students in the field of heavy equipment operation and maintenance or repair.

Prerequisites: None

1 Year/2 Years: 2 Years

Location: F. Donald Myers Education Center, Southern Adirondack Education Center

Course Objective: The program follows the Contren Learning Series, Published by the National Center for Construction Education and Research. NCCER is a nationally recognized industry leader. Our program prepares students for entry-level employment and/or for post-secondary educational opportunities within this career cluster.

Course Topic Outline:

- Introduction and Orientation
- Orientation to Heavy Equipment Operation and Repair
- Basic Safety
- Current and Changing Technology
- Introduction to Hand Tools
- Introduction to Power Tools
- Operation and Maintenance:
 - › Front End Loaders
 - › Dump Trucks
 - › Excavators
 - › Bulldozers
 - › Backhoes
- Certifications:
 - › Industrial Lift Truck
 - › Bobcat Service
- CDL License
- Preventive Maintenance on Equipment
- Precision Measurement
- Site Layout
- Repair:
 - › Power Trains
 - › Truck and Trailer Air Brake Systems
 - › Steering Systems
 - › Suspension Systems
 - › Wheels and Tires
 - › Electrical Systems
 - › Hydraulics
 - › Welding
- Portfolio
- Work-Based Learning
- Entrepreneurship

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Student Course Requirements:	none
Textbooks/Materials Resources:	Heavy Duty Truck Systems, The Contren Learning Series, which is the NCCER textbook and Diesel Technology texts. The program also utilizes owned as well as rented equipment to ensure that all students receive the required “seat time” necessary to complete the program successfully.
Assessments/Technical Assessments:	<p>The NCCER written and performance test, equipment operator’s certification, New York State Commercial Driver’s License, and OSHA. recognized industrial lift truck certification can all be obtained in this program. There are quizzes and tests used in assessment and each student is responsible to complete a portfolio.</p> <p>The NCCER Equipment Operator’s Certification must be passed in order to meet the technical assessment requirement for the technical endorsement on a student’s high school diploma.</p>
Grading System:	Quizzes 15% Projects 40% In-Class Assignments 20% Tests 20% Homework/Journal 5%
Attendance & Class Participation:	The 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. More specifically, attendance and participation is crucial to the success of the student. The program is sequential and time missed is time lost regardless of reason.
Activities/Labs/Projects/Clinics:	The students will learn to operate and maintain heavy equipment through instructor designed labs and activities that prepare the student for the workforce. We also put the students to work on community projects which we run like an actual jobsite. Lastly students will go to work with one of our work-based learning partners in their senior year to further prepare them for their chosen career.
Student Provided Material List:	Personal Protective equipment (work boots, coveralls, safety glasses)
Industry Certification:	National Center for Construction Education and Research (NCCER). This organization maintains a national registry of certified individuals.
Articulation Agreements:	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. We have an agreement with Alfred State College and the Lincoln Institute of Technology.
Related Careers/Post-Secondary Training:	Civil Engineer, Site Plan Development, Heavy Equipment: Operator, Mechanic, Sales/Rental, Truck driver/mechanic, Product distribution, Etc.

**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
Organization:**

› 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.