



2013-2014 College Catalog

Published 8-19-2013
Volume 2.1

Providing:

**Civil Engineering Technology
Degree Programs**

and

**Professional Technical
Continuing Education Classes**

Evening: All Classes

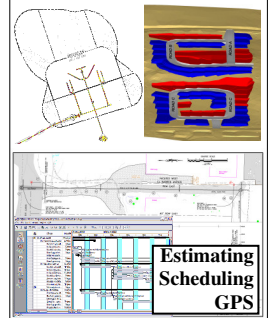
Low Tuition: \$5,400 / year

**Private
Education:** Responsive & Flexible

Instruction: By Industry Professionals

Four-Year
Degree

Bachelor of
Science in Civil
Engineering
Technology



Two-Year
Degree

Associate of
Science in Civil
Engineering
Technology





1301 Fraser Street, Suite A3
Bellingham WA 98229
website: www.weiedu.org
email: admin@weiedu.org
phone: (360) 739-1428

Institute Mission Statement:

“The mission of the Washington Engineering Institute is to provide practical engineering technology curriculum, driven by industry needs, and instructed by engineers, surveyors, and technicians with practical industry experience. The goal is to produce positive and motivated engineering technicians with technical job skills that are highly desirable to engineering and related industries.”

Institute Purpose Statements:

1. **Keep Private College Tuition Low:** Full-time tuition is \$5,400 per year.
2. **All Evening Classes:** The Institute provides all of its classes in the evenings. This allows our students and instructors to work during the day and meet for engineering school in the evenings.
3. **Instruction by Industry:** The Institute provides classes instructed by engineers, land surveyors, planners, technicians, designers, and other industry professionals. A detailed list of faculty members and their qualifications can be found on our website at www.weiedu.org.
4. **Commitment to Private Education:** The Institute was founded by private industry professionals with the strong belief that private industry should be directly involved in engineering technology education.
5. **Monthly and Quarterly Classes:** The Institute provides focused classes with one, two, or three month durations, so that professionals can take or teach them for continuing education credit.
6. **Engineering Career Advocates:** The Institute advocates engineering and surveying career options to high school students, industry, and the general public.

Equal Opportunity Statement:

The Washington Engineering Institute provides equal opportunity in education and employment, and does not discriminate on the basis of race, ethnicity, creed, color, sex, national origin, age, marital status, religious preference, the presence of any sensory, mental, or physical disability, reliance on public assistance, sexual orientation, or status as a disabled person. Questions regarding this policy should be directed to the Academic Director, 360-739-1428

Washington Engineering Institute

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Washington Engineering Institute

Address and Map

Physical and Administrative Correspondence Address:

Washington Engineering Institute
1301 Fraser Street, Suite A3
Bellingham, WA 98229

Web: www.weiedu.org

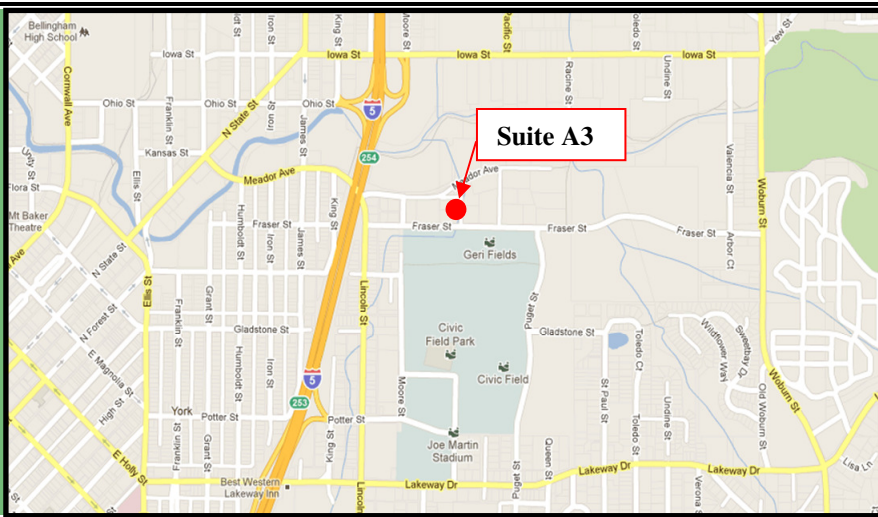
Email: admin@weiedu.org

Phone: (360) 739-1428

Map and Directions:

Located at the:

1. Haskell Business Center
2. Directly across from the Civic Center Softball Fields
3. Look for Lettered Building A
4. Suite A3 is at the center of the building



Fall Quarter 2013	
September 2	Labor Day Holiday, No Classes
September 9	Fall Quarter Begins
November 11	Veteran's Day, No Classes
November 28-29	Thanksgiving Holiday, No Classes
December 19	Fall Quarter Ends
December 20- Jan. 5	Winter Break

Winter Quarter 2014	
January 6	Winter Quarter Begins
January 20	Martin Luther King, Jr. Day, No Classes
February 17	President's Day, No Classes
March 29	Winter Quarter Ends
April 1-6	Spring Break

Spring Quarter 2014	
April 7	Spring Quarter Begins
May 26	Memorial Day, No Classes
June 26	Spring Quarter Ends
June 28	Graduation
July 1-7	Summer Break

Summer Quarter 2014	
July 4	Independence Day, No Classes
July 7	Summer Quarter Begins
August 28	Summer Quarter Ends
September 1-7	Fall Break

Fall Quarter 2014	
September 1	Labor Day Holiday, No Classes
September 8	Fall Quarter Begins
November 11	Veteran's Day, No Classes
November 27-28	Thanksgiving Holiday, No Classes
December 18	Fall Quarter Ends
December 19- Jan. 4	Winter Break

Mission Statement:

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6. **Engineering Career Advocates:** The Institute advocates engineering and surveying career options to high school students, industry, and the general public.

Accreditation Status: The Institute is currently not accredited. The Institute is pursuing institutional accreditation under the Accrediting Commission for Career Schools and Colleges (ACCSC). The accreditation process can take several years. The Institute has an accreditation plan in place so that we can be institutionally accredited before our first students graduate.

Private Ownership and Commitment to Private Education: The Institute is funded by tuition and the curriculum is driven by industry standards. The Institute is privately owned and directed by:

Dave C. Bren, PE, MSCE

dbren@weiedu.org

Mr. Bren is a practicing licensed Washington State Professional Engineer and acts as the Engineer of Record for the Institute with his license. He has over 16 years of public and private civil engineering experience, along with 12 years of higher education teaching and administration experience.

Advisory Committee: The Civil Engineering Technology program has an advisory committee made up of industry professionals and faculty members to guide and develop the curriculum to meet current and future industry needs.

Administrative Officers: The Institute is very small and our administration also teaches course work. The administrative officers for the Institute are as follows:

Dave C. Bren, PE, MSCE
President and Academic Director
dbren@weiedu.org

Kristina Daheim, MA
Admissions and Student Services Director
kdaheim@weiedu.org

Katherine Bren, EIT, MSE
Business and Library Director
kbren@weiedu.org

Janelle Miner, M.Ed.
Registrar
jminer@weiedu.org

Faculty Members: Most of the Institute faculty are practicing professionals that are currently working in the industry. Practicing professionals bring the industry to the classroom ensuring that the curriculum is driven by industry needs. Current faculty members are as follows:

① **Dave C. Bren, PE, MSCE**
CADD Instructor
dbren@weiedu.org
Professional Engineer, WA
MS in Civil Engineering, UW
BS in Civil Engineering, UW

⑥ **Matt Daheim, WSBA, JD**
Legal Instructor
mdaheim@weiedu.org
Washington State Bar Association
JD, Seattle University of Law
BA in Business, PLU

② **Katherine I. Bren, EIT, MSE**
Civil Engineering Technology Instructor
kbren@weiedu.org
MS in Engineering (Civil), UW
BS in Industrial Engineering, UW

⑦ **Scott Goodall, EIT, MSCE**
Civil Engineering Technology Instructor
sgoodall@weiedu.org
MS in Civil Engineering and Wood Science, OSU
BS in Civil and Environmental Engineering, UW

③ **Chris Brueske, PE, MSE**
Civil Engineering Technology Instructor
cbrueske@weiedu.org
Professional Engineer, WA
MS in Engineering (Civil), UW
MS in Environmental Science, MU
BA in Zoology, MU

⑧ **Jim Perry, PE, MSCE**
Civil Engineering Technology Instructor
jperry@weiedu.org
Professional Engineer, WA
MA in Business Administration, UC
MS in Civil Engineering Technology, CALTECH
BS in Civil Engineering Technology, Walla Walla

④ **Dale Buys, PE, MSCE**
Civil Engineering Technology Instructor
dbuys@weiedu.org
Professional Engineer, WA
MS in Engineering, WSU
BS in Agricultural Engineering, WSU

⑨ **Amelia Seagrave, PE, MSCE**
Civil Engineering Technology Instructor
Aseagrave@weiedu.org
Professional Engineer, WA
MS in Environmental Engineering, CU
BS in Civil Engineering, NMSU

⑤ **Kristina Daheim, MA**
English Instructor
kdaheim@weiedu.org
MA in English, CWU
BBA in Marketing, PLU

⑩ **Brenna Sterling-Borgognoni, MA**
GIS Instructor
bsterling-borgognoni@weiedu.org
MA in Geography, Binghamton University
BS in Geography, Binghamton University

⑪ **Kevin Thompson, MSCE, EIT**
Civil Engineering Technology Instructor
kthompson@weiedu.org
MS in Civil Engineering, UI
BS in Civil Engineering, UI

Continuing Education Students: Individual classes may be taken without formal program enrollment on a space available basis. However, enrolled program students have class registration seniority over continuing education students. The registration process for continuing education is as follows:

- 1) **Registration For Course:** A continuing education candidates must complete a class registration form to get on the space available list for a class.
- 2) **Email Confirmation:** Obtain email confirmation of space available.
- 3) **Tuition Payment:** Pay tuition for the course to hold the space in the class.

Program Enrolled Students: Students that has successfully completed the program admissions process shall be considered program enrolled. Program enrolled students have coursework registration seniority over continuing education students.

Quarterly Registration Process: By the nature of the program and cohort model, students of good standing (2.0 GPA or higher) are automatically registered for the following quarter's classes, upon completion of the current quarter.

Program Admissions Checklist for the Associate Degree: Associates degree program enrollment requires all candidates, including advanced placements, to complete the following steps:

- 1) **High School Diploma or GED Verification:** All Associate degree program candidates must hold a High School Diploma or GED in order to be accepted into a degree program. Students without a Diploma or GED may still take "individual" courses for continuing education purposes, on a space available basis. However, they may not enter a degree program until they obtain a GED.
- 2) **Entrance Exam:** All Associate degree program candidates must take the Washington Engineering Institute Entrance Exam. The results of the Entrance Exam will be used to rank students ability-to-benefit from the coursework. This ability-to-benefit ranking is a primary element in admissions determination.
- 3) **Registration Form:** All degree program candidates must complete their first quarter registration form before they can be accepted into a degree program.
- 4) **Enrollment Agreement:** All degree program candidates must complete an enrollment agreement with the Institute before they can be accepted into a degree program.
- 5) **Debt Acknowledgement Agreement:** All degree program candidates must complete a debt acknowledgment agreement with the Institute before they can be accepted into a degree program.
- 6) **Candidate Interview:** All degree program candidates must conduct an interview with admissions before they can be accepted into a degree program.

- 7) **Letter of Acceptance:** A student shall not be considered as program enrolled until they have received a signed Letter of Acceptance from the Institute. The letter of acceptance includes start date, name of advising instructor, student identification number (SID), and if necessary, remedial coursework requirements.

Program Admissions Checklist for the Baccalaureate Degree: The Baccalaureate Degree program starts at the Junior year and requires the completion of a Civil Engineering Technology Associates Degree for acceptance. The Baccalaureate Degree program enrollment process requires all candidates, including advanced placements, to complete the following steps:

- 1) **Associates in Applied Science Civil Engineering Technology (AASCET) or equal**
- 2) **Class Registration Form:** All degree program candidates must complete their first quarter registration form before they can be accepted into a degree program.
- 3) **Enrollment Agreement:** All degree program candidates must complete an enrollment agreement with the Institute before they can be accepted into a degree program.
- 4) **Debt Acknowledgement Agreement:** All degree program candidates must complete a debt acknowledgment agreement with the Institute before they can be accepted into a degree program.
- 5) **Candidate Interview:** All degree program candidates must conduct an interview with admissions before they can be accepted into a degree program.
- 6) **Letter of Acceptance:** A student shall not be considered as program enrolled until they have received a signed Letter of Acceptance from the Institute. The letter of acceptance includes start date, name of advising instructor, and if necessary, a student identification number (SID).

Prerequisites: Students must meet prerequisite requirements to register for a course that has prerequisites. The Instructor of Record for the class may provide permission for a student to register for a course without the required prerequisites. A simple signed note or email from the class Instructor of Record is all that is necessary for the registrar to allow registration.

Class Size: The minimum size for a course to run is (8) students. The maximum class size is (16) with an ideal class size of (12). This provides a maximum of a **16:1** ratio for classes at the Institute.

Credit for Experiential Learning: The Institute **does not** award experiential learning credit. Alternatively, the Institute provides a course challenge process, where students can show their knowledge in a measurable and documentable way.

Course Challenge Process: Students may request credit for industry training and work experience through the course challenge process. The course challenge process is a measurable and documentable way for a student to prove their knowledge in a course subject. Course challenge credit may not exceed twenty five percent (25%) of the total program credits. The Instructor of Record for the course shall have full authority to evaluate a course challenge under the following process steps:

1. The student will register for the course as normal.
2. The student will meet with the Instructor of Record after the first class and present training and work experience for evaluation.
3. Should the Instructor of Record approve of the students presented knowledge they will then administer a course challenge, typically in the form of a final exam or final project and pass the exam to a standard B grade or better.
 - Should the student fail the course challenge they will continue the course, **paying full tuition.**
 - Should the student pass the course challenge the Instructor of Record will notify the registrar of a successful course challenge and the student will pay a **\$50 course challenge fee.**

Credit for Prior Education: Students may request credit for prior education for any course(s) in their program. The Registrar shall have full authority to evaluate student provided transcripts and grant transfer credit for the requested course(s). Credit for prior education may not exceed twenty five percent (25%) of the total program credits. The transfer credit award process is as follows:

1. Have an official transcript sent by mail to the Registration Office from your transfer institution
2. Notify the Registrar by email at admin@weiedu.org that an official transcript is being sent and detail which classes you are requesting prior education credit
3. The Registrar will evaluate the prior education and update the student's official transcript for any prior education credit awarded. The student may request a copy of the updated transcript per standard transcript policy.

Advanced Placement: The Institute **does not** award advanced placement credit. Alternatively, the Institute provides a course challenge process, where students can show their knowledge in a measurable and documentable way. All students must conduct the admissions checklist requirements for their degree level to enroll in a program. In addition, they must meet prerequisites for any classes they may begin the program within.

No Transferability: There are no known Bachelors level programs in Civil Engineering Technology (BSCET) in the State of Washington. There are many Bachelors level programs in Civil Engineering (BSCE) in the State. However, their respective applied vs. theory based curriculums make them very different degrees. Therefore, transferability would be very difficult in the State of Washington. In addition, until we have accreditation, transferability will be severely limited. There are several Associates level programs in Civil Engineering Technology (AASCET) in the State of Washington. Transferability would be more likely at the associates level. However, until we have accreditation, transferability will be severely limited.

Graduation Requirements - Bachelors of Science in Civil Engineering Technology: Graduating candidates must meet all of the following requirements:

1. Completion of an Associates of Science in Civil Engineering Technology Degree
2. Completion of all Junior and Senior level coursework detailed on page 20
3. Hold a minimum GPA of 2.0 at time of graduation

Graduation Requirements - Associates of Science in Civil Engineering Technology: Graduating candidates must meet all of the following requirements:

1. Completion of all Freshman and Sophomore level coursework detailed on page 18
2. Hold a minimum GPA of 2.0 at time of graduation

Fee Schedule: The Institute fees are the same for everyone. Regardless if you are in-state or out-of-state, it does not matter, as WEI is a private school. The typical tuition and fee schedule is as follows:

Fee	Amount	Unit
Tuition by Course Credit	\$120	Per Course Credit
Quarterly Tuition	\$1,800	Per (15) Credit Quarter
Yearly Tuition	\$5,400	Per (45) Credit Year
Successful Course Challenge	\$50	Per Challenge
Student Accident Insurance	\$30	Per Year
Lent Book Damaged or Lost	\$30	Per Damaged or Lost Book

Refunds: Students may request a tuition refund with a signed note or letter. The Institute will retain a \$50 refund registration fee and refund the remaining tuition based on the following schedule:

Course Percent Completed	Refund Amount
Refund requested before the course start date	100%
Refund requested before the course midpoint	50%
Refund requested on or after the course midpoint	0%

Course Cancellation by Institute: The Institute reserves the right to cancel courses that do not have at least (8) students with at least 24 hours notice of class start. Students will receive a full refund for the cancelled course tuition.

Text Book Lending from the Engineering Library: In recent years course book costs have increased excessively. Therefore, the Institute has a unique program of text book lending for most, but not all of our college classes. Just return the lent book at the end of course. Take care of it so that students who follow will have the same opportunity as you. **Text book lending saves WEI students thousands of dollars** in text book costs over their degree program.

Supplies: Supplies purchasing is spread out through the program and item costs can vary greatly on desired item quantity and quality. In many cases, you can get used equipment and books to reduce your costs. The following list is **not** comprehensive; we will add additional supplies to the list as the program develops:

Typical Program Supplies
• 17" Laptop (~\$500 to 800)
• Survey Vest (~\$100)
• Clear Presentation Binders (3 ring) for 12 Classes (~\$35)
• Mechanical Pencils and Erasers (~\$35)
• Engineer's Scale Stick (~\$8)
• Color Highlighters (~\$10)
• 11x17 Itoya Presentation Portfolio (~\$20)
• Scientific Calculator (~\$20+)
• Class Textbooks (~\$100 to 300) *See Book Lending Program Described Above.
• Engineers' scale tape measure 25' (~\$35)
• Rite in the Rain Survey Field Book (~\$10)
• Engineers' calculation paper pads (~\$35)

Grading System: The Instructor of Record holds the sole authority to issue grades based on a 4.0 schedule as shown below. Grades are generally determined by a combination of attendance, assignments, exams, quizzes, projects, verbal questions, observed equipment skill competencies, tardiness, and/or classroom behavior to determine a grade.

Grading legend

4.0	A
3.7	A-
3.3	B+
3.0	B
2.7	B-

2.4	C+
2.0	C
1.7	C-
1.3	D+
1.0	D
0.7	D-

AU	Class audited with no grade earned
CC	Course Challenge credit granted per policy
TR	Prior education credit granted per policy
I	Incomplete – Instructor Allows Extra Time to Complete
W	Withdrawn from class

Auditing: No grade is awarded for classes taken as an audit. Continuing education student typically take classes for audit credit only. A special “AU” is recorded on the student transcript.

Course Challenge Credit: The Institute policy on challenging coursework is defined earlier in this Catalog.

Educational Transfer Credit: The Institute policy on educational transfer credit is defined earlier in this Catalog.

Incomplete: The instructor may issue an (I) incomplete grade for a course. It is the student’s responsibility to complete the course by the end of the next following quarter. All incomplete grades will be replaced with a 0.0 grade at the end of the following quarter.

Withdrawal: Students can withdraw from a course up till the middle of a course. A special “W” is recorded on the student transcript.

Attendance Drops or No Shows: Student that informally leaves the class without completing the curriculum will receive the grade they have earned in the class. In many cases this will be a 0.0 grade, depending on how much of the class they have completed.

The Institute generally has a single 4.0 grade per class policy, with remaining class grades assigned by modified curve. However, the Instructor holds the sole authority to issue class grades.

Academic Status: Academic status is reviewed at the end of each quarter, to maintain and gauge student performance and abilities to continue on with the Associates or Bachelors programs. Status will be based on credits completed, and quarterly and cumulative Grade Point Average (GPA).

Academic Progress and Probation: Students shall maintain a quarterly GPA of at least 2.0. Students that fall below a 2.0 quarterly average shall be placed on academic probation for one following quarter. A student on academic probation that falls below a 2.0 quarterly average shall be dismissed.

Dismissal: As student that is already on academic probation and falls below a 2.0 quarterly average for a second quarter in a row shall be dismissed.

Reinstatement: A student may appeal dismissal by writing a “request for reinstatement” letter to the Academic Director. The Academic Director has the sole authority to review submitted materials and to offer reinstatement.

Student Grievance: A student may appeal any grade or action taken by faculty, staff, or administration by writing a “statement of grievance” letter to the College President.

**College President
1301 Fraser Street, Suite A3
Bellingham, WA 98229**

The College President has the sole authority to review submitted materials and determine grievance actions.

Absences, Tardiness, and Make-Up Work: Absences and tardiness may affect grades and can be made-up at the Instructor discretion. The Instructor may issue make-up coursework at their discretion. In all cases, it shall be the initiative of the student to make-up any missed work or lectures.

Withdrawal Procedure: A student who wishes to withdrawal from the program must do so formally, by sending a notice of withdrawal to the Academic Director. Not registering, not paying, or not showing up for class is not a formal notice of withdrawal. The Withdrawal process will include the Registrar formally filing the withdrawal in the student’s file, sending a written Notice of Withdrawal to the student, acknowledging that the withdrawal is complete.

Transcripts Policy: An official final transcript is mailed with the completion of any degree program. Official transcripts may also be sent by standard mail, upon written request by the student. Unofficial quarterly transcripts are emailed to students for the previous quarter. In addition, unofficial transcripts can be provided to students upon email request to the registrar at admin@weiedu.org.

Student Records: A student that is enrolled or has been enrolled may review educational records maintained by the college under the following policy.

Educational Records: Any record in whatever form including; handwritten, electronic, recorded, printed, filmed, or other mediums which are maintained by the college.

Staff Exception: Personal records kept in the sole possession of a college staff member may not be reviewed. A good example is the grade book of an instructor. The student may review the final grades submitted to the college by the instructor, but not the personal grade book of the instructor.

Student Rights: Students have the right to:

- Review the student’s own educational records.
- Request that the student’s educational records be amended to ensure the records are not inaccurate, misleading or otherwise in violation of a student’s privacy.
- Consent to disclosure of personally identifiable information contained in the student’s educational records.

- Obtain a copy of the college's Student Records Policy.

Procedure to Review Educational Records: Students will use the following process to access their records:

- Students may review their own educational records upon written request to the College's Academic Director. The request should identify as precisely as possible the record(s) the student wishes to review.
- Access will be provided within 10 working days of receipt of the written request.
- The college reserves the right to refuse to permit a student to review the following information:
 1. Letters of recommendation for which the student has waived his or her right of access.
 2. Records which are excluded from the above definition of educational records.
 3. Any records which contain information about other students.
- The College reserves the right to refuse to provide copies of records to students with outstanding financial obligations to the college or where there is an unresolved disciplinary action pending against the student.

Amendment of Educational Records: Students will use the following process to amend their records:

- A student must notify the college in writing of information in the student's educational record which the student believes is inaccurate, misleading or in violation of a student's privacy. Requests for grade changes are not included in this policy.
- If the college does not amend the student's record at the student's request, the student is entitled to a hearing with the College President. The decision of the College President will be considered final.

Disclosure of Educational Records: The College will disclose information contained in a student's educational records only with written consent of the student, with the following exceptions:

- To school officials, including teachers, who have a legitimate educational interest in the student records.
- To officials of a local, state or federal agency in connection with a student's request for financial assistance for college expenses from that agency.
- To federal, state and local agencies and authorities as provided by law.
- To comply with a judicial order or lawfully issued subpoena.
- In response to an emergency where the student or others are in immediate physical danger. Determination to disclose records under this provision will be made solely by the College President.

Disruptive Behavior: The Instructor has full authority to maintain control in the classroom in order to provide a positive learning environment. Disruptive behavior is defined as any action that negatively effects the classroom-learning environment.

Behavior Rising to the Level of Dismissal: Threats and any criminal activity are clear grounds for dismissal. In addition, disruptive behavior can rise to the level of dismissal. The Academic Officer has full authority to determine dismissal. Class re-admission is possible, only with Academic Officer permission.

Drug-Free Campus: In compliance with the Drug Free Workplace Act, the unlawful manufacture, distribution, dispensation, possession or use of a controlled substance is prohibited in and on Institute controlled property. Any instructor or student determined to have violated this policy shall be subject to termination of employment or expulsion from the Institute.

Cheating, Plagiarism and Dishonesty : The Washington Engineering Institute maintains a high standard of academic integrity. Learning in a small, cohesive environment is based on trust, honesty and a common desire to develop applicable skills and knowledge in the field of engineering. In the event of cheating, plagiarism and academic dishonesty, the ability for the Institute to be a provider of education, and student learning is compromised.

The Oxford English Dictionary definition of **Cheating**: *To act dishonestly or unfairly in order to gain an advantage, especially in a game or examination.*

The Oxford English Dictionary definition of **Plagiarism**: *The practice of taking someone else's work and passing them off as one's own.*

Disciplinary Actions: In the event of cheating and plagiarizing the following disciplinary actions may be taken by the program instructor:

- 1) Review at which time, the Instructor may consult the Academic Officer.
- 2) The Instructor may decide if the coursework, exam, or paper are required to be repeated.
- 3) The Instructor may determine if the exam, project, or paper grade be a zero (0).
- 4) The Instructor may determine if the final course grade should be a zero (0).
- 5) The Instructor may refer to the case to the Academic Officer, who can, in collaboration with the Student Services Officer and the Instructor, determine if probation, suspension, or expulsion is the best course of action.

Appeals: In the event of disciplinary action the student may appeal the decisions of the Program Instructor to the Academic Director and Student Services Director. In the event of expulsion or suspension, the student may appeal to the College President and/or Advisory Board.

Distance Learning (None): The Institute **does not** provide distance learning. Our industry advisors and our faculty members both agree that engineering is not an online subject. In addition, industry clearly is skeptical of online engineering degrees and may not hire them at all. Therefore, we have decided to have all our coursework be conducted as traditional structured lectures and labs.

Financial Aid Services (None): The Institute does not provide financial aid services, so we can keep our tuition low with minimal administration. In addition, the Institute is not a Title IV school and **cannot receive federal funding** of any kind. That being stated, on their own initiative, our students receive funding from various state, local, and private sources as follows:

- ◆ **Washington State Eligible Training Provider (ETP):** The Institute can receive Washington State funding sources and is registered as a State Eligible Training Provider (ETP). Please contact your local WorkSource Center for information on how to apply for Workforce Investment Act Training Programs.
- ◆ **L&I Training Provider (#264516):** The Institute is registered as an L&I training provider. Please contact your case counselor for more information regarding L&I retraining.
- ◆ **Division of Vocational Rehabilitation Provider (#58396):** The Institute is registered as a DVR training provider. Please contact your case counselor for more information regarding DVR retraining.
- ◆ **Scholarships:** Several students have received scholarships to go to the Institute recently. Please see the list of potential scholarships on our website www.weiedu.org.
- ◆ **Employer Tuition Reimbursement:** A good portion of our students have their tuition fully or partially paid for by their employer. Check with your employer, you may be surprised at how supportive they will be for you to gain technical job skills.
- ◆ **Self Pay:** A good portion of our students work during the day and pay for their own tuition. With tuition at \$600 per month you can still work your way through engineering school.

Tax Credit Information (Not Deductible by Individuals): The Institute is not a Title IV school and cannot receive federal funding of any kind. Since we cannot receive federal monies our tuition is not tax deductible by individuals. However, companies may still be able to deduct tuition as training for their employees. Please see your tax advisor for tax information.

Placement Services (None): The Institute does not provide job placement services, so we can keep tuition low with **minimal administration**. That being stated, the instructors, who are practicing professionals, do recommend impressive students to their peers in the industry. In addition, industry professionals take classes for continuing education purposes and student networking, mentoring, and internships are encouraged.

Book Store (None): The Institute does not provide a bookstore, so we can keep tuition low with minimal administration. The reality is that students are buying more and more on the Internet to save money anyways. In addition, there are plenty of book and office supply stores around that can provide materials with low overhead. The Institute has made the practical choice to keep our tuition down by having our students obtain their own books, equipment, and supplies.

Laptops are Required: Since the Institute is only open in the evenings; all enrolled students are required to have a personal laptop so they can study at their worksite, home, or at school. The Institute has made the practical choice to keep our tuition down by having our students obtain their own laptop for studies. The Institute does have computers for faculty member use, continuing education use, outreach use, and occasional fieldwork labs.

The good news is that laptop prices are reasonable. You should be able to get a good laptop for somewhere **between \$500 and \$800**. WEI recommends the following laptop specifications:

- 17" Screen with a full size keyboard
- Windows 7 (best) or Windows 8 (acceptable)
- Dedicated Video Card
- Fast 7200rpm or Solid State Drive

Student Software: The Institute holds a Perpetual Autodesk Master Suite School License. This allows WEI students to join the Autodesk Academic Community as a student and download a licensed student version of Autodesk products.

Email: Students are required to obtain an email account to use throughout their academic tenure at the Institute. A Gmail or Hotmail account will suffice, so long as the student acknowledges that important information between the school, including instructors and school administration, will be sent to that account. Students are welcome to use the Washington Engineering Institute's computers on campus to check their email accounts, in the event that they do not have access to email elsewhere.

Industry Equipment: In order to keep tuition costs down, some of the Institute classes utilize equipment borrowed from local industry. A good example is Construction GPS or Surveying Equipment. This equipment is very expensive and tuition would have to rise if the school had to purchase it. Thanks to the generosity of local industry we have access to this equipment. Therefore, students and faculty must take great care with the borrowed equipment so as to ensure future classes access to the equipment.

Identification Cards: Student Identification Cards will be issued to each student upon enrollment for the current school year.

Student ID Numbers (SID): Each student is issued a unique student ID number. This number is used on school paperwork to avoid use of the social security numbers. Students should always use their student ID number instead of social security numbers on required school documents.

Student Accident Insurance: Student accident insurance is required for all students. A yearly insurance fee subject to change may apply. Current fee amount is \$30/year.

Emergency Contact Information: Students are required to file emergency contacts with the registrar, accessible by the instructor, in the event of an emergency. It is the student's responsibility to maintain accuracy of the emergency contact information kept on file at the Washington Engineering Institute.

Institute Catalog: The Institute has the following policies relating to the catalog.

Reduction of Paper Waste: The Washington Engineering Institute is committed to reducing paper waste in the environment. Therefore, we have made the green commitment not to send out course schedules or catalogs by bulk mail. Instead, a limited number of course schedules and catalogs will be printed for internal and advising table use.

Online Catalog Availability: Marketing efforts will direct candidate students to our online catalog and course schedules. The catalog and course schedules will be available for viewing or download in PDF format on the Institute website: www.weied.org. Alternatively, any employee can provide a digital copy of the catalog in PDF format by email.

Individual Hardcopies on Request: On occasion, candidates or agencies may request a catalog or course schedule in hardcopy format. Individual hardcopies will be provided free of cost by mail on request.

Catalog Changes and Approvals: The Academic Officer shall approve all changes to the Institute's Catalog prior to issuance. The Catalog shall have the volume number and date of publication clearly printed on the front page. The Catalog shall have contact information printed in the footer of every page.

Student Evaluations of Faculty: Student evaluations of faculty shall be conducted quarterly or by course. The typical evaluation process is as follows:

- 1) The instructor shall designate one student as the evaluation lead and provide them blank evaluation forms and a large envelope.
- 2) The instructor shall leave the classroom while the students fill out their evaluation forms.
- 3) The student evaluation lead shall collect the evaluations, place them in the envelope, seal the envelope, and submit the sealed envelope to the Academic Officer.
- 4) The Academic Officer will then review and compile the evaluations.
- 5) The Academic Officer may then meet with the instructor, provide a compiled evaluation, and/or discuss the results.
- 6) The Academic Officer may use the evaluations for corrective actions or use them for positive recognition.

Program Coursework Changes: The Academic Director, under the advice and consent of the Advisory Board, shall direct and approve any program coursework changes. Program changes will typically be made between school years to minimize curriculum and graduation conflicts. The Academic Director shall prepare a program coursework equivalences chart for advising and graduation planning purposes. Program coursework changes are necessary to quickly adapt to changing industry needs and will be conducted under the advice and consent of the Advisory Board.

**Two-Year
Degree**

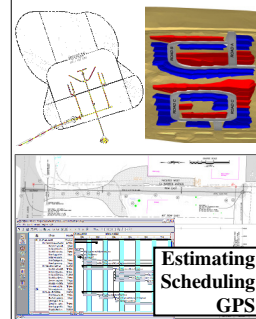
**Associate of
Science in
Civil Engineering
Technology**



Pages 18-19

**Four-Year
Degree**

**Bachelor of
Science in
Civil Engineering
Technology**



Pages 20-21

**Associates of
Science in
Civil Engineering
Technology**



Associate of Science in Civil Engineering Technology

**Two-Year
Engineering Technician Program
And
Professional Technical
Continuing Education Classes**

Program Description: The two-year Civil Engineering Technology degree focuses on software and equipment job skills required for careers in government agencies and the private Civil Engineering Industry. Hands-on coursework includes field surveying, two years of CADD design, GIS mapping, permitting, and heavy construction fundamentals. The intent is for students to gain job skills early with our evening two-year associates program, get a job as an engineering technician during the day, and continue their studies in our evening four-year Baccalaureate program. This type of program is known as an upside-down or career-step program.

Program Advisor: A cadre of local engineers, surveyors, certified planners, and design professionals instruct the program. A single program advisor coordinates all the curriculum, faculty, and facilities for the program. Your program advisor contact information is as follows:

Dave C. Bren, PE, MSCE
Academic Director
dbren@weiedu.org

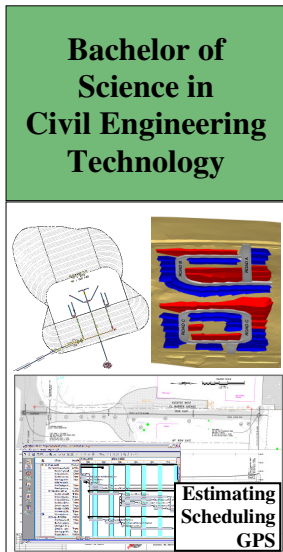
Career Paths for Graduates: The two-year career change program trains students to work at the engineering technician level with typical job titles as follows:

- **Engineering Technician**
- **Civil Drafter**
- **Civil Designer**
- **Stormwater Technician**
- **Stormwater/Erosion Control Inspector**
- **Public Works Permit Specialist**
- **Construction Materials Inspector/Tester**
- **Construction Inspector**
- **Public Works Inspector**

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Associate of Science in Civil Engineering Technology – Evening Program

Freshman - Year 1	Fall	ENGR 101	Civil / Survey Industry Introduction	3
		CADD 111	AutoCAD 2D Drawings	4
		COMP 151	Spreadsheets for Engineering Modeling	3
		SURV 131	Traditional Surveying Equipment with Lab	5
	Winter	CADD 112	AutoCAD 3D Drawings	4
		PLAN 121	Zoning, Permitting, and Government Agencies	3
		MATH 141	Precalculus I - Algebra	5
	Spring	HCON 121	Heavy Construction Estimation	5
		MATH 142	Precalculus II - Trigonometry	5
		SURV 132	Robotic and GPS Surveying Equipment with Lab	5
	Summer	GIS 121	ArcGIS Level I	3
		PHYS 121	Physics I with Lab	4
Sophomore - Year 2	Fall	CADD 211	Civil 3D Level 1	4
		ENGR 201	Roadway Geometry and Design	4
		HCON 222	Earthmoving Fundamentals	3
	Winter	ENGL 205	Technical Writing	3
		CADD 212	Civil 3D Level 2	4
		ENGR 202	Storm Design and Modeling	4
	Spring	CADD 213	Civil 3D Advanced Grading	4
		ENGR 203	Water System Design and Modeling	4
		ENGR 221	Statics for Building Construction	4
	Summer	ENGR 222	Civil Engineering Materials Lab	3
		SURV 234	Construction Surveying Lab	4



Bachelor of Science in Civil Engineering Technology

Four-Year Engineering Technologist Program

Program Description: The four-year Civil Engineering Technology degree focuses on software and equipment job skills required for careers in government agencies and the private Civil Engineering Industry. Hands-on coursework includes field surveying, two years of CADD design, GIS mapping, permitting, and heavy construction fundamentals. The intent is for students to gain job skills early with our evening two-year associates program, get a job as an engineering technician during the day, and continue their studies in our evening four-year Baccalaureate program. This type of program is known as an upside-down or career-step program.

Program Advisor: A cadre of local engineers, surveyors, certified planners, and design professionals instruct the program. A single program advisor coordinates all the curriculum, faculty, and facilities for the program. Your program advisor contact information is as follows:

Dave C. Bren, PE, MSCE
Academic Director
dbren@weiedu.org

Career Paths for Graduates: The four-year program trains students to work at the engineering technologist or engineer level with typical job titles as follows:

- **Civil Engineering Designer**
- **Construction Manager**
- **Engineering Manager**
- **Public Works Director**
- **Construction Estimator, Planner, or Scheduler**
- **Construction Engineer**

Bachelor of Science in Civil Engineering Technology – Evening Program

Obtain an Associate of Science in Civil Engineering Technology Degree					90	
Junior – Year 3	Fall	MATH 301	Calculus I – Differential Calculus Applications		5	
		PHYS 301	Applied Engineering Physics I		5	
		ECON 301	Engineering Economics		5	
	Winter	MATH 302	Calculus II – Integral Calculus Applications		5	
		PHYS 302	Applied Engineering Physics II		5	
	Spring	ENGL 301	Proposals and Grant Writing		5	
		PHYS 303	Applied Engineering Physics III		5	
	Summer	COMP 301	C for Engineers		5	
		ENGL 302	Technical Report Writing		5	
						135
	Senior – Year 4	Fall	ENGR 401	Applied Statics		5
			* *	Technical Elective I (ENGR 451 as default)		5
Winter		ENGR 402	Applied Dynamics		5	
		* *	Technical Elective II (ENGR 441 as default)		5	
Spring		ENGR 403	Applied Mechanics of Materials		5	
		MATH 401	Calculus III – Multi Variable Calculus Applications		5	
Summer		MATH 402	Linear Algebra with Engineering Applications		5	
		* *	Technical Elective III (ENGR 421 as default)		5	
Fall		ENGR 471	FE/EIT Exam Preparatory		5	
					180	

Geotechnical Engineering - Technical Electives

ENGR 451 Soil Mechanics
 ENGR 452 Foundation Engineering
 ENGR 453 Earth Retaining Structures

Structures - Technical Electives

ENGR 441 Concrete Design
 ENGR 442 Steel Design
 ENGR 443 Structural Analysis

Construction Engineering - Technical Electives

HCON 421 Contracts and Construction Law
 HCON 422 Construction Project Controls
 HCON 423 Construction Resource Accounting

Washington Engineering Institute

Course Listings and Credit Hours

Chapter 8

Computer Aided Drafting and Design Classes		Credits
CADD 111	AutoCAD 2D Drawings	4
CADD 112	AutoCAD 3D Drawings	4
CADD 211	Civil 3D Level 1	4
CADD 212	Civil 3D Level 2	4
CADD 213	Civil 3D Advanced Grading	4

Computer Classes		Credits
COMP 151	Spreadsheets for Engineering Modeling	3
COMP 301	C for Engineers	5

Economics Classes		Credits
ECON 301	Engineering Economics	5

English Classes		Credits
ENGL 205	Technical Writing	3
ENGL 301	Proposals and Grant Writing	5
ENGL 302	Technical Report Writing	5

Engineering Classes		Credits
ENGR 101	Civil / Survey Industry Introduction	3
ENGR 201	Roadway Geometry and Design	4
ENGR 202	Storm Design and Modeling	4
ENGR 203	Water System Design and Modeling	4
ENGR 221	Statics for Building Construction	4
ENGR 222	Civil Engineering Materials Lab	3
ENGR 401	Applied Statics	5
ENGR 402	Applied Dynamics	5
ENGR 403	Applied Mechanics of Materials	5
ENGR 441	Concrete Design	5
ENGR 442	Steel Design	5
ENGR 443	Structural Analysis	5
ENGR 451	Soil Mechanics	5
ENGR 452	Foundation Engineering	5
ENGR 453	Earth Retaining Structures	5
ENGR 471	FE/EIT Exam Preparatory	5

Geographic Information Systems Classes		Credits
GIS 121	ArcGIS Level I	3

Heavy Construction Classes		Credits
HCON 121	Heavy Construction Estimation	5
HCON 222	Earthmoving Fundamentals	3
HCON 421	Contracts and Construction Law	5
HCON 422	Construction Project Controls	5
HCON 423	Construction Resource Accounting	5

Math Classes		Credits
MATH 141	Precalculus I - Algebra	5
MATH 142	Precalculus II - Trigonometry	5
MATH 301	Calculus I – Differential Calculus Applications	5
MATH 302	Calculus II – Integral Calculus Applications	5
MATH 401	Calculus III – Multi-Variable Calculus Applications	5
MATH 402	Linear Algebra with Engineering Applications	5

City Planning Classes		Credits
PLAN 121	Zoning, Permitting, and Government Agencies	3

Physics Classes		Credits
PHYS 121	Physics I with Lab	4
PHYS 301	Applied Engineering Physics I	5
PHYS 302	Applied Engineering Physics II	5
PHYS 303	Applied Engineering Physics III	5

Land Surveying Classes		Credits
SURV 131	Traditional Surveying Equipment with Lab	5
SURV 132	Robotic and GPS Surveying Equipment with Lab	5
SURV 234	Construction Surveying Lab	4

Credit Hours in Carnegie Units: The Institute calculates course credit hours by using the standard Carnegie unit. The Carnegie unit assumes that students will study (2) hours for every (1) hour of lecture time and one credit hour is equal to (20) lecture hours or (40) study hours.

Course Blocks: The Institute has organized its courses into course blocks. A course block is a focused course with many hours over a shorter duration. Students typically take one evening course at a time, as they work through the program. Typical course credit hours are calculated as follows:

Course Block	Credit Hours	Weeks	Lecture or Exam Hours	Study Hours
B1	3 CR	4-6	28	56
B2	4 CR	4-8	40	80
B3	5 CR	6-12	52	104

CADD 111 AutoCAD 2D Drawings (4 CR)

This is an entry-level CAD class for the Civil / Survey professions. Students will learn AutoCAD software by conducting Civil Engineering and Surveying applications. Thus students are learning fundamentals of the profession at the same time as learning CAD. Course material includes site feature mapping, topographic mapping, plan view utilities, and road cross sections. **Prerequisites:** NONE

CADD 112 AutoCAD 3D Drawings (4 CR)

This is an intermediate level CAD class for the Civil / Survey professions. Students will learn AutoCAD software by conducting Civil Engineering and Surveying applications. Thus students are learning fundamentals of the profession at the same time as learning CAD. Course material includes existing and finished ground profiles, profile view utilities, long and short plat drawings. **Prerequisites:** CADD 111

CADD 211 Civil 3D Level 1 (4 CR)

This class is a practical hands-on experience. Students will work through a basic road design project from beginning to end using Civil 3D, showing many different methods of using Civil 3D to accomplish certain tasks and solve problems along the way. The class covers the basics of basemap preparation, preliminary layout, survey plan, surfaces generation, horizontal alignments, profiles, corridor modeling, and grading.

Prerequisites: CADD 111

CADD 212 Civil 3D Level 2 (4 CR)

This class is a practical hands-on experience. Students will work through an advanced Civil 3D project, showing many different methods of using Civil 3D to accomplish certain tasks and solve problems along the way. The course covers advanced elements of horizontal and vertical alignments, corridor modeling, plan production tools, pipe design tools, grading tools, data shortcuts and Autodesk Vault project management tools.

Prerequisites: CADD 211

CADD 213 Civil 3D Advanced Grading (4 CR)

This class is a practical hands-on experience. Students will work through an advanced Civil 3D grading project. The course covers parking lot grading, pond grading, road grading, detailed TIN and edge editing, composite surface grading, and Google earth surfaces.

Prerequisites: CADD 212

COMP 151 Spreadsheets for Engineering Modeling (3 CR)

This course provides a practical hands-on experience with spreadsheet modeling. Students will work through a series of engineering project activities while learning spreadsheet skills including: job time sheet preparations, data formatting, basic functions, functions, imbedded logic, and lookup tables. **Prerequisites:** NONE

COMP 301 C for Civil Engineers (5 CR)

This course introduces structured computer programming and problem solving, specifically for civil engineering technology students, using the C language. Problem examples emphasize numerical solutions common to engineering. Emphasis is placed on programming principles, programming techniques and the process of solving civil engineering problems using computers. **Prerequisites:** NONE

ECON 301 Macro Economics (5 CR)

This class provides the fundamentals of traditional Time Value of Money methods to form an economic basis for improvement decisions. The course covers decision methods, economic consideration, and system optimization using economic variables. **Prerequisites: NONE**

ENGL 205 Technical Writing (3 CR)

This class provides an introduction to technical writing methods. The course focuses on the preparation of various documents including; resumes, letters, papers, presentations, forms, and a company brochure.

Prerequisites: COMP 151

ENGL 301 Proposals and Grant Writing (5 CR)

This course provides basic principles in persuasive technical writing for the engineering workplace. Students work on persuasive technical documents to improve their ability to write clear, detailed prose, while persuading the intended audience. Competence in mechanics and standard English usage is assumed of all students.

Prerequisites: ENGL 205 or ASCET Degree

ENGL 302 Technical Report Writing (5 CR)

This course provides an overview of civil engineering technical documents production. The course emphasizes such skills as clarity, objectivity, audience analysis and adherence to format. Students use subjects within their intended majors or career fields to write business correspondence, memoranda, resumes, mechanism descriptions, progress reports and analytical research reports. **Prerequisites: ENGL 205**

ENGR 101 Civil / Survey Industry Introduction (3 CR)

This class provides an introduction to the Civil / Survey profession. Students will learn about the site survey, civil design, construction survey, construction inspection, and asbuilt survey process for development and public works projects. Students will learn about the various Civil / Survey jobs specialties including field inspector, party chief, chainman, COGO technician, civil engineering technician, surveying technician, civil designer, civil engineer in training, civil engineer, land surveyor in training, and land surveyor. Students will learn about the RCW/WAC regulations that govern the profession. **Prerequisites: NONE**

ENGR 201 Roadway Geometry and Design (4 CR)

This class provides the fundamentals of road design. This course focuses on horizontal and vertical geometry and their associated calculations. This course includes background material on sight distance, functional classification, ADT traffic volumes, design speed, travel lanes, shoulders, medians, barriers, guardrails, side slopes, and curbing.

Prerequisites: MATH 112

ENGR 202 Storm Design and Modeling (4 CR)

This class provides the fundamentals of storm water design and modeling. This course focuses on conveyance, treatment, detention, and infiltration design utilizing storm water modeling software. The course includes the preparation of a storm water report for a civil engineering project.

Prerequisites: ENGR 201

ENGR 203 Water System Design and Modeling (4 CR)

This class provides the fundamentals of pressurized public water systems design and modeling. This course focuses on conveyance, pressure, pumping, pressure reduction, and system losses design utilizing water system modeling software. The course includes the preparation of a water system report for a civil engineering design project.

Prerequisites: ENGR 202

ENGR 221 Statics for Building Construction (4 CR)

This class provides a fundamental introduction to engineering mechanics for rigid structures in equilibrium with building construction applications. This statics course is limited to trigonometric and algebra level calculations (no calculus). The intent is to provide associates level students with the ability to determine forces and stresses in elementary structural systems. **Prerequisites: PHYS 121 Physics I with Lab**

ENGR 222 Civil Engineering Materials Lab (3 CR)

This course provides an introduction to the engineering properties and testing requirements of heavy civil construction materials. Focuses on aggregates, asphalt, Portland cement concrete, wood and steel as construction materials to meet various ASTM Standards. **Prerequisites: ENGR 221 Statics for Building Construction**

ENGR 401 Applied Statics (5 CR)

This class provides a fundamental course in engineering mechanics for particles and rigid bodies in equilibrium with civil engineering applications. Applied problems include two and three dimensions using both scalar and vector algebra methods. **Prerequisites: MATH 303**

ENGR 402 Applied Dynamics (5 CR)

This class provides a fundamental course in engineering mechanics for particles and rigid bodies experiencing acceleration. Students study unbalanced forces and torques acting on bodies, and the resulting motion using scalar and vector algebraic methods. **Prerequisites: ENGR 401**

ENGR 403 Applied Mechanics of Materials (5 CR)

The provides a study of internal stresses, strains, and deformations of structural members and parts resulting from externally applied loads with civil engineering applications. Covers design criteria for beams, columns, pressure vessels, bolts, shafts, etc. **Prerequisites: ENGR 402**

ENGR 441 Concrete Design (5 CR)

This course provides a fundamental introduction to strength analysis and design of reinforced concrete members along with current code provisions. Topics include: combined bending and compression, development and anchorage of reinforcement, deflections, design of slabs including one-way and two-way, design of footings, retaining walls, introduction to prestressed concrete, and design issues with multi-story buildings. **Prerequisites: ENGR 222 Civil Engineering Materials Lab and the completion of and/or concurrently taking ENGR 401 Applied Statics**

ENGR 442 Steel Design (5 CR)

This course provides a fundamental introduction to strength analysis and design of steel members along with current code provisions. Topics include: familiarity with AISC Manual of Steel Construction, layout and design of building components using steel products, fundamental principles of structural steel design, and design issues for typical multi-story buildings. **Prerequisites: ENGR 222 Civil Engineering Materials Lab and ENGR 401 Applied Statics**

ENGR 443 Structural Analysis (5 CR)

This course provides an advanced structures course which includes the use of structural computer modeling software. Topics include: modeling of structures, supports, and loads to determine stability of trusses, beams, frames, and arches when subjected to axial forces, shear forces, and bending moments. **Prerequisites: ENGR 442 Steel Design**

ENGR 451 Soil Mechanics (5 CR)

This course provides a fundamental introduction to the physical properties of soils including compaction, flow of water through soils, stress distribution, and consolidation. This course includes fieldwork, lab work, and report preparation. **Prerequisites: the completion of and/or concurrently taking ENGR 401 Applied Statics**

ENGR 452 Foundation Engineering (5 CR)

This course focuses on the geotechnical design of shallow and deep foundations. Topics include: subsurface exploration, deep foundations, short and long term monitoring, bearing capacity, settlement, and lateral loads for spread footings, driven piles, and drilled piers. **Prerequisites: ENGR 451 Soil Mechanics**

ENGR 453 Earth Retaining Structures (5 CR)

This course focuses on the geotechnical design of soil slopes and various soil retaining methods. Topics include: Soil compaction, drainage, slope stability, and soil pressures. **Prerequisites: ENGR 452 Foundation Engineering**

ENGR 471 FE/EIT Exam Preparatory (5 CR)

This course prepares the EIT candidate to take the NCEES Civil FE Exam. In addition, the class provides a venue for candidates to meet and form study groups to further prepare for the exam. This class specializes in the Civil FE Exam specialization. However, the morning exam is the same for everyone, so candidates from other disciplines would gain from this class as well. **Prerequisites: Senior Level Engineering Student or by instructor permission.**

GIS 121 ArcGIS Level 1 (3 CR)

This class is a practical hands-on experience. Students will work through a mapping project using ArcView and ArcEditor to accomplish certain tasks and solve problems along the way. The class covers the software interface, map data, map attributes, data acquisition, symbolizing features and rasters, classifying features and rasters, labeling features, querying data, joining tables, feature selection by location, preparing data by analysis, analyzing spatial data, and projecting data in ArcMap. **Prerequisites: NONE**

HCON 121 Heavy Construction Estimation (5 CR)

This class combines the learning of the MS Excel software with a classic heavy civil construction estimation course. Students will learn conceptual project estimating as well as detailed unit cost estimation concepts. Students will practice timely quantity take offs for water, sewer, and stormwater piping and structures from civil plans. In addition, students will learn average end area methods for roadway material volumes and the grid method for site grading volumes. The course concludes with bid process fundamentals and a timely competitive bid.

Prerequisites: NONE

HCON 222 Earthmoving Fundamentals (3 CR)

This course provides an introduction to earthmoving production fundamentals of construction equipment. The production of heavy equipment, including excavators, scrapers, trucks, bulldozers, and front end loaders is examined from a production perspective. In addition, earthwork conversions between loose cubic yards, bank cubic yards, and compacted cubic yards is covered. **Prerequisites: NONE**

HCON 421 Contracts and Construction Law (5 CR)

This course provides a fundamental introduction to construction law specific to the heavy civil construction industry. The course focuses on contracts and subcontracts, business law basics, and construction law fundamentals. **HCON 121 Heavy Construction Estimation**

HCON 422 Construction Project Controls (5 CR)

The course provides a fundamental introduction to the methods for controlling heavy civil construction projects. The course focuses on job estimate review, cost account codes, budget monitoring, performance forecasting, and project schedule review. **Prerequisites: HCON 121 Heavy Construction Estimation**

HCON 423 Construction Resource Accounting (5 CR)

This course provides a fundamental introduction to resource accounting for the heavy civil construction industry. The course focuses on the reading of real world example project budgets and the preparation of project budgets based on project estimates and heavy civil construction plans. In addition, the fundamentals of time value of money are covered to support the budget process. **Prerequisites: HCON 121 Heavy Construction Estimation**

MATH 141 Precalculus I - Algebra (5 CR)

This class provides an applied precalculus algebra course. Topics to be covered include coordinate systems, graphing, functions, parametric equations, linear and quadratic modeling, trigonometric ratios, and elementary statics. Students will gain an understanding of these mathematical tools in the context of practical problem solving, particularly for engineering applications. It is assumed that students have been exposed to these topics to some extent in previous prealgebra and geometry classes. **Prerequisites: NONE**

MATH 142 Precalculus II - Trigonometry (5 CR)

This class provides an applied precalculus trigonometry course. Course subjects include classic trigonometric functions, graphing, inverses, identities, equations, laws, and vectors. **Prerequisites: MATH 111**

MATH 301 Calculus I – Differential Calculus Applications (5 CR)

This is the first quarter of a three-quarter course of study in calculus and analytic geometry. This course includes an introduction to limits, rates of change and continuity. The course also deals with the definition of derivative of a function and rules of differentiation, curve sketching and other application of differentiation, introduction to integrals and the Fundamental Theorem of Calculus. **Prerequisites: MATH 112**

MATH 302 Calculus II – Integral Calculus Applications (5 CR)

This is the second quarter of a three-quarter course of study in calculus and analytic geometry. This course also includes applications of integration, derivatives and integrals of exponential, logarithmic and the trigonometric functions, derivatives and integrals of hyperbolic functions and their inverses, indeterminate forms and L'Hopital's Rule, and techniques of integration. **Prerequisites: MATH 301**

MATH 401 Calculus III – Multi-Variable Calculus Applications (5 CR)

A course designed to give students an introduction to the basic concepts of multivariable calculus using the tools of linear algebra as applicable; vector functions, real valued functions, differentiation of scalar functions, multiple integration, vector differentiation and integration, transformation of coordinates, Green's Theorem, Stoke's Theorem, Gauss' Theorem and Lagrange Multipliers. **Prerequisites: MATH 302**

MATH 402 Linear Algebra with Engineering Applications (5 CR)

Introduction to linear transformations, matrix theory, vector products, finite dimensional spaces, subspaces, spanning sets, bases, eigenvalues and eigenvectors. **Prerequisites: MATH 401**

PLAN 121 Zoning, Permitting, and Government Agencies (3 CR)

The class introduces students to the local planning, zoning, permitting process, and government agency process. Students will develop a basic understanding of the local government project review process from application through approval. Students will prepare development applications for a project and present the project as if to a project review body (Hearing Examiner or Planning Commission). This class is a combination of lectures, student explorations, and practical hands-on experience. The class covers the basics of zoning, SEPA, SMA, GMA, public hearings, and the development review process. **Prerequisites: NONE**

PHYS 121 Physics I with Lab (4 CR)

This course provides a broad survey of mechanics, heat, and sound for engineering technology students. This physics course is limited to trigonometric and algebra level calculation (no calculus). The intent is to provide associates level students with a fundamental understanding of physics in order to conduct the Statics for Building Construction course. The course includes a weekly physics lab and report preparation. **Prerequisites: MATH 112 Precalculus II – Trigonometry**

PHYS 301 Applied Engineering Physics I (5 CR)

This is the first quarter of a three-quarter course of study in engineering physics. This course includes engineering physics applications with an emphasis on mechanics. Topics include physical measurements, 1D kinematics, vectors, 2D kinematics, Newton's laws, circular motion, and energy of a system. **Prerequisites: MATH 112**

PHYS 302 Applied Engineering Physics II (5 CR)

This is the second quarter of a three-quarter course of study in engineering physics. This course includes engineering physics applications with an emphasis on mechanics. Topics include conservation of energy, linear momentum & collisions, rotational kinematics, angular momentum, static equilibrium, universal gravitation, and fluid mechanics. **Prerequisites: PHYS 301**

PHYS 303 Applied Engineering Physics III (5 CR)

This is the third quarter of a three-quarter course of study in engineering physics. This course includes engineering physics applications with an emphasis on thermodynamics and wave mechanics. Topics include laws of thermodynamics, thermal properties of matter, mechanical waves, sound and light. **Prerequisites: PHYS 302**

SURV 131 Traditional Surveying Equipment with Lab (5 CR)

This class provides a hands-on field experience with total station and autolevel surveying equipment based on traditional ground control. Students practice timely total station setup, control orientation, advancing traverse control, sideshots, timely autolevel setup, and level loops. **Prerequisites: NONE**

SURV 132 Robotic and GPS Surveying Equipment with Lab (5 CR)

This class provides a hands-on field experience with robotic total station and construction grade GPS equipment. Students practice timely setup, control orientation, topographic mapping techniques, and FG surface cut/fill staking. **Prerequisites: SURV 131**

SURV 234 Construction Surveying Lab (4 CR)

This class provides a hands-on field experience with construction surveying. Students practice construction surveying with robotic total station and GPS equipment. Roadway centerline and curb staking, FG surface cut/fill staking, slope staking. The course includes a discussion on GPS machine automation principles to prepare for the machine automation class. **Prerequisites: SURV 131**

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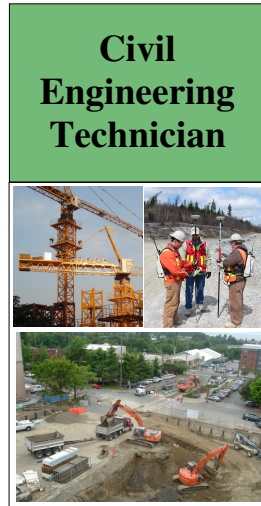
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**STEP 1: Associates of Applied Science in
Civil Engineering Technology (AASCET)**

Career Path: Engineering Technician

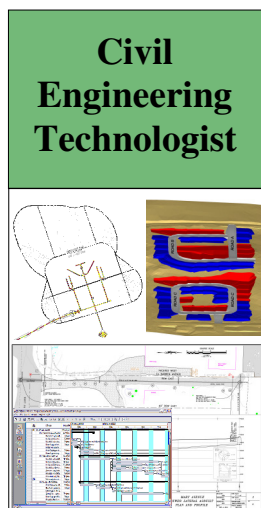


Typical Job Titles Include:

- Engineering Technician
- Civil Drafter or Designer
- Stormwater/Erosion Control Technician
- Public Works Permit Specialist
- Construction Materials Inspector/Tester
- Public Works or Construction Inspector
- Machine Automation Technician
- DTM Modeling Technician
- GPS Construction or Mapping Technician

**STEP 2: Baccalaureate of Science in
Civil Engineering Technology (BSCET)**

Career Path: Engineering Technologist



Typical Job Titles Include:

- Civil Engineering Designer
- Construction Manager
- Engineering Manager
- Public Works Director
- Construction Estimator, Planner, or Scheduler
- Construction Engineer