Commercial & Heavy Construction Program

Organization: Washburn Institute of Technology
Program Number: 49.0202
Instructional Level: Certificate
Instructional Area: Construction

Target Population
Must be at least 18 years old; Post-secondary.

Description
The Mission of Commercial & Heavy Construction Program is to introduce skills used in commercial and heavy construction projects. The program is a challenging, career building educational experience for anyone who is serious about their future in construction. Courses are a combination of lecture, lab, and has the opportunity for work site experience which utilizes skills with equipment acquired from the courses. Math and reading are embedded in the curriculum. At the completion of the program, students are eligible to be a NCCER Certified Craft Technicians through all courses except Class A Commercial Driver's License, Safety, Pipe laying, and Heavy Equipment 2 Application. Class A CDL is an optional certification.

Entry Requirements
WorkKeys
- Applied Math Level 4
- Reading for Information Level 4

Assessment Plan
Assessment is an integral part of the educational process at Washburn Tech and accurate feedback is an important tool in continuously improving the institution’s technical programs. Students can expect to participate in assessment activities prior to entry into programs, within specific courses and following program completion for specific fields of study.

Grading Criteria
90-100% A
89-80% B
79-70% C
Lab:
Pass/Fail

Make-up Policy:
Written classroom assignments can only be made up after the absence has been called in and recorded in the grade book from a voice mail to document the phone call. Participation points cannot be made up due to lost time; however, performance points can be regained after the task has been successfully completed. Requests for missed assignments and tasks are to be initiated by the returning student.

Student Learning Outcomes
A. Communicate effectively.
B. Integrate technology.
C. Learn effectively - use academics effectively.
D. Demonstrate cooperative/teamwork skills.
E. Apply safety.
F. Think critically and creatively.
G. Demonstrate responsible work ethics.

Program Outcomes
A. Safely operate heavy equipment.
B. Demonstrate a positive attitude, attentive listening, and the ability to work effectively in teams.
C. Apply theory to practical situations of heavy equipment operations.
D. Use critical thinking skills to evaluate and solve problems.
E. Demonstrate professional ethics.

Program Course Descriptions

**CHC105 – Introductory Craft Skills – (3 credits)**
Introduction to Craft Skills is a required course for all students entering a construction program. The intent if this course is to introduce the students to the construction trades. It is very
important for every student to learn the proper way to conduct themselves while in the shop or on the job site. This course will cover shop and job site safety, tool safety, personal protective devices, protective railings, proper storage and handling of construction materials, and construction drawings. This course will follow the NCCER modules for: Basic Safety, Introduction to Construction Math, Introduction to Hand Tools, Introduction to Power Tools, Introduction to Blueprints, Basic Rigging, Basic Communication Skills, and Basic Employability Skills.

**CHC110 - Field Safety and Orientation – (2 credits)**
Through a variety of classroom and/or lab activities the student will explore and demonstrate hazard recognition, signs, signals, barricades, work permits, material handling, specialty work, and health issues related to the industry. In addition, work zone safety, electric and high voltage issues, fall protection, ladders and scaffolding, lock-out/tag-out, safety inspections and meetings, and how to properly investigate and document an accident are discussed and implemented. Math and reading will be embedded in the curriculum.

**CHC120 - Site Layout I – (1 credit)**
This course introduces the student to site layout and how it applies to commercial sites for building pads and site work. Introduction to the equipment used for site layout of these projects, and common math equations encountered will be addressed. Math and reading are embedded in the curriculum.

**CHC122 - Site Layout II – (4 credits)**
The course will include surveying math, metric system, and conversion between English and metric. Concepts in working with formulas and equations will be an essential component of the course. Students will learn proper use and care for site layout equipment. An introduction to reading of blueprints and specifications are relevant to site layout of various projects. Math and reading are embedded in the curriculum.

**CHC130 - Safety Certifications – (2 credits)**
This course instructs and prepares the student for a certificate in trench safety and competent person training, confined space safety certificate; and the OSHA 10-hour safety certificate. Industry has a high priority and focus on these safety certifications. Math and reading are embedded in the curriculum.

**CHC140 - Heavy Highway I – (6 credits)**
In this course the student will be introduced to the heavy highway trade of trucks and heavy equipment. Course content includes procedures and components of trucks, heavy equipment, below grade construction, earthmoving, plant operations, paving, and structures. Math and reading are embedded in the curriculum.

**CHC150 - Heavy Equipment I (5 credits)**
This course will prepare the student with technical skills to seek employment as a heavy equipment operator in the equipment operations career field. This course includes instructions and practical operation experience in bulldozers, backhoes, track excavators, skid loaders, motor graders, and dump trucks. Students will also have a working understanding of grade reading, laser level operation, engineering stake interpretations, safety procedures, and equipment maintenance. Math and reading will be embedded within the curriculum.
**CHC250 - Heavy Equipment II – (7 credits)**
This course will focus on the student’s choice of heavy equipment. Application of all heavy equipment safety aspects is required. The training will take the student into more extensive operating procedures and will be tailored to an intermediate experience level. The course plan is progressive as the instructor introduces general maneuvers and the student advances their skill towards skills of greater difficulty and complexity. Student will be encouraged to attempt, practice, and perform simulations to demonstrate their skilled achievements. Math and reading will be embedded within the program.

**CHC255 - Heavy Equipment II Application – (6 credits)**
This laboratory/application course will focus on advancing the skills of the student on heavy equipment. Technical knowledge learned in CHC250 will be applied in this course. With practice, it is the intent that applied skills will improve on various pieces of equipment. Equipment used will consist of bulldozers, backhoes, loaders, track hoes, uni-loaders, and off road trucks. As the student completes each task he/she will move to a more challenging task. The instructor will monitor each task and improvement of student. Tasks are pass or fail. Math and reading will be incorporated in each task as it applies in the field.

**CHC180 - Pipe Laying 1 - (6 credits)**
Through classroom and/or lab experiences, instruction will include proper use of hand and power tools in the pipe laying trade, receiving and inspecting pipe upon arrival on the job site, cutting and fabricating the pipe, discussion of concrete, PVC, and ductile iron pipe, proper elevations, foundations and stabilization, bedding and de-watering practices will be discussed. Math and reading will be embedded in the curriculum.

**CHC195 - Class A CDL – (1 credit)**
This course will provide technical knowledge and skills for the student about various trucks in the 54,000 lb. tag weight and used in construction. Dump trucks will be the primary focus and the student will learn the components of the trucks as well as be instructed on safe operation of the vehicle. Math and reading will be embedded in the program. Pre- and post-trip inspections will be taught along with proper paperwork required in such vehicle. Optional: the student may complete the assessment to obtain the class A CDL.

**ADA Notification Statement and Disability Services:**
The Testing/ADA Coordinator office is responsible for assisting in arranging accommodations and for identifying resources at Washburn Tech for persons with disabilities. Qualified students with disabilities MUST register and provide documentation with the office to be eligible for services. New requests for accommodations should be submitted two months or more prior to the date services should begin by contacting the Testing/ADA Coordinator’s office as soon as a need may arise. Depending on the accommodation request, four to eight weeks lead time may be needed for timely and effective provision of services. Testing/ADA Coordinator coordinates and assists in arranging services it deems appropriate for eligible students on a case-by-case basis.

If you are a student with a disability that may substantially limit your ability to participate in this class and believe you will need accommodations, it is your responsibility to contact:

Testing/ADA Coordinator
Phone: 785-228-6356  email: ssscoordinator@washburn.edu