



# 2014-2015 College Catalog

Published 4.1.2015  
Volume 3.5

**Engineering Focused Education:**

- Bachelor of Science Degrees
- Associate of Applied Science Degrees
- Continuing Education Courses

**Evening:** All Programs & Courses

**Low Tuition:** \$5,400 / year

**Private Education:** Responsive & Flexible

**Instruction:** By Industry Professionals

## Civil Engineering Technology



## Mechanical Engineering Technology





1414 Meador Avenue, Suite 104  
Bellingham WA 98229  
website: [www.weiedu.org](http://www.weiedu.org)  
email: [admin@weiedu.org](mailto: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 technologists 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 classes 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 in this catalog.
4. **Commitment to Private Education:** The Institute was founded by private industry professionals with the strong belief that private industry should manage and teach 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.

#### **College Authorization Statement:**

Washington Engineering Institute is authorized by the Washington Student Achievement Council and meets the requirements and minimum education standards established for degree-granting institutions under the Degree-Granting Institutions Act. This Authorization is subject to periodic review and authorizes the Washington Engineering Institute to offer specific degree programs. The Council may be contacted for a list of currently authorized programs. Authorization by the Council does not carry with it an endorsement by the Council of the institution or its programs. Any person desiring information about the requirements of the act or the applicability of those requirements to the institution may contact the Council at P.O. Box 43430, Olympia, WA 98504-3430

#### **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  
1414 Meador Avenue, Suite 104  
Bellingham, WA 98229

Web: [www.weiedu.org](http://www.weiedu.org)

Email: [admin@weiedu.org](mailto:admin@weiedu.org)

Phone: (360) 739-1428

### Map and Directions:

1. Find the Haskell Business Center, which is directly across from the Civic Center Softball Fields
2. Take Express Drive North into the Business Center
3. At the corner of Meador Avenue and Express Drive
4. Look for the Lettered Building H, Suite 104



<b>Fall Quarter 2014</b>	
<b>September 1</b>	<b>Labor Day Holiday, No Classes</b>
<b>September 2</b>	<b>Fall Quarter Begins</b>
<b>November 11</b>	<b>Veteran's Day, No Classes</b>
<b>November 27-28</b>	<b>Thanksgiving Holiday, No Classes</b>
<b>December 18</b>	<b>Fall Quarter Ends</b>
<b>December 19- Jan. 5</b>	<b>Winter Break</b>

<b>Winter Quarter 2015</b>	
<b>January 6</b>	<b>Winter Quarter Begins</b>
<b>January 19</b>	<b>Martin Luther King, Jr. Day, No Classes</b>
<b>February 16</b>	<b>President's Day, No Classes</b>
<b>March 28</b>	<b>Winter Quarter Ends</b>
<b>March 29 - April 4</b>	<b>Spring Break</b>

<b>Spring Quarter 2015</b>	
<b>April 5</b>	<b>Spring Quarter Begins</b>
<b>May 25</b>	<b>Memorial Day, No Classes</b>
<b>June 24</b>	<b>Spring Quarter Ends</b>
<b>June 25</b>	<b>Graduation</b>
<b>June 26 - July 5</b>	<b>Summer Break</b>

<b>Summer Quarter 2015</b>	
<b>July 4</b>	<b>Independence Day, No Classes</b>
<b>July 6</b>	<b>Summer Quarter Begins</b>
<b>August 29</b>	<b>Summer Quarter Ends</b>
<b>Aug. 30 – Sept. 7</b>	<b>Fall Break</b>

<b>Fall Quarter 2015</b>	
<b>September 7</b>	<b>Labor Day Holiday, No Classes</b>
<b>September 8</b>	<b>Fall Quarter Begins</b>
<b>November 11</b>	<b>Veteran's Day, No Classes</b>
<b>November 26-27</b>	<b>Thanksgiving Holiday, No Classes</b>
<b>December 17</b>	<b>Fall Quarter Ends</b>
<b>December 18- Jan. 3</b>	<b>Winter Break</b>

**Accreditation Status:** The Institute is currently not accredited. The Institute is pursuing institutional accreditation under the Accrediting Council for Independent Colleges and Schools (ACICS). The accreditation process can take several years. Accreditation must be earned. The Institute is following an accreditation plan to provide for accreditation as soon as practicable.

**Private Ownership and Commitment to Private Education:** The Institute is primarily funded by students working during the day and paying for their own tuition. The Institute is privately owned and operated by Dave C. Bren, PE, MSCE. Mr. Bren is a practicing licensed Washington State Professional Engineer and acts as the Engineer of Record for the Institute with his license. Mr. Bren has over 17 years of public and private civil engineering experience, along with 13 years of higher education teaching and administration experience.

**Advisory Committees:** Program areas have advisory committees made up of industry professionals and faculty members who support and guide the curriculum, facilities, equipment, and instruction.

**Civil Engineering Technology Advisory Committee Members:**

Martin Kjelstad, PE Civil Engineer and Committee Chair	George Raper, PLS Land Surveyor
Bob Morse, PLS Land Surveyor	Larry Scholten, PE Civil Engineer
Dave Bren, PE, MSCE Program Advisor	

**Mechanical Engineering Technology Advisory Committee Members:**

John Vanden Bosche Chinook Wind Mechanical Engineer & Patent Agent	Dustin Durham Andvil Corporation Process Piping Designer
Katherine Bren, MSE, EIT Program Advisor	Dave Weidkamp, M.Ed. Engineering Technology Instructor Lynden High School

**Administrative Officers:** The Institute is very small and our administrators are involved in teaching coursework as well as administrative functions. The administrative officers for the Institute are as follows:

Dave C. Bren, PE, MSCE President and Academic Director	Kristina Daheim, MA Admissions and Student Services Director
Katherine Bren, EIT, MSE Business and Library Director	Janelle Miner, M.Ed. Registrar

**Faculty Members:** Many of the Institute faculty are practicing professionals that work in the industry during the day. Practicing professionals bring the industry to the classroom ensuring that the curriculum is driven by industry needs. A detailed list of faculty and credentials can be found in this catalog.

**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.

**Associates Degree Program Admissions:** associates degree program admissions requires all candidates to complete the following steps:

- 1) **High School Diploma, GED, or Degree Verification:** All degree candidates must hold a high school diploma, GED, or degree in order to be accepted into a Washington Engineering Institute degree program.
- 2) **Entrance Exam:** All candidates must take the Washington Engineering Institute Entrance Exam. The results of the Entrance Exam will be used to determine a candidate's ability-to-benefit from the coursework.
- 3) **Registration Form:** All candidates must complete a registration form before they can be accepted into a degree program.
- 4) **Enrollment Agreement:** All candidates must complete an enrollment agreement before they can be accepted into a degree program.
- 5) **Candidate Interview:** All candidates must conduct an admissions interview before they can be accepted into a degree program.
- 6) **Letter of Acceptance:** A candidate shall not be considered 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.

**Baccalaureate Degree Program Admissions:** The Baccalaureate Degree program starts at the Junior/3rd year and requires the completion of an Associate Degree in the prerequisite area of study. The Baccalaureate Degree enrollment process requires all candidates to complete the following steps:

- 1) **Prerequisite Associate Degree:** All candidates must hold an Associate Degree in the prerequisite area of study as follows:
  - **Associate of Applied Science in Civil Engineering Technology (AASCET)**
  - **Associate of Applied Science in Mechanical Engineering Technology (AASMET)**
- 2) **Entrance Exam:** All candidates must take the Washington Engineering Institute Entrance Exam. The results of the Entrance Exam will be used to determine a candidate's ability-to-benefit from the coursework.
- 3) **Registration Form:** All candidates must complete a registration form before they can be accepted into a degree program.
- 4) **Enrollment Agreement:** All candidates must complete an enrollment agreement before they can be accepted into a degree program.
- 5) **Candidate Interview:** All candidates must conduct an admissions interview before they can be accepted into a degree program.
- 6) **Letter of Acceptance:** A candidate shall not be considered 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.

**Prerequisites:** Students must meet prerequisite requirements to register for a course that has prerequisites. The course instructor may provide permission for a student to register for a course without the required prerequisites.

**Minimum Class Size:** The minimum size for a course to run is **(8)** students. The ideal class size for instruction is **(16)**. The maximum class size is **(24)**.

**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.



**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.

**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 course instructor and present training and work experience for evaluation.
3. Should the course instructor 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 course instructor will notify the registrar of a successful course challenge and the student will pay a **\$50 course challenge fee.**

**Transfer of Credit:** Students may request transfer of 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). At a minimum, twenty five percent (25%) of the total program credits required for a program must be completed at the Institute. 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 [jminer@weiedu.org](mailto:jminer@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.

**No Transferability:** There are no known Bachelor's level programs in Civil Engineering Technology (BSCET) in the State of Washington. Therefore, transferability is not possible in the State of Washington from the Civil Engineering Technology program. On the other hand, there a handful of Mechanical Engineering Technology Bachelor's degree programs in the State of Washington. However, until the Institute earns accreditation in the future, transferability will be unlikely from the Mechanical Engineering Technology program as well.

**Graduation Requirements – Associate of Applied Science:** Graduating candidates must meet all of the following requirements:

1. Completion of all Freshman and Sophomore level coursework required by the degree program
2. Hold a minimum GPA of 2.0 at time of graduation

**Graduation Requirements – Bachelor of Science:** Graduating candidates must meet all of the following requirements:

1. Completion of an Associate's Degree in the prerequisite area of study
2. Completion of all Junior and Senior level coursework required by the degree program
3. Hold a minimum GPA of 2.0 at time of graduation

**Tuition Schedule:** WEI is a private college, so the tuition rates are the same for everyone. The tuition rate schedule is as follows:

Fee	Amount	Unit
Tuition by Course Credit	\$120	Per Course Credit
Typical Quarterly Tuition	\$1,800	Per (15) Credit Quarter
Typical Yearly Tuition	\$5,400	Per (45) Credit Year
Course Challenge Tuition	\$50	Per Course Challenge

**Refunds:** Students may request a tuition refund with a signed note or letter. The Institute will then 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 text 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 a bachelor's degree program.

**Supplies:** Supplies purchasing is spread out through the program and item costs vary greatly on student choices for quantity and quality. The following list is **not** comprehensive; additional supplies may be required to meet the demands of the curriculum.

Typical Program Supplies
• 17" Laptop (~\$500 to 800)
• Student Version of MS Office (~\$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+)
• Course Textbooks (~\$200) *** See Book Lending Policy ***
• Engineers' calculation paper pads (~\$35)
• Engineers' scale tape measure 25' ( <b>CET Only</b> ~\$35)
• Rite in the Rain Survey Field Book ( <b>CET Only</b> ~\$10)
• Survey Vest ( <b>CET Only</b> ~\$100)
• Student Version of Rhino ( <b>MET Only</b> ~200)
• Student Version of Solidworks ( <b>MET Only</b> ~\$200)
• (2) Months The Foundry Lab Fee ( <b>MET Only</b> ~\$100)
• Basic Welding & Fabrication Equipment Kit ( <b>MET Only</b> ~\$300)

**Grading System:** The Instructor 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-
0.0	F

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.

**Credit Hours Under Quarterly System:** The Institute conducts curriculum under a quarterly system and calculates course credit hours by using the following standard:

Course Activity	Hours	Credit
Lecture	10	1 Cr
Lab Work	20	1 Cr
External Work	40	1 Cr

**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:

Block	Credits	Weeks	Total Lecture Hours
1	3 CR	4	30
2	4 CR	4	40
3	5 CR	6	50

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

**Program Inactivity:** Students must complete one course per quarter to remain active in a degree program. Students that are inactive for a quarter will be placed on academic probation for program inactivity. A student on academic probation for inactivity that remains inactive for another quarter shall be dismissed. Exceptions may be granted for medical and work reasons by the Academic Director.

**Academic Progress:** 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 academic progress. A student on academic probation that falls below a 2.0 quarterly average for another quarter shall be dismissed. Exceptions may be granted for medical and work reasons by the Academic Director.

**Dismissal:** A student that is on academic probation and who does not correct the deficiency in the following quarter 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 action taken by faculty, staff, or administration with a written “statement of grievance” to the Academic Director, 1414 Meador Avenue Suite 104, Bellingham, WA 98229. The Academic Director 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 and unofficial transcripts are provided to students upon email request to the registrar at [jminer@weiedu.org](mailto:jminer@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 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 Director has full authority to determine dismissal. Class re-admission is possible, only with Academic Director 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 Director.
- 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 Director, who can, in collaboration with the Student Services Director and the Instructor, determine if probation, suspension, or expulsion is the best course of action.

**Disciplinary Appeals:** In the event of disciplinary action, expulsion, or suspension the student may appeal to the Academic Director in writing. The Academic Director has the sole authority to review submitted materials and determine appeal actions.

**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 conducted as 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 government funding** of any kind. That being stated, the Institute's tuition is low and our courses are only offered at night for a reason. In short, our students work during the day, pay as they go, and avoid getting in debt as follows:

- ◆ **Self-Pay:** Most WEI students work during the day and pay for their own tuition. This is why all WEI classes are in the evening. Low tuition provides the opportunity for students to work and pay as they go.
- ◆ **Scholarships:** Program enrolled WEI students should consider putting some effort into obtaining career changing scholarships. Engineering is a good subject area to be in for scholarships.
- ◆ **Employer Tuition Reimbursement:** A small 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.
- ◆ **Paid Engineering Internships:** Students that have studied hard in their freshman and sophomore years, should have enough skills to test the engineering career waters with a paid internship. All of our classes are in the evenings so our students will be available during the day for internships.

**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. **Students just check out their course textbooks from the engineering library.** In addition, there are plenty of office supply stores around that can provide student supplies. Therefore, the Institute has made the practical choice to keep our tuition low by having our students obtain their own 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 low 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:** All of the degree programs require students to purchase Microsoft Office to conduct the coursework. In addition, the Mechanical program requires students to purchase the student version of Solidworks and Rhino to conduct their coursework. Other coursework software can be downloaded for free including; AutoCAD, Civil 3D, Inventor, and Revit.

**Email:** Students are required to obtain an email account to use throughout their time 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.

**Industry Equipment:** In order to keep tuition costs low, some of the Institute courses 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 courses have 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.

**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.weiedu.org](http://www.weiedu.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 Director 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 Director.
- 4) The Academic Director will then review and compile the evaluations.
- 5) The Academic Director may then meet with the instructor, provide a compiled evaluation, and/or discuss the results.
- 6) The Academic Director 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 program advisory committee, shall direct and approve program coursework changes. The Academic Director shall prepare 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 program advisory committee.

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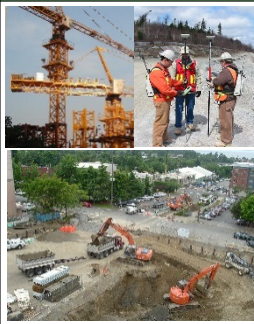
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### Civil Engineering Technology



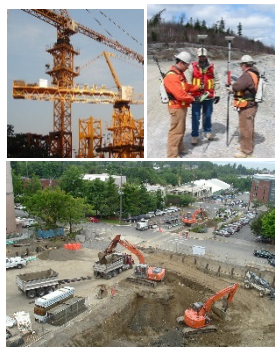
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### Mechanical Engineering Technology



**Pages 26-29**

## AAS in Civil Engineering Technology



# Associate of Applied Science in Civil Engineering Technology

## Engineering Technician Degree Program

**Program Objective:** The Civil Engineering Technology Associate of Applied Science degree prepares graduates to work as engineering technicians. The program 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.

**Typical Career Paths for Graduates:** The associate of science program prepares students to work at the engineering technician level with typical job titles including the following:

- **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**

**Program Outcomes:** Graduates of the baccalaureate degree program must demonstrate knowledge and technical competency, appropriate to the objectives of the program, to:

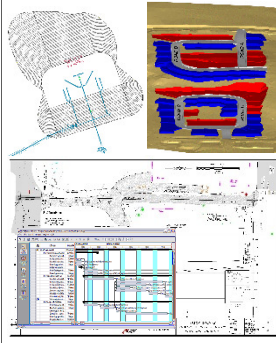
- a. Utilize principles, hardware, and software that are appropriate to produce drawings, reports, quantity estimates, and other documents related to civil engineering;
- b. Conduct standardized field and laboratory tests related to civil engineering;
- c. Utilize surveying methods appropriate for land measurement and/or construction layout;
- d. Apply fundamental computational methods and elementary analytical techniques in sub-disciplines related to civil engineering.



## Associate of Applied Science Coursework

Freshman - Year 1	Fall	CADD 111	AutoCAD 2D Drawings	4
		CIVE 101	Civil / Survey Industry Introduction	4
		MATH 131	Engineering Math – Algebra I	3
		SURV 131	Traditional Surveying Equipment with Lab	4
	Winter	CADD 112	AutoCAD 3D Drawings	4
		COMP 151	Spreadsheets for Engineering Modeling	4
		MATH 132	Engineering Math – Algebra II	3
	Spring	CMST 210	Interpersonal Communications	4
		MATH 133	Engineering Math – Trigonometry I	3
		PLAN 121	Zoning, Permitting, and Government Agencies	4
	Summer	PHYS 121	Physics I	4
		SURV 132	Robotic and GPS Surveying Equipment with Lab	4
Sophomore - Year 2	Fall	CIVE 201	Roadway Geometry and Design	4
		CIVE 211	Civil 3D Level 1	4
		HCON 222	Earthmoving Fundamentals	4
		MATH 231	Engineering Math – Trigonometry II	3
	Winter	CIVE 202	Storm Design and Modeling	4
		CIVE 212	Civil 3D Level 2	4
		MATH 232	Engineering Math – Plane Analytic Geometry	3
	Spring	CIVE 203	Water System Design and Modeling	4
		CIVE 213	Civil 3D Advanced Grading	4
		CIVE 221	Statics for Building Construction	4
	Summer	ENGL 205	Oral and Written Communications	4
		SURV 234	Construction Surveying Lab	4
Year 3	Fall	CIVE 222	Civil Engineering Materials	4
		MATH 233	Engineering Math – Calculus Preparatory	3
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## BS in Civil Engineering Technology



# Bachelor of Science in Civil Engineering Technology

## Engineering Technologist Degree Program

**Program Objective:** The Civil Engineering Technology Bachelor of Science degree prepares graduates to work as design engineers or engineering technologists. This program includes all of the hands-on technical skills coursework of the associate's degree program, along with two years of calculus level mathematics, statics, dynamics, and engineering physics curriculum that is critical to pass the Fundamentals of Engineering (FE) licensing exam.

**Typical Career Paths for Graduates:** The bachelor of science program prepares students to work at the design engineer and engineering technologist level with typical job titles including the following:

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

**Program Outcomes:** Graduates of the baccalaureate degree program must demonstrate knowledge and technical competency, appropriate to the objectives of the program, to:

- a. Utilize principles, hardware, and software that are appropriate to produce drawings, reports, quantity estimates, and other documents related to civil engineering;
- b. Conduct standardized field and laboratory tests related to civil engineering;
- c. Utilize surveying methods appropriate for land measurement and/or construction layout;
- d. Apply fundamental computational methods and elementary analytical techniques in sub-disciplines related to civil engineering;
- e. Plan and prepare documents appropriate for design and construction;
- f. Perform economic analyses and cost estimates related to design, construction, operations and maintenance of systems associated with civil engineering;
- g. Select appropriate engineering materials and practices, and;
- h. Perform standard analysis and design in at least three sub-disciplines related to civil engineering.

## Bachelor of Science Coursework

Obtain an Associate of Applied Science in Civil Engineering Technology				98
Junior – Year 3	Fall	MATH 301	Engineering Math – Calculus I	5
		PHYS 301	Applied Engineering Physics I	5
	Winter	MATH 302	Engineering Math – Calculus II	5
		PHYS 302	Applied Engineering Physics II	5
	Spring	MATH 303	Engineering Math – Calculus III	5
		PHYS 303	Applied Engineering Physics III	5
	Summer	COMP 301	C for Engineers	5
		ENGL 302	Technical Report Writing	5
Senior – Year 4	Fall	ENGR 401	Engineering Mechanics – Statics I	5
		MATH 401	Engineering Math – Multi Variable Calculus	5
	Winter	ENGR 402	Engineering Mechanics – Statics II	5
		MATH 402	Engineering Math - Linear Algebra	5
	Spring	ENGR 403	Engineering Mechanics – Dynamics I	5
		CIVE 451	Soils Mechanics or Technical Elective I	5
	Summer	CIVE 452	Foundation Engineering or Technical Elective II	5
		HCON 421	Contracts and Construction Law or Technical Elective III	5
Year 5	Fall	ECON 301	Engineering Economics	5
		ENGR 471	FE/EIT Exam Preparatory	5
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### Geotechnical Engineering - Technical Electives

CIVE 451	Soil Mechanics
CIVE 452	Foundation Engineering
CIVE 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

**AAS  
Mechanical  
Engineering  
Technology**



Mechanical Design



3D Printing Prototyping



CADD Drafting Solidworks

# Associate of Applied Science in Mechanical Engineering Technology

## Engineering Technician Degree Program

<p><b>Program Objective:</b> The Mechanical Engineering Technology associate degree program prepares graduates with knowledge, problem solving ability, and hands-on skills to enter careers in the design, installation, manufacturing, testing, evaluation, or maintenance of mechanical systems. Graduates of the associate degree program have strengths in specifying, installing, fabricating, testing, documenting, operating, selling, or maintaining basic mechanical systems.</p> <p>The Mechanical Engineering Technology discipline encompasses the areas of computer-aided drafting/design, manufacturing, analysis of engineering data, machine/mechanical design/analysis, conventional or alternative energy system design/analysis, maintenance, and heating, ventilation, and air conditioning (HVAC).</p>	<p><b>Typical Career Paths for Graduates:</b> The associate of applied science program prepares students to work at the engineering technician level with typical job titles including the following:</p> <ul style="list-style-type: none"> <li>• <b>Engineering Technician</b></li> <li>• <b>Manufacturing Technician</b></li> <li>• <b>Process Technician</b></li> <li>• <b>CADD Drafter</b></li> <li>• <b>CADD Designer</b></li> <li>• <b>3D Printing Technician</b></li> <li>• <b>CNC Machine Technician</b></li> </ul>
<p><b>Program Outcomes:</b> Graduates of the associate degree program must demonstrate knowledge and technical competency, appropriate to the objectives of the program, to:</p> <ol style="list-style-type: none"> <li>a. The ability to apply specific program principles to the specification, installation, fabrication, testing, operation, maintenance, sales, or documentation of basic mechanical systems.</li> <li>b. Have an understanding of engineering materials, applied mechanics, and manufacturing methods</li> <li>c. The ability to computer-aided draft emphasizing mechanical components and systems, as well as fundamentals of descriptive geometry, orthographic projection, sectioning, tolerancing and dimensioning, and basic computer aided drafting and design with technical depth in at least one of these areas</li> <li>d. Have an understanding of the application of physics and engineering materials having an emphasis in applied mechanics, or in-depth application of physics having emphasis in mechanical components and design.</li> </ol>	

## Associate of Applied Science Coursework

Freshman - Year 1	Fall	CADD 111	AutoCAD 2D Drawings	4
		MATH 131	Engineering Math – Algebra I	3
		MECH 101	Mechanical Engineering Industry Careers	4
		MECH 131	Rhino 3D Modeling	4
	Winter	CADD 112	AutoCAD 3D Drawings	4
		COMP 151	Spreadsheets for Engineering Modeling	4
		MATH 132	Engineering Math – Algebra II	3
	Spring	CADD 113	AutoCAD Dimensioning & Tolerancing	4
		MATH 133	Engineering Math – Trigonometry I	3
		MECH 121	Material Fabrication and Safety Lab	4
	Summer	MECH 122	Material Fabrication and Welding Lab	4
		PHYS 121	Physics I with Lab	4
Sophomore - Year 2	Fall	MATH 231	Engineering Math – Trigonometry II	3
		MECH 201	CNC Programming	4
		MECH 211	Solidworks Mechanical Design Level 1	4
		MECH 221	Applied Mechanics for Engineering Technology	4
	Winter	MATH 232	Engineering Math – Plane Analytic Geometry	3
		MECH 202	Process Piping Design	4
		MECH 212	Solidworks Mechanical Design Level 2	4
	Spring	CMST 210	Interpersonal Communications	4
		ENGL 205	Oral and Written Communications	4
		MECH 213	Solidworks Mechanical Design Level 3	4
	Summer	MECH 231	Design Project	4
		INDE 201	Manufacturing Methods and Standards	4
Year 3	Fall	MATH 233	Engineering Math – Calculus Preparatory	3
		MECH 222	Materials Science and Testing Methods	4
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## BS in Mechanical Engineering Technology



# Bachelor of Science in Mechanical Engineering Technology

## Engineering Technologist Degree Program

**Program Objective:** The baccalaureate degree program in Mechanical Engineering Technology will prepare graduates with knowledge, problem solving ability, and hands-on skills to enter careers in the design, installation, manufacturing, testing, evaluation, or maintenance of mechanical systems. Graduates of the baccalaureate degree program have strengths in the analysis, applied design, development, implementation, or oversight of more advanced mechanical systems and processes.

The Mechanical Engineering Technology discipline encompasses the areas of computer-aided drafting/design, manufacturing, analysis of engineering data, machine/mechanical design/analysis, conventional or alternative energy system design/analysis, maintenance, and heating, ventilation, and air conditioning (HVAC).

**Typical Career Paths for Graduates:** The bachelor of science program prepares students to work at the design engineer or engineering technologist level with typical job titles including the following:

- **Process Engineer**
- **Industrial Engineer**
- **Manufacturing Designer**
- **Manufacturing Technologist**
- **Engineering Technologist**
- **Manufacturing Supervisor**
- **Production Supervisor**

**Program Outcomes:** Graduates of the baccalaureate degree program must demonstrate knowledge and technical competency, appropriate to the objectives of the program, to:

- a. The ability to apply specific program principles to the specification, installation, fabrication, testing, operation, maintenance, sales, or documentation of basic mechanical systems.
- b. Have an understanding of engineering materials, applied mechanics, and manufacturing methods
- c. The ability to computer-aided draft emphasizing mechanical components and systems, as well as fundamentals of descriptive geometry, orthographic projection, sectioning, tolerancing and dimensioning, and basic computer aided drafting and design with technical depth in at least one of these areas
- d. Have an understanding of the application of physics and engineering materials having an emphasis in applied mechanics, or in-depth application of physics having emphasis in mechanical components and design.
- e. The ability to apply specific program principles to analysis, design, development, implementation, or oversight of more advanced mechanical systems or processes.
- f. The ability to design machine elements, advanced drafting including current three dimensional computer representations as related to mechanical design, and manufacturing methods. Advanced proficiency must be demonstrated in at least three drafting / design related areas, consistent with the technical orientation of the program.
- g. Have an understanding of the in-depth application of physics and engineering materials having emphasis in drafting, manufacturing, and design of mechanical components.

## Bachelor of Science Coursework

Obtain an Associate of Applied Science in Mechanical Engineering Technology				98
Junior – Year 3	Fall	MATH 301	Engineering Math - Calculus I	5
		PHYS 301	Applied Engineering Physics I	5
	Winter	MATH 302	Engineering Math – Calculus II	5
		PHYS 302	Applied Engineering Physics II	5
	Spring	MATH 303	Engineering Math – Calculus III	5
		PHYS 303	Applied Engineering Physics III	5
	Summer	COMP 301	C for Engineers	5
		ENGL 302	Technical Report Writing	5
Senior – Year 4	Fall	ENGR 401	Engineering Mechanics – Statics I	5
		MATH 401	Engineering Math – Multivariable Calculus	5
	Winter	ENGR 402	Engineering Mechanics – Statics II	5
		MATH 402	Engineering Math – Linear Algebra	5
	Spring	ENGR 403	Engineering Mechanics – Dynamics I	5
		INDE 451	Plant Layout or Technical Elective I	5
	Summer	INDE 401	Probability and Statistics for Engineering	5
		PATA 421	Patent Process or Technical Elective II	5
Year 5	Fall	ECON 301	Engineering Economics	5
		ENGR 471	FE/EIT Exam Preparatory	5
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Hydro Power Design – Elective Emphasis	
PENG 431	Hydro Power Testing and Experiments Lab
PENG 432	Hydro Power Site Analysis
PENG 433	Hydro Power Design Project

Industrial Engineering - Technical Electives	
INDE 451	Plant Layout and Materials Handling
INDE 452	Engineering Quality Control
INDE 453	Production Management Systems

Wind Power Design – Elective Emphasis	
PENG 441	Wind Power Testing and Experiments Lab
PENG 442	Wind Power Analysis
PENG 443	Wind Power Design Project

Patent Process - Technical Electives	
PATA 421	Patent Process
PATA 422	Patent Drafting





### **CADD 111 4 CR**

#### **AutoCAD 2D Drawings**

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 4 CR**

#### **AutoCAD 3D Drawings**

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

### **CAD 113 4 CR**

#### **AutoCAD Dimensioning & Tolerancing**

This is an intermediate level CAD course. Students will learn Geometric Dimensioning and Tolerancing (GD&T) standards using AutoCAD software by conducting various projects.

**Prerequisites:** CADD 111

### **CIVE 101 4 CR**

#### **Civil / Survey Industry Introduction**

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

### **CIVE 211 4 CR**

#### **Civil 3D Level 1**

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

### **CIVE 212 4 CR**

#### **Civil 3D Level 2**

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:** CIVE 211

### **CIVE 213 4 CR**

#### **Civil 3D Advanced Grading**

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:** CIVE 212

### **CIVE 201 4 CR**

#### **Roadway Geometry and Design**

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 142

### **CIVE 202 4 CR**

#### **Storm Design and Modeling**

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:** CIVE 201

### **CIVE 203 4 CR**

#### **Water System Design and Modeling**

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:** CIVE 202

### **CIVE 221 4 CR**

#### **Statics for Building Construction**

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 associate's level students with the ability to determine forces and stresses in elementary structural systems.

**Prerequisites:** PHYS 121

### **CIVE 222 4 CR**

#### **Civil Engineering Materials Lab**

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:** CIVE 221

**CIVE 451 5 CR****Soil Mechanics**

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:** ENGR 401

**CIVE 452 5 CR****Foundation Engineering**

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:** CIVE 451

**CIVE 453 5 CR****Earth Retaining Structures**

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:** CIVE 452

**COMP 151 4 CR****Spreadsheets for Engineering Modeling**

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

**CMST 210 4 CR****Interpersonal Communications**

Focuses on interpersonal communication in relationships. Students explore perception, language, self-concept, self-disclosure, listening, and conflict resolution management, and experience the concepts through class activities.

**Prerequisites:** NONE

**COMP 301 5 CR****C for Civil Engineers**

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 5 CR****Engineering Economics**

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 4 CR****Oral and Written Communications**

This class provides an introduction to technical writing and presentation 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 5 CR****Proposals and Grant Writing**

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:** AAS Degree

**ENGL 302 5 CR****Technical Report Writing**

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:** AAS Degree

**ENGR 299 1-4 CR****Internship Work Experience**

This course provides an employer evaluated internship work experience. The course provides 1CR for each (40) hours of verified internship work experience, up to a maximum of 4CR. The course requires a signed Employer Internship Agreement and a signed Supervisor Evaluation Form to be submitted to the assigned faculty advisor for grading.

**Prerequisites:** NONE

**ENGR 401 5 CR****Engineering Mechanics – Statics I**

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. **Prereq:** MATH 301

**ENGR 402 5 CR****Engineering Mechanics – Statics II**

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. **Prereq:** ENGR 401

**ENGR 403 5 CR****Engineering Mechanics – Dynamics I**

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 402

**ENGR 441 5 CR****Concrete Design**

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 pre-stressed concrete, and design issues with multi-story buildings.

**Prerequisites:** ENGR 401

**ENGR 442 5 CR****Steel Design**

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. **Prereq:** ENGR 441

**ENGR 443 5 CR****Structural Analysis**

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

**ENGR 471 5 CR****FE/EIT Exam Preparatory**

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:** BSCET Program Senior

**GIS 121 4 CR****ArcGIS Level 1**

This course 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 4 CR****Heavy Construction Estimation**

This course 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 4 CR****Earthmoving Fundamentals**

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 prospective. In addition, earthwork conversions between loose cubic yards, bank cubic yards, and compacted cubic yards is covered.

**Prerequisites:** NONE

**HCON 421 5 CR****Contracts and Construction Law**

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.

**Prerequisites:** AASCET Degree

**HCON 422 5 CR****Construction Project Controls**

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:** AASCET Degree

**HCON 423 5 CR****Construction Resource Accounting**

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

**INDE 201 4 CR****Manufacturing Methods and Standards**

This course provides an introduction to the Lean Manufacturing standards. Students will learn about Sorting, Straightening, Shine, Standardizing, and Sustaining manufacturing methodology for modeling efficient manufacturing processes.

**Prerequisites:** MECH 101

**INDE 401 5 CR****Probability and Statistics for Engineering**

This class covers quantitative analysis of uncertainty and risk for engineering applications. Fundamentals of probability, random processes, statistics, and decision analysis are covered, along with random variables and vectors, uncertainty propagation, risk-based decision, estimation of distribution parameters, hypothesis testing, simple and multiple linear regressions.

**Prerequisites:** MATH 301

**INDE 451 5 CR****Plant Layout and Materials Handling**

Modeling and analysis of structural and operational issues associated with material-flow system design including facility location, warehouse/inventory systems, and distribution/transportation systems.

**Prerequisites:** AASMET Degree

**INDE 452 5 CR****Engineering Quality Control**

This course provides an introduction to quality in manufacturing including control charts, sampling plans, process capability, experimental design; introduction to system reliability. The course includes an overview of Six Sigma and DMAIC methodology.

**Prerequisites:** INDE 401

**INDE 453 5 CR****Production Management Systems**

Design and operation of production systems, including lean production concepts, just-in-time/kanban, facility layout and material flow issues.

**Prerequisites:** INDE 451

**MATH 131 3 CR****Engineering Math – Algebra I**

This course provides an applied precalculus algebra course. Topics to be covered include coordinate systems, graphing, slopes, transformations, composite functions, inverse functions, distance and midpoint, and modeling with functions. Students will gain an understanding of these mathematical tools in the context of practical problem solving, particularly for engineering applications.

**Prerequisites:** Demonstrated Intermediate Algebra Skills

**MATH 132 3 CR**  
**Engineering Math – Algebra II**  
This course provides an applied precalculus algebra course. Topics to be covered include complex numbers, quadratic functions, polynomial functions, dividing polynomials, zeros of polynomials, rational functions, polynomial inequalities, and exponential functions. Students will gain an understanding of these mathematical tools in the context of practical problem solving, particularly for engineering applications.  
**Prerequisites:** MATH131

**MATH 133 3 CR**  
**Engineering Math – Trigonometry I**  
This course provides an applied precalculus algebra course. Topics to be covered include radians, units circles, right triangles, trigonometric functions, trigonometric graphing, and trigonometric identities. Students will gain an understanding of these mathematical tools in the context of practical problem solving, particularly for engineering applications.  
**Prerequisites:** MATH132

**MATH 231 3 CR**  
**Engineering Math – Trigonometry I**  
This course provides an applied precalculus algebra course. Topics to be covered include law of sines, law of cosines, polar coordinates, vectors, and dot product. Students will gain an understanding of these mathematical tools in the context of practical problem solving, particularly for engineering applications.  
**Prerequisites:** MATH133

**MATH 232 3 CR**  
**Engineering Math – Plane Analytic Geometry**  
A beginning course in plane analytic geometry including the straight line, the circle, parabola, and the transformation of coordinates. Students will gain an understanding of these mathematical tools in the context of practical problem solving, particularly for engineering applications.  
**Prerequisites:** MATH231

**MATH 233 3 CR**  
**Engineering Math – Calculus Preparatory**  
A preparation course for Calculus. This course is designed to review and prepare the student for the junior level calculus coursework. Students will gain an understanding of these mathematical tools in the context of practical problem solving, particularly for engineering applications.  
**Prerequisites:** MATH232

**MATH 301 5 CR**  
**Engineering Math – Calculus I**  
This is the first quarter of a 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 233 or **Instructor Permission**

**MATH 302 5 CR**  
**Engineering Math - Calculus II**  
This is the second quarter of a three-quarter course of study in calculus, analytic geometry, probability and statistics. This course begins with Newton's Method and the Fundamental Theorem of Calculus. The focus of the course is on techniques of integration and applications, including inverse trigonometric, exponential, logarithmic, hyperbolic functions, partial fractions, and improper integrals. **Prerequisites:** MATH 301

**MATH 303 5 CR**  
**Engineering Math - Calculus III**  
This is the third quarter of a course of study in calculus and analytic geometry. Continued techniques of integration, differential equations, topics in probability and statistics, infinite sequences and series, Taylor and Maclaurin series, Fourier series, Fourier and Laplace transforms. **Prerequisites:** MATH 301

**MATH 401 5 CR**  
**Engineering Math – Multi-Variable Calculus**  
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 303

**MATH 402 5 CR**  
**Engineering Math - Linear Algebra**  
Introduction to linear transformations, matrix theory, vector products, finite dimensional spaces, subspaces, spanning sets, bases, eigenvalues and eigenvectors.  
**Prerequisites:** MATH 401

**MECH 101 4 CR**  
**Mechanical Engineering Industry Careers**  
This course provides an introduction to the mechanical engineering technology profession. Students will learn about the various software and equipment job skills required for careers in aerospace manufacturing, renewable energy manufacturing, and process piping design. Various jobs specialties include; engineering technician, manufacturing technician, CADD Drafter, CADD Designer, 3D Printing Technician, and CNC Machine Technician.  
**Prerequisites:** NONE

**MECH 121 4 CR**  
**Material Fabrication and Safety Lab**  
This course provides an introduction to traditional manufacturing materials and fabrication safety. Topics include metal shop orientation, bending, cutting, lathing, drilling, and welding.  
**Prerequisites:** MECH 101

**MECH 122 4 CR**  
**Material Fabrication and Welding Lab**  
This course provides a hands-on introduction to traditional fabrication shop tools and their safe usage. Topics include metal shop orientation, bending, cutting, lathing, drilling, and welding.  
**Prerequisites:** MECH 121

**MECH 131 4 CR****Rhino 3D Modeling**

This course is a practical hands-on experience. Students will work through a basic mechanical design project using Rhinoceros software, showing many different methods to accomplish certain tasks and solve problems along the way. Students will learn Rhinoceros 3D modeling software by conducting mechanical industry applications. Thus students are learning fundamentals of the profession at the same time as learning the Rhinoceros software. Course material includes software interface, free-form surfaces, curves, point objects, curve manipulation, solids, polysurfaces, polygon meshes, object transformation, rendering, and data exchange.

**Prerequisites: CADD 111**

**MECH 201 4 CR****CNC Programming**

Students will learn how to program GCODE by text editing. Then students will use a program that will prepare GCODE and conduct detailed editing of the GCODE by text editing. Students will then use a mini-CNC machine to run their GCODE as the final project.

**Prerequisites: NONE**

**MECH 202 4 CR****Process Piping Design**

This course provides an introduction to process piping design.

**Prerequisites: CADD 113**

**MECH 211 4 CR****Solidworks Mechanical Design Level I**

This course is a practical hands-on experience. Students will work through a mechanical design project using Solidworks software to accomplish tasks and solve problems along the way. The course covers the basics of the software interface, sketching solid models, adding sketch constraints, adding sketch dimensions, editing sketches, extruding, revolving sketches, modeling options, modeling tools, editing features, and automatic dimensioning.

**Prerequisites: CADD 111**

**MECH 212 4 CR****Solidworks Mechanical Design Level II**

This course is a practical hands-on experience. Students will work through a mechanical design project using Solidworks software to accomplish tasks and solve problems along the way. The course covers advanced elements of modeling tools, assembly modeling, drawing views, presentation, design tools, sheet metal components, and weldments.

**Prerequisites: MECH 211**

**MECH 213 4 CR****Solidworks Mechanical Design Level III**

Students will work as a team to design a final project using Solidworks software accomplish tasks and solve problems along the way. The STL output from this project will be used in the following MECH 221 CNC and 3D Printer

Fundamentals course. **Prerequisites: MECH 212**

**MECH 221 4 CR****Applied Mechanics for****Engineering Technology**

This class provides a fundamental introduction to engineering mechanics for rigid structures in equilibrium with mechanical applications. This statics course is limited to trigonometric and algebra level calculations (no calculus). The intent is to provide associate's level students with the ability to determine forces and stresses in elementary mechanical systems.

**Prerequisites: MATH 142**

**MECH 222 4 CR****Materials Science and Testing Methods**

This course provides an introduction to the engineering properties and testing requirements of materials. Focuses on metals, woods, plastics, and composite materials to meet various ASTM Standards.

**Prerequisites: MECH 221**

**MECH 231 4 CR****Design Project**

Students will work as a team to prepare a full set of plans and specifications for their design project as a capstone portfolio project for the program. The course includes a presentation of the design project to an industry panel.

**Prerequisites: MECH 213**

**PATA 421 5 CR****Patent Process**

This course provides an overview of patent law, focusing on the federal patent laws (35 U.S.C. 1 et seq.). This course introduces students to the U.S. patent system, issues relating to patent law, patentability, benefits of obtaining patent protection, defenses to and remedies for patent infringement, and patent issues abroad.

**Prerequisites: AASMET Degree**

**PATA 422 5 CR****Patent Drafting**

This is a practical skills course that teaches the fundamentals of preparing a patent application, with particular emphasis on claim drafting. Drafting techniques useful for all technical subject matters will be covered. Students will draft a claim and prepare patent application documents suitable for filing in the U.S. Patent and Trademark Office as a course project.

**Prerequisites: PATA 421**

**PENG 431 5 CR****Hydro Power Testing and Experiments Lab**

This course provides a hands-on experience with the development of a demonstration micro-hydro power project. Students will conduct a site assessment, site surveying, and flow testing utilizing log weirs. In addition, students will design, fabricate, test, and experiment with an 8" to 12" pelton wheel system for micro-hydro power generation.

**Prerequisites: AASMET Degree**

**PENG 432 5 CR****Hydro Power Site Analysis**

This course provides a hands-on experience with the development of a demonstration micro-hydro power project. Students will prepare a written system plan to include all mechanical drawing, mechanical specifications, power generation analysis, return on investment analysis, installation scope, installation budget, and installation schedule. Includes a presentation of the system plan to an industry panel.

**Prerequisites: PENG 431**

**PENG 433 5 CR****Hydro Power Design Project**

This course provides a hands-on experience with the development of a demonstration micro-hydro power project. Students will acquire intake materials, piping, power house materials, and pelton wheel assembly materials. Students will then pre-fabricate the system as much as possible before transport and final assembly on site. After the system is assembled on-site, it will need trouble shooting, monitoring, and testing so that it can be adjusted to produce as much power as possible. This demonstration project will be temporary and off-grid in nature. All materials are to be recovered for use by the next class year.

**Prerequisites:** PENG 432

**PENG 441 5 CR****Wind Power Testing and Experiments Lab**

This course provides a hands-on experience with the development of a demonstration wind power project. Students will conduct a site assessment, site surveying, and wind resource testing. In addition, students will design, fabricate, test, and experiment with a gin pole cable tower and a 9' to 12' diameter blade system for wind power generation.

**Prerequisites:** AASMET Degree

**PENG 442 5 CR****Wind Power Site Analysis**

This course provides a hands-on experience with the development of a demonstration wind power project. Students will prepare a written system plan to include all mechanical drawing, mechanical specifications, power generation analysis, return on investment analysis, installation scope, installation budget, and installation schedule. Includes a presentation of the system plan to an industry panel.

**Prerequisites:** PENG 441

**PENG 443 5 CR****Wind Power Design Project**

This course provides a hands-on experience with the development of a demonstration wind power project. Students will acquire gin pole pipe, tower pipe, tower cables, power house materials, turbine, and blades assembly materials. Students will then pre-fabricate the system as much as possible before transport and final assembly on site. After the system is assembled on-site, it will need trouble shooting, monitoring, and testing so that it can be adjusted to produce as much power as possible. This demonstration project will be temporary and off-grid in nature. All materials are to be recovered for use by the next class year.

**Prerequisites:** MECH 442

**PHYS 121 4 CR****Physics I with Lab**

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 associate's 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 142

**PHYS 301 5 CR****Applied Engineering Physics I**

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:** Concurrent MATH 301

**PHYS 302 5 CR****Applied Engineering Physics II**

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 5 CR****Applied Engineering Physics III**

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

**PLAN 121 4 CR****Zoning, Permitting, and Government Agencies**

The course 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 Hearing Examiner or Planning Commission. The class covers the basics of zoning, SEPA, SMA, GMA, public hearings, and the development review process.

**Prerequisites:** NONE

**SURV 131 4 CR****Traditional Surveying Equipment**

This course 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 4 CR****Robotic and GPS Surveying Equipment**

This course 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 4 CR****Construction Surveying Lab**

This class provides a hands-on field experience with construction surveying. Students practice construction surveying in teams with traditional total station surveying equipment including; roadway staking, utility staking, grade staking, grid surveys, and stockpile volume surveys.

**Prerequisites:** SURV 131

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## The Wolverine Back Story:

### Why the Washington Engineering Institute has a Wolverine as its mascot



The Wolverine was extinct in Washington State and is now making a tremendous comeback. They have traveled south from Canada and have begun to recolonize their native habitat in Washington State's high snowy woodlands.

The Wolverine is a carnivore and largest member of the Weasel family with some specimens getting up to 45 pounds. Pound-per-pound one of the most ferocious, independent, hardy, nimble, clever, and determined animals in Washington State.

Shawn Sartorius, a wildlife biologist based in Helena, Montana, for the U.S. Fish and Wildlife Service provided an excellent quote on how the Wolverine challenges itself as follows:

***Wolverines** "are the superheroes of the animal world ... when you follow the tracks of these things, you see they are not taking the easy way around; they will go straight over mountaintops, craggy peaks, the rockiest, steepest, cliffiest place; they will go right over that in the middle of winter, at night."*

The Wolverine's impressive characteristics compliment the Washington Engineering Institute motto: "Challenge Yourself." In short, the Wolverine challenges itself every-moment of every-day.