



2010 Catalog

Certificate Programs and Continuing Education Courses

Volume 1.7 Published 6-28-2010

A licensed private engineering school
providing engineering and surveying
education to job seekers and industry.

Washington Engineering Institute

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Prime Directives:

Low Tuition Costs: The Institute provides private engineering and surveying education for the same tuition costs as public community and technical colleges. Tuition is currently only \$1200 per quarter or \$3600 for a full year of study.

Instruction by Industry: The Institute provides classes instructed by Engineers, Land Surveyors, Architects, Planners, and Designers.

Evening Programs: The Institute provides all classes and programs in the evenings or on the weekends, so that working students can take them and working instructors can teach them.

Focused Short Courses: The Institute provides focused classes with one month duration, so that professionals can take or teach them for continuing education credit.

Job Skill Focus: The Institute provides classes that are focused on job skills, so that

Engineering Career Advocates: The Institute advocates engineering and surveying professional career options at the high school level.

Internships: The Institute facilitates internships between students and industry that lead to jobs in the industry.

Mentoring: The Institute facilitates mentoring between students and practicing professionals.

Private Ownership and Commitment to Private Education: The Institute is solely funded by tuition and the curriculum is driven purely by industry standards. The institute is privately owned by Dave C. Bren, PE, MSCE.

Administrative Correspondence for the Institute: Please send all correspondence to the following address:

Washington Engineering Institute
P.O. Box 483
Custer WA 98240

You can also email the Institute at admin@weiedu.org or call at (360) 739-1428.

No Placement Services: The Institute does not formally place students in jobs. That being said, the instructors, who are practicing professionals, do recommend talented students to their peers in the industry. In addition, many industry professionals will be taking the classes for continuing education purposes and mentoring and internships will be encouraged through them.

No Financial Aid Services: The Institute **does not** provide financial aid services. In addition, the Institute as a business does not take Federal grants or funding support. In short, this policy keeps the tuition and administrative overhead low for the Institute. The idea is to keep tuition affordable so that students can work their way through engineering school without building up Federal financial aid loans.

Washington State Eligible Training Provider (ETP): The Institute does accommodate Washington State funding sources and is registered as an 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 also registered as an L&I training provider. Please contact your Vocational Rehabilitation Counselor for more information regarding L&I training.

Program Enrollment: Program enrollment is required to conduct a one or two year career certificate program at the Institute. Career certificate program enrollment requires the following steps:

- 1) Complete the WEI Entrance Exam or ACT Test
- 2) Complete a Class Registration Form
- 3) Complete a WEI Enrollment Agreement
- 4) Complete a WEI Debt Acknowledgement Agreement

Class Registration: Students enrolled in a certificate program shall have registration seniority for the first week a class is opened. Remaining class space is open for general registration after the first week a class is opened. General registration is offered on a first-come first-serve basis.

Class Prerequisites: Several courses offered by the Institute have prerequisites in order for students to register for them. The Instructor of Record may provide permission for a student to take a course without the required prerequisites.

Credit for Experiential Learning: Students may request credit for industry work experience for any course(s) in their program. The Instructor of Record for the class shall have full authority to evaluate student work experience documentation and grant credit for the requested course(s). The Instructor of Record shall forward industry experience documentation and corresponding course credit awarded to the Institute Registrar. Credit for Experiential Learning may not exceed twenty five percent (25%) of the total program credits. The credit award process is as follows:

1. Register for the class as normal
2. Only pay the \$50 registration fee for the class
3. Meet with the Instructor of Record after the first class and present work experience for evaluation. At a minimum, provide a letter detailing your work experience for the Instructor.
4. If the Instructor of Record approves the work experience, the documentation and course credit awarded will be forwarded to the Registrar
5. If the Instructor of Record does not approve the work experience, the student may pay the remaining tuition and take the class as normal.

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 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

- 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.

Class Sizes: The minimum size for classes is (8) students. The maximum class size is (12) for 200 level classes and (16) for 100 level classes. This provides a maximum of a 12:1 student to instructor ratio for the advanced 200 level classes and 16:1 ratio for the basic 100 level classes.

Certificate Programs Offered: The Institute offers several career certificates. The certificates prepare students for careers as Civil Engineering Technicians, GIS specialists, Heavy Civil Construction Managers, and Surveying Technicians. Detailed information for each certificate can be found in Chapter 6 of this catalog. The Institute does not offer a degree at this time. However, the Institute intends to expand in the future to offer degree options.

Class Cancellations: The Institute reserves the right to cancel classes that do not have at least (8) students with at least 24 hours notice of class start. Students will receive a full refund or the option to reschedule to a future class.

Class Refunds: Students must request all refunds in writing. The Institute will retain a \$50 registration fee and refund the remaining class cost based on the following schedule:

Refund Request by Percent of Class Completed	Refund Request by Day	Refund Amount
0-10%	Refund up to end of 1 st class	90% after registration fee
11-25%	Refund up to end of 2 nd class	75% after registration fee
26-50%	Refund up to end of 4 th class	50% after registration fee
50-100%	Refund after 4 th class day	0%

Class Grading: The Instructor for a course shall issue grades based on a 4.0 schedule for each student in each class instructed. The Instructor of Record is the sole authority to issue a class grade. The Instructor may use exams, quizzes, verbal questioning, observed competency, attendance, tardiness, and/or classroom behavior to determine this grade.

A class grade record will be sent by email to all students after a class is completed. Copies of grading records will be sent by standard mail for a fee of \$5, upon written request by the student. The Institute will maintain class grading records for (50) years after the class has ended.

Class Progress, 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.

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 Institute Director has full authority to determine dismissal. Class re-admission is possible, only with Institute Director permission.

Dave C. Bren, PE, MSCE

**Institute Director and
Civil Engineering Technology Instructor**

Experience: 15 years of experience in the public and private civil engineering industry. Most recent experience was as the Assistant Public Works Director for the City of Blaine. Mr. Bren established and taught the Civil Engineering Technology program at Bellingham Technical College from 1997-2006 while continuing to consult in the industry.

Registration: Professional Engineer
State of Washington License #43156

Education: Master of Science in Civil Engineering
University of Washington

Bachelor of Science in Civil Engineering
University of Washington

Robert D. Morse, PLS

Surveying Technology Instructor

Experience: 38 years of experience in the private surveying, civil engineering, structural, and forestry industries.

Registration: Professional Land Surveyor
State of Washington License #46896

Education: Bachelor of Science in Industrial Technology
Western Washington University

Associates in Civil Engineering Technology
Everett Community College

Surveying Program
British Columbia Institute of Technology

Katherine I. Bren, EIT, MSE

**Institute Registrar and
Engineering Technology Instructor**

Experience: 8 years of experience in the public and private civil engineering industry.

Registration: Engineer in Training
State of Washington License #21308

Education: Master of Science in Engineering
University of Washington

Bachelor of Science in Industrial Engineering
University of Washington

Josh Coray

Mechanical Engineering Technology Instructor

Experience: 22 years of experience with AutoCAD for 2D and 3D industrial design including piping, civil/structural, instrumentation, and mechanical design. Mr. Coray is currently the E/I&C CAD Lead for the Bellingham CH2M Hill CAD Department.

Education: University of Alaska, Kenai Peninsula College

Marjorie R. Bills

Math and Technical Writing Instructor

Experience: 10 years of experience in the private civil engineering industry conducting stormwater analysis, design, permitting, and technical report writing.

Education: Bachelor of Science in Mathematics
Western Washington University

Associates of Science in Civil Engineering
Technology, Bellingham Technical College

Associates in Pre-Engineering
Shoreline Community College

Training Facilities for the Institute: Regularly scheduled classes are held in (2) lecture rooms in the new BIA Building at 1650 Baker Creek Place, Bellingham, WA 98226. In addition, the Institute occasionally holds continuing education classes out in the industry, hosted within training rooms provided by the industry.

Equipment: The Institute has a computer lab for software lecture classes. However, all students enrolled in a certificate program are required to obtain a laptop computer for their homework studies.

Software and Textbooks: Students are responsible for their personal laptop software and class textbooks. In most cases students can download or purchase student versions of the software. In some cases, a student version of the software comes with the class textbook.

Washington Engineering Institute

Programs of Study

Chapter 6

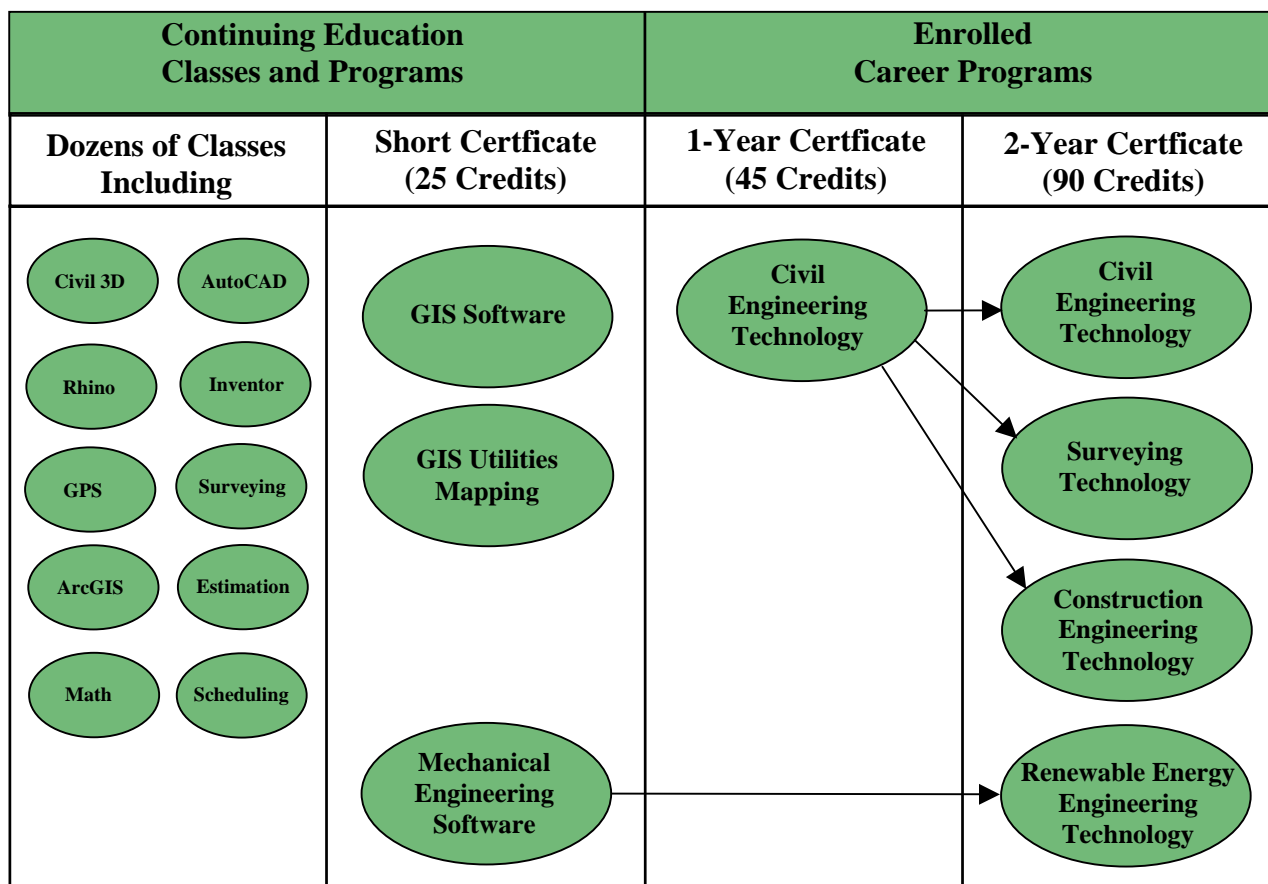
Certificate Programs Offered: The Institute offers several certificates as follows:

Career Certificate Programs	Certificate Type	Credits
Civil Engineering Technology	1 Year	45
Civil Engineering Technology	2 Year	90
Construction Engineering Technology	2 Year	90
Renewable Energy Engineering Technology	2 Year	90
Survey Technology	2 Year	90

Industry Upgrade Certificate Programs	Certificate Type	Credits
GIS Software	* Continuing Education	25
GIS Utilities Mapping	* Continuing Education	25
Mechanical Engineering Software	* Continuing Education	25

* Indicates prerequisite education or work experience required.

Program Progression: The following graphically shows program options at the Institute:



Civil Engineering Technology

One Year Certificate

Program Description: The one-year Civil Engineering Technology Certificate focuses on software and equipment job skills required for entry-level positions in government agencies and the private Civil Engineering Industry. This certificate is required for students to continue enrollment in a specialized second year certificate at the Institute. Hands on coursework includes field surveying, CAD design, CAD mapping, permitting, and heavy civil construction fundamentals.

ONE YEAR CERTIFICATE REQUIREMENTS			
First Quarter			
ENGR	101	Civil / Survey Industry Introduction	5
ENGR	111	Civil / Survey CAD Level 1	5
SURV	131	Traditional Surveying Equipment	5
			15
Second Quarter			
ENGR	112	Civil / Survey CAD Level 2	5
ENGR	123	Zoning, Permitting, and Government Agencies	5
MATH	111	Applied Precalculus Level 1	5
			15
Third Quarter			
HCON	121	Heavy Construction Estimation	5
MATH	112	Applied Precalculus Level 2	5
SURV	132	Robotic and GPS Surveying Equipment	5
			15
Certificate Total =			45

Civil Engineering Technology

Two Year Certificate

Program Description: The two-year Civil Engineering Technology Certificate focuses on software and equipment job skills required for careers in government agencies and the private Civil Engineering Industry. The two-year certificate greatly increases placement and career progression opportunities over the baseline one-year certificate. Hands on coursework includes field surveying, advanced CAD design, advanced CAD mapping, permitting, and heavy construction fundamentals.

TWO YEAR CERTIFICATE REQUIREMENTS			
First Quarter			
ENGR	101	Civil / Survey Industry Introduction	5
ENGR	111	Civil / Survey CAD Level 1	5
SURV	131	Traditional Surveying Equipment	5
			15
Second Quarter			
ENGR	112	Civil / Survey CAD Level 2	5
ENGR	123	Zoning, Permitting, and Government Agencies	5
MATH	111	Applied Precalculus Level 1	5
			15
Third Quarter			
HCON	121	Heavy Construction Estimation	5
MATH	112	Applied Precalculus Level 2	5
SURV	132	Robotic and GPS Surveying Equipment	5
			15
Fourth Quarter			
ENGR	211	Civil 3D Level 1	5
HCON	221	Heavy Construction Scheduling	5
HCON	222	Earthmoving Fundamentals	5
			15
Fifth Quarter			
ENGR	212	Civil 3D Level 2	5
HCON	205	Technical Report Writing	5
HCON	223	Construction Materials	5
			15
Sixth Quarter			
ENGR	213	Civil 3D Advanced Grading	5
SURV	201	Civil Engineering and Surveying Law and Ethics	5
SURV	234	Construction Surveying	5
			15
Certificate Total =			90

Construction Engineering Technology

Two Year Certificate

Program Description: The two-year Construction Engineering Technology Certificate focuses on software and equipment job skills required for careers in the Heavy Civil and Site Work Construction Industry. The two-year certificate greatly increases placement and career progression opportunities over the baseline one-year certificate. Hands on coursework includes construction law, construction project documentation, construction project controls, construction surveying, construction safety, permitting, construction standards and codes.

TWO YEAR CERTIFICATE REQUIREMENTS			
First Quarter			
ENGR	101	Civil / Survey Industry Introduction	5
ENGR	111	Civil / Survey CAD Level 1	5
SURV	131	Traditional Surveying Equipment	5
			15
Second Quarter			
ENGR	112	Civil / Survey CAD Level 2	5
ENGR	123	Zoning, Permitting, and Government Agencies	5
MATH	111	Applied Precalculus Level 1	5
			15
Third Quarter			
HCON	121	Heavy Construction Estimation	5
MATH	112	Applied Precalculus Level 2	5
SURV	132	Robotic and GPS Surveying Equipment	5
			15
Fourth Quarter			
HCON	201	Contracts and Construction Law	5
HCON	221	Heavy Construction Scheduling	5
HCON	222	Earthmoving Fundamentals	5
			15
Fifth Quarter			
HCON	202	Construction Project Documentation	5
HCON	223	Construction Materials	5
HCON	231	Construction Resource Accounting	5
			15
Sixth Quarter			
HCON	203	Construction Safety	5
HCON	232	Construction Project Controls	5
SURV	234	Construction Surveying	5
			15
Certificate Total =			90

GIS Software and Utilities Mapping

Short Continuing Education Certificates

Program Description: These short continuing education certificates focus on software and equipment job skills required for advancement in government, mapping, and GIS industry technical positions. These two certificates are intended to upgrade the skills of professionals with existing education or work experience in the planning, mapping, surveying, or engineering industry. Hands on coursework includes GPS field mapping, advanced CAD mapping, advanced ArcGIS mapping, ArcGIS extensions, and GIS database systems.

GIS SOFTWARE CERTIFICATE REQUIREMENTS			
Sixth Quarter			
GIS	201	ArcGIS Level 1	5
GIS	202	ArcGIS Level 2	5
GIS	203	ArcGIS Level 3	5
GIS	212	GIS Database Systems	5
GIS	214	ArcGIS Extensions	5
Certificate Total =			25

GIS UTILITIES MAPPING CERTIFICATE REQUIREMENTS			
SURV	131	Traditional Surveying Equipment	5
SURV	132	Robotic and GPS Surveying Equipment	5
GIS	211	Map 3D Level 1	5
SURV	231	GPS Mapping	5
GIS	215	GIS Final Project	5
Certificate Total =			25

Infrequent Course Note: Courses in these two continuing education certificate programs are offered infrequently or only once per year. Therefore, completion of these small certificate programs may require taking occasional classes spread out over a year.

Certificate Prerequisites: Both certificates required education or work experience in planning, mapping, surveying, or the engineering industry as a prerequisite: Those who cannot meet the education or work experience prerequisite for the program may take the 1 Year Civil Engineering Technology certificate offered at the Institute to meet the requirement. The Instructor of Record may provide permission for a student to take individual courses within the program without the required education or work experience prerequisites.

Mechanical Engineering Software

Short Continuing Education Certificate

Program Description: This short continuing education certificate focuses on software job skills required for advancement in mechanical technical positions. The certificate is intended to upgrade the skills of professionals with existing education or work experience in the mechanical industry. Software coursework includes AutoCAD with mechanical applications, Autodesk Inventor, and Rhino software.

MECHANICAL ENGINEERING SOFTWARE CERTIFICATE REQUIREMENTS			
MENG	111	Mechanical CAD Level 1	5
MENG	112	Mechanical CAD Level 2	5
MENG	131	Rhino 3D Modeling Level 1	5
MENG	211	Inventor Mechanical Design Level 1	5
MENG	212	Inventor Mechanical Design Level 2	5
Certificate Total =			25

Infrequent Course Note: Courses for this continuing education certificate program are offered infrequently or only once per year. Therefore, completion of this small certificate program may require taking occasional classes spread out over a year.

Certificate Prerequisites: This certificate program requires education or work experience in mechanical engineering, manufacturing, or piping industry as a prerequisite. The Instructor of Record may provide permission for a student to take individual courses within the program without the required education or work experience prerequisites.

Renewable Energy Engineering Technology

Two Year Certificate

Program Description: This program combines hands-on applied coursework in mechanical and electrical engineering technology with theory based coursework in wind power production, solar power production, and hydropower production. The two-year Renewable Energy Engineering Technology Certificate is intended to produce engineering design technicians that will support project engineers in the development of renewable energy sources. In addition, the program curriculum prepares students well for employment in the more traditional mechanical engineering technician field.

TWO YEAR CERTIFICATE REQUIREMENTS			
<u>First Quarter</u>			
RENG	101	Hydro Power Fundamentals	5
RENG	121	Electrical Power Fundamentals	5
MECH	111	Mechanical CAD Level 1	5
			15
<u>Second Quarter</u>			
RENG	102	Wind Power Fundamentals	5
ENGR	123	Zoning, Permitting, and Government Agencies	5
MATH	111	Applied Precalculus Level 1	5
			15
<u>Third Quarter</u>			
RENG	103	Solar Power Fundamentals	5
MATH	112	Applied Precalculus Level 2	5
MECH	112	Mechanical CAD Level 2	5
			15
<u>Fourth Quarter</u>			
RENG	201	Fluid Mechanics	5
RENG	202	Electro Mechanical Conversions	5
MECH	131	Rhino 3D Modeling Level 1	5
			15
<u>Fifth Quarter</u>			
RENG	203	Photovoltaic Systems	5
HCON	205	Technical Report Writing	5
MECH	211	Inventor Mechanical Design Level 1	5
			15
<u>Sixth Quarter</u>			
RENG	204	Power Systems Modeling and Analysis	5
RENG	205	Engineering Economics	5
MECH	212	Inventor Mechanical Design Level 2	5
			15
Certificate Total =			90

Surveying Technology

Two Year Certificate

Program Description: The two-year Surveying Technology Certificate focuses on software and equipment job skills required for careers in government agencies and the private Mapping and Surveying Industry. The two-year certificate greatly increases placement and subsequent career progression opportunities over the baseline one-year certificate. Hands on coursework includes GPS field surveying, traditional field surveying, construction surveying, advanced CAD mapping, GPS machine automation, and construction safety.

TWO YEAR CERTIFICATE REQUIREMENTS			
<u>First Quarter</u>			
ENGR	101	Civil / Survey Industry Introduction	5
ENGR	111	Civil / Survey CAD Level 1	5
SURV	131	Traditional Surveying Equipment	5
			15
<u>Second Quarter</u>			
ENGR	112	Civil / Survey CAD Level 2	5
ENGR	123	Zoning, Permitting, and Government Agencies	5
MATH	111	Applied Precalculus Level 1	5
			15
<u>Third Quarter</u>			
HCON	121	Heavy Construction Estimation	5
MATH	112	Applied Precalculus Level 2	5
SURV	132	Robotic and GPS Surveying Equipment	5
			15
<u>Fourth Quarter</u>			
ENGR	211	Civil 3D Level 1	5
SURV	221	Survey Field Notes and Data Collection	5
SURV	231	GPS Mapping	5
			15
<u>Fifth Quarter</u>			
SURV	213	Civil 3D for Surveyors	5
SURV	232	DTM Surface Preparation for Machine Automation	5
SURV	233	GPS for Machine Automation	5
			15
<u>Sixth Quarter</u>			
HCON	203	Construction Safety	5
SURV	201	Civil Engineering and Surveying Law and Ethics	5
SURV	234	Construction Surveying	5
			15
Certificate Total =			90

Credit, Lecture Hour, and Lab Hour Conversions: The Institute defines all classes in terms of credits. Credit to hour conversions are defined by the following table:

18 Lab Hours = 1 Credit
8 Lecture Hours = 1 Credit

Credit Based Tuition: The institute uses a simple **\$80 per credit basis** for all tuition and registration costs. Therefore, tuition for a typical (15) credit quarter would be \$1200.

Textbook and Supplies Costs: Item purchasing is spread out through the program and item costs vary greatly on desired item quality. In many cases, you can get used equipment and books online to reduce your costs. We will add additional items to the following list as the program continues to develop:

3-Ring Clear Presentation Binders	\$30-\$50
Mechanical Pencils, Erasers, and Highlighters	\$30-\$50
12" Engineer's Scale Stick	\$5
11x17 Presentation Portfolio (Itoya Art Portfolio)	\$15
Survey Vest	\$65
Survey Field Book – Rite in the Rain Transit	\$6
25' Engineers Pocket Tape – Lufkin Hi Vis	\$14
Compass, Suunto MC2D with Clinometer	\$45

Laptop Computer	\$350-\$1200
Books	\$400-\$600
Scientific Calculator	\$50-\$100
Engineering Pad Paper	\$14-\$28
Drawing Templates	\$5-\$15

Civil Engineering Classes				
Class Number	Class Name	Lecture Hours	Lab Hours	Credits
ENGR 101	Civil / Survey Industry Introduction	24	36	5
ENGR 111	Civil / Survey CAD Level 1	24	36	5
ENGR 112	Civil / Survey CAD Level 2	24	36	5
* ENGR 121	Civil Engineering Drawing Fundamentals	24	-	3
* ENGR 122	Civil Engineering Design Fundamentals	24	-	3
ENGR 123	Zoning, Permitting, and Government Agencies	24	36	5
ENGR 211	Civil 3D Level 1	24	36	5
ENGR 212	Civil 3D Level 2	24	36	5
ENGR 213	Civil 3D Advanced Grading	24	36	5
* ENGR 214	Civil 3D Hydraflow Storm Modeling	24	-	3
* ENGR 215	Civil 3D CAD Manager Styles and Vault Planning	24	-	3
* ENGR 216	Civil 3D CAD Manager Transition Planning	24	-	3
* ENGR 217	Civil 3D Site Modeling in 3D	24	-	3
* ENGR 218	Civil 3D Certification Exam Preparation	24	36	5
* ENGR 219	Civil CET Exam Preparation	24	36	5
* ENGR 231	Statics	24	36	5
* ENGR 271	EIT / FE Exam Preparation - Civil	40	-	5
* ENGR 272	PE Exam Preparation - Civil	40	-	5

* Indicates Continuing Education Class Offering Only

Construction Engineering Classes

Class Number	Class Name	Lecture Hours	Lab Hours	Credits
* HCON 101	Flagging Certification	8	0	0
* HCON 102	Flagging Re-Certification	4	0	0
* HCON 111	Quick Books Level 1	24	36	5
* HCON 112	Quick Books Level 2	24	36	5
HCON 121	Heavy Construction Estimation	24	36	5
HCON 201	Contacts and Construction Law	24	36	5
HCON 202	Construction Project Documentation	24	36	5
HCON 203	Construction Safety	24	36	5
* HCON 204	Standards, Specifications, and Codes	24	36	5
HCON 205	Technical Report Writing	24	36	5
HCON 221	Heavy Construction Scheduling	24	36	5
HCON 222	Earthmoving Fundamentals	24	36	5
HCON 223	Construction Materials	24	36	5
HCON 231	Construction Resource Accounting	24	36	5
HCON 232	Construction Project Controls	24	36	5

* Indicates Continuing Education Class Offering Only

GIS Classes

Class Number	Class Name	Lecture Hours	Lab Hours	Credits
* GIS 101	Geography and GIS Fundamentals	24	-	3
* GIS 201	ArcGIS Level 1	24	36	5
* GIS 202	ArcGIS Level 2	24	36	5
* GIS 203	ArcGIS Level 3	24	36	5
* GIS 211	Map 3D Level 1	24	36	5
* GIS 212	GIS Database Systems	24	36	5
* GIS 213	GIS Applications	24	36	5
* GIS 214	ArcGIS Extensions	24	36	5
* GIS 215	GIS Final Project	24	36	5

* Indicates Continuing Education Class Offering Only

Math Classes

Class Number	Class Name	Lecture Hours	Lab Hours	Credits
MATH 111	Applied Precalculus Level 1	24	36	5
MATH 112	Applied Precalculus Level 2	24	36	5

Mechanical Engineering Classes

Class Number	Class Name	Lecture Hours	Lab Hours	Credits
MECH 111	Mechanical CAD Level 1	24	36	5
MECH 112	Mechanical CAD Level 2	24	36	5
MECH 131	Rhino 3D Modeling Level 1	24	36	5
MECH 211	Inventor Mechanical Design Level 1	24	36	5
MECH 212	Inventor Mechanical Design Level 2	24	36	5

Renewable Energy Engineering Classes

Class Number	Class Name	Lecture Hours	Lab Hours	Credits
RENG 101	Hydro Power Fundamentals	24	36	5
RENG 102	Wind Power Fundamentals	24	36	5
RENG 103	Solar Power Fundamentals	24	36	5
RENG 121	Electrical Power Fundamentals	24	36	5
RENG 201	Fluid Mechanics	24	36	5
RENG 202	Electro Mechanical Conversions	24	36	5
RENG 203	Photovoltaic Systems	24	36	5
RENG 204	Power Systems Modeling and Analysis	24	36	5
RENG 205	Engineering Economics	24	36	5

Surveying Classes

Class Number	Class Name	Lecture Hours	Lab Hours	Credits
* SURV 121	Surveying Drawing Fundamentals	24	-	3
SURV 131	Traditional Surveying Equipment	24	36	5
SURV 132	Robotic and GPS Surveying Equipment	24	36	5
SURV 201	Civil Engineering and Surveying Law and Ethics	24	36	5
SURV 213	Civil 3D for Surveyors	24	36	5
SURV 221	Survey Field Notes and Data Collection	24	36	5
SURV 231	GPS Mapping	24	36	5
SURV 232	DTM Surface Preparation for Machine Automation	24	36	5
SURV 233	GPS for Machine Automation	24	36	5
SURV 234	Construction Surveying	24	36	5

* Indicates Continuing Education Class Offering Only

Typical Monthly Class Calendar

- Lecture classes are instructed in the evenings from 6-9 PM
- Most classes run on the A Class Schedule (TTh). However, some classes may run on the B Class Schedule (MW).
- Instructors may utilize Saturdays for a class labs and exams
- All classes are completed within one month. Program student have a new class every month.
- The following typical monthly schedule will be adjusted for any National Holidays

Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		Sunday	
												1	
2	6-9 PM	3	6-9 PM	4	6-9 PM	5	6-9 PM	6		7	TBA	8	
B Class		A Class		B Class		A Class				A / B Optional Lab			
9	6-9 PM	10	6-9 PM	11	6-9 PM	12	6-9 PM	13		14	TBA	15	
B Class		A Class		B Class		A Class				A / B Optional Lab			
16	6-9 PM	17	6-9 PM	18	6-9 PM	19	6-9 PM	20		21	TBA	22	
B Class		A Class		B Class		A Class				A / B Optional Lab			
23	6-9 PM	24	6-9 PM	25	6-9 PM	26	6-9 PM	27		28	TBA	29	
B Class		A Class		B Class		A Class				A / B Optional Lab			

Washington Engineering Institute

Course Descriptions

Chapter 7

ENGR 101	
Civil / Survey Industry Introduction	
Credits	5
Prerequisites	None
<p>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.</p>	

ENGR 121	
Civil Engineering Drawing Fundamentals	
Credits	3
Prerequisites	ENGR 111
<p>This class introduces students to the fundamentals of Civil Engineering Drawing. Students will learn about drawing scale, APWA standards, local development standards, company standards, base mapping fundamentals, topographic mapping fundamentals, plan view fundamentals, profile view fundamentals, utility fundamentals, road sections, terrain sections, short plat drawings, long plat drawings, and asbuilt drawings</p>	

ENGR 111	
Civil / Survey CAD Level 1	
Credits	5
Prerequisites	None
<p>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.</p>	

ENGR 122	
Civil Engineering Design Fundamentals	
Credits	3
Prerequisites	ENGR 121
<p>This class introduces students to the fundamentals of Civil Engineering Grading and Utilities Design. Students will learn design fundamentals for site grading, pond grading, road grading, storm utility plan and profile design, sewer utility plan and profile design, and water utility plan and profile design.</p>	

ENGR 112	
Civil / Survey CAD Level 2	
Credits	5
Prerequisites	None
<p>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.</p>	

ENGR 123	
Zoning, Permitting, and Government Agencies	
Credits	5
Prerequisites	None
<p>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.</p>	

ENGR 211	
Civil 3D Level 1	
Credits	5
Prerequisites	None
<p>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.</p>	

ENGR 214	
Civil 3D Hydraflow Storm Modeling	
Credits	3
Prerequisites	ENGR 212
<p>This advanced Civil 3D class shows the student how to integrate the Civil 3D Hydraflow extension into site stormwater and regional watershed analysis. The course covers the Hydraflow Storm Sewers, Express, and Hydrographs extensions for AutoCAD Civil 3D. Course topics include pavement drainage analysis, inlet analysis, hydraulic calculations, watershed analysis, and pond modeling with the Hydraflow extensions.</p>	

ENGR 212	
Civil 3D Level 2	
Credits	5
Prerequisites	ENGR 211
<p>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.</p>	

ENGR 215	
Civil 3D CAD Manager Styles & Vault Planning	
Credits	3
Prerequisites	ENGR 212
<p>This advanced Civil 3D class is a practical hands-on experience for CAD Managers to prepare the company Styles and prepare for Vault network integration. The course supports the CAD Manager to prepare the styles for their company with practical industry examples and structured coursework. In addition, the course supports the CAD Manager to prepare the network and company for Vault integration. The materials prepared in the class will be used to prepare a company transition plan in the ENGR 216 class.</p>	

ENGR 213	
Civil 3D Advanced Grading	
Credits	5
Prerequisites	ENGR 212
<p>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.</p>	

ENGR 216	
Civil 3D CAD Manager Transition Planning	
Credits	3
Prerequisites	ENGR 215
<p>This advanced Civil 3D class is a practical hands-on experience for CAD Managers to prepare a transition written plan specific their company standards from LDT to C3D. The course covers industry standard layering, company styles, drawing templates, sheet layout templates, data short cuts, and Vault integration. CAD Managers will prepare a written plan tailored for their specific company standards as final project for this class.</p>	

ENGR 217	
Civil 3D Site Modeling in 3D	
Credits	3
Prerequisites	ENGR 212
<p>This advanced Civil 3D class shows the student how to prepare 3D sites, utilities, and grading for various presentation. The course covers the application of materials, rendering tools, live client presentation, slideshows, site fly through, and photorealistic rendering.</p>	

ENGR 231	
Statics	
Credits	5
Prerequisites	MATH 112
<p>This course provides the fundamentals for engineering mechanics of rigid bodies in equilibrium. The course focuses on 2D and 3D scalar and vector analysis of loads and forces in static engineering structures.</p>	

ENGR 218	
Civil 3D Certification Exam Preparation	
Credits	5
Prerequisites	ENGR 212
<p>This advanced Civil 3D class prepares the student for the Civil 3D Associate Certification Exam. Students who have learned Civil 3D in a practical manor or on the job in the Institutes practical classes will be surprised to discover that the Certification Exam is very academic nature. Therefore, students will have to review various Civil 3D methodology concepts and interface details in this class to prepare for this academic Exam.</p>	

ENGR 271	
EIT / FE Exam Preparation - Civil	
Credits	5
Prerequisites	None
<p>This advanced class 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. The class concludes with a ½ length sample exam.</p>	

ENGR 219	
Civil CET Exam Preparation	
Credits	5
Prerequisites	ENGR 212
<p>This advanced class prepares the student for the Civil Certified Engineering Technician Exam. The CET exam is a national standard exam that recognizes engineering technician competencies. Please refer to the American Society of Certified Engineering Technicians website for exam details.</p>	

ENGR 272	
PE Exam Preparation - Civil	
Credits	5
Prerequisites	None
<p>This advanced class prepares the PE candidate to take the NCEES Civil PE Exam. In addition, the class provides a venue for candidates to meet and form study groups to further prepare for the exam. The class focuses on the general section of the exam in preparing for all (5) civil specializations; construction, geotechnical, structural, transportation, and water resources. The class concludes with a sample general section exam.</p>	

GIS 101	
Geography and GIS Fundamentals	
Credits	3
Prerequisites	None
<p>This class provides an overview of geography fundamentals including datums and projections. In addition, the course combines the learning of the Arc Explorer software with an introduction to Geographic Information Systems (GIS) course.</p>	

GIS 203	
ArcGIS Level 3	
Credits	5
Prerequisites	None
<p>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 how to apply ArcGIS tools with a focus on working with data stored in a geodatabase, organize and prepare data for analysis, create geoprocessing models, and work through a challenging analysis project. The workflow taught in this course is applicable to all types of GIS analysis.</p>	

GIS 201	
ArcGIS Level 1	
Credits	5
Prerequisites	None
<p>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.</p>	

GIS 211	
Map 3D Level 1	
Credits	5
Prerequisites	None
<p>This class is a practical hands-on experience. Students will work through a mapping project using Map 3D to accomplish certain tasks and solve problems along the way. The class covers object data, external data, annotation, COGO, importing data, raster images, queries, GIS contours, coordinate conversions, thematic mapping, and exporting data.</p>	

GIS 202	
ArcGIS Level 2	
Credits	5
Prerequisites	None
<p>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 building geodatabases, creating features, editing features and attributes, geocoding addresses, making maps from templates, maps for presentation, and creating models.</p>	

GIS 212	
GIS Database Systems	
Credits	5
Prerequisites	None
<p>This class provides an introduction to databases, their terminology and an overview of various data models and modeling techniques. Topics include relational database design, Codd's rules, constraints, relationships, normalization, and the structured query language (SQL).</p>	

GIS 213	
GIS Applications	
Credits	5
Prerequisites	None
<p>Students will undertake a group or class GIS project under the direction of the instructor. The project must include the use of GPS collected data. The project concludes with a final report and class presentation on the GIS project.</p>	

HCON 102	
Flagging Re-Certification	
Credits	0
Prerequisites	Previous Flagging Certification
<p>This class provides State of Washington certification as a flagger upon satisfactory completion of the course. Flagger re-certification earned in the course is good for three years.</p>	

GIS 214	
ArcGIS Extensions	
Credits	5
Prerequisites	None
<p>This class is a practical hands-on experience. Students will work through a mapping project using various ArcGIS extensions to accomplish certain tasks and solve problems along the way.</p>	

HCON 111	
Quick Books Level 1	
Credits	5
Prerequisites	None
<p>This class provides a course of study for entry level Quick Books users to get started properly. The course covers software interface, setting up the company, basic accounting, everyday transactions, basic payroll, and working with reports.</p>	

GIS 215	
GIS Final Project	
Credits	5
Prerequisites	None
<p>Students will undertake an independent GIS project in a selected area of GIS technology, in consultation with industry and the course instructor. The project concludes with a final report and class presentation with industry guests. Individual students must show how they solved a GIS technical problem and demonstrate thorough knowledge of their project.</p>	

HCON 112	
Quick Books Level 2	
Credits	5
Prerequisites	HCON 111
<p>This class provides a course of study for intermediate level Quick Books users. The course covers multiple user methods, password protection, integration with MS Word and Excel, protecting data, bounced checks, down payments and deposits, automatic transactions, credit cards, and online banking.</p>	

HCON 101	
Flagging Certification	
Credits	0
Prerequisites	None
<p>This class provides State of Washington certification as a flagger upon satisfactory completion of the course. Flagger certification earned in the course is good for three years.</p>	

HCON 121	
Heavy Construction Estimation	
Credits	5
Prerequisites	None
<p>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.</p>	

HCON 201	
Contracts and Construction Law	
Credits	5
Prerequisites	None
<p>This course provides an 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.</p>	

HCON 205	
Technical Report Writing	
Credits	5
Prerequisites	None
<p>The course focuses on preparing contracts, contract modification, project correspondence, permits, project billing documentation, presentations, and email educate specific to the heavy civil construction industry.</p>	

HCON 202	
Construction Project Documentation	
Credits	5
Prerequisites	None
<p>This course provides an introduction to project documentation required for public projects. The course focuses on contracts, contract modification, project correspondence, permits, as-built drawings, and project billing documentation specific to the heavy civil construction industry.</p>	

HCON 221	
Heavy Construction Scheduling	
Credits	5
Prerequisites	None
<p>This course provides an introduction to precedence diagrams, activity networks, project float calculations, and critical path management specific to the heavy civil construction industry. The course focuses scheduling fundamentals and concludes with the use of MS Project to prepare and adjust a project schedule.</p>	

HCON 203	
Construction Safety	
Credits	5
Prerequisites	None
<p>The course provides an introduction to the methods of safety management. The course focuses on traffic control plans, trench safety, labor and industry requirements, OSHA and WISHA requirements, safety management, risk management, and loss control.</p>	

HCON 222	
Earthmoving Fundamentals	
Credits	5
Prerequisites	None
<p>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.</p>	

HCON 204	
Standards, Specifications, and Codes	
Credits	5
Prerequisites	None
<p>This course provides an introduction to heavy civil construction inspection practice. The course focuses on field measurements and inspection during and after construction of sewer, water, storm, and roadway civil improvements.</p>	

HCON 223	
Construction Materials	
Credits	5
Prerequisites	None
<p>This course provides an introduction to the engineering properties and testing requirements of heavy civil construction materials. Focuses on aggregates, asphalt, and Portland cement concrete as construction materials.</p>	

HCON 231	
Construction Resource Accounting	
Credits	5
Prerequisites	None
<p>This course provides an introduction to resource accounting fundamentals specific to 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.</p>	

MATH 112	
Applied Precalculus Level 2	
Credits	5
Prerequisites	MATH 111
<p>This class provides an applied precalculus trigonometry course. Course subjects include classic trigonometric functions, graphing, inverses, identities, equations, laws, and vectors.</p>	

HCON 232	
Construction Project Controls	
Credits	5
Prerequisites	None
<p>The course provides an introduction to the methods of controlling heavy civil construction projects. The course focuses on job estimate review, cost account codes, budget monitoring, performance forecasting, and project schedule review.</p>	

MECH 111	
Mechanical CAD Level 1	
Credits	5
Prerequisites	None
<p>This is an entry level CAD class for the mechanical and manufacturing professions. Students will learn AutoCAD software by conducting mechanical industry applications. Thus students are learning fundamentals of the profession at the same time as learning CAD. Course material includes software interface, linework, text, coordinate systems, units, plotting, layering, properties, shape drawing, constructions, basic dimensioning, osnaps, filters, selections, display options, editing, polylines, and data query.</p>	

MATH 111	
Applied Precalculus Level 1	
Credits	5
Prerequisites	None
<p>This class is an applied precalculus 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 (except statics) to some extent in previous algebra and geometry classes. Each class period will offer a formal lecture and time for student to work on problems.</p>	

MECH 112	
Mechanical CAD Level 2	
Credits	5
Prerequisites	MECH 111
<p>This is an intermediate level CAD class for the mechanical and manufacturing professions. Students will learn AutoCAD software by conducting mechanical industry applications. Thus students are learning fundamentals of the profession at the same time as learning CAD. Course material includes advanced dimensioning, blocks, external references, ACAD Customization, 3D Surfaces, 3D Solids, and Rendering.</p>	

MECH 131	
Rhino 3D Modeling Level 1	
Credits	5
Prerequisites	MECH 112
<p>This class 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.</p>	

RENG 101	
Hydro Power Fundamentals	
Credits	5
Prerequisites	None
<p>This class provides the fundamentals of Hydro Power production. The course materials include an overview of hydrology physics, power, head, and flow-rate. In addition, the course covers traditional system components including spillways, gates, valves, trashracks, penstocks, generators, hydro batteries, and governors.</p>	

MECH 211	
Inventor Mechanical Design Level 1	
Credits	5
Prerequisites	None
<p>This class is a practical hands-on experience. Students will work through a basic mechanical design project using Autodesk Inventor, showing many different methods of using Autodesk Inventor to accomplish certain tasks and solve problems along the way. The class 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</p>	

RENG 102	
Wind Power Fundamentals	
Credits	5
Prerequisites	None
<p>This class provides the fundamentals of Wind Power production. The course materials include an overview of wind physics. In addition, the course covers traditional system components including vertical and horizontal axis turbines, generators, and governors.</p>	

MECH 212	
Inventor Mechanical Design Level 2	
Credits	5
Prerequisites	MECH 211
<p>This class is a practical hands-on experience. Students will work through an advanced mechanical design project, showing many different methods of using Autodesk Inventor to accomplish certain 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.</p>	

RENG 103	
Solar Power Fundamentals	
Credits	5
Prerequisites	None
<p>This class provides the fundamentals of Solar Power production. The course materials include an overview of solar radiation physics and heat transfer. In addition, the course covers traditional system components including mirror collectors, plate collectors, water heating, and cooling.</p>	

RENG 121	
Electrical Power Fundamentals	
Credits	5
Prerequisites	None
<p>This class provides the fundamentals of electrical power. The course materials include and overview of single phase circuits and three phase circuits. In addition, the course covers system components including power line transmission, transformers, power factor, building drop down services, and power grid fundamentals.</p>	

RENG 203	
Photovoltaic Systems	
Credits	5
Prerequisites	RENG 202
<p>This class provides the fundamentals of Photovoltaic Systems for Solar Power production. The course materials include an overview of power inversion and panel performance analysis. In addition, the course covers traditional system components including batteries, Photovoltaic (PV) modules, charge controllers, power trackers, and power inverters.</p>	

RENG 201	
Fluid Mechanics	
Credits	5
Prerequisites	RENG 101
<p>The class provides the fundamentals of fluid mechanics. The course materials include fluid statics, fluid dynamics, pipe flow, drag, flow measurement, viscous flow, laminar flow, turbulent flow, and fluid movement forces.</p>	

RENG 204	
Power Systems Modeling and Analysis	
Credits	5
Prerequisites	RENG 203
<p>This class provides the fundamentals of modeling and balancing power from variable renewable power sources and traditional backup sources to provide continuous power supplies. Various software will be used to model and balance the power supply to the grid. Cost balancing will also be used to boost profitability of the power system.</p>	

RENG 202	
Electro Mechanical Conversions	
Credits	5
Prerequisites	RENG 121
<p>This class provides the fundamentals of Electromechanical Energy Conversion. The course materials include an overview of single and three phase Alternating Current (AC) motor/generators and Direct Current (DC) motor/generators. In addition, the course covers power switching devices, speed control, brushless motors, circuits, and diagrams</p>	

RENG 205	
Engineering Economics	
Credits	5
Prerequisites	None
<p>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.</p>	

SURV 121	
Survey Drawing Fundamentals	
Credits	3
Prerequisites	ENGR 111
This class introduces students to the fundamentals of Surveying Drawing. Students will learn about drawing scale, drafting standards, traditional angle and distance point survey drawing, coordinate point survey drawing, base mapping fundamentals, topographic mapping fundamentals, road sections, terrain sections, plat drawings, and asbuilt drawings.	

SURV 213	
Civil 3D for Surveyors	
Credits	5
Prerequisites	ENGT 212
This class is a practical hands-on experience. Students will work through the site survey of a project with the Survey Toolspace in Civil 3D. The course covers survey databases, survey networks, figure styles and prefixes, importing field books, working with survey data, and working with sharing point updates through Vault.	

SURV 131	
Traditional Surveying Equipment	
Credits	5
Prerequisites	None
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.	

SURV 221	
Survey Field Notes and Data Collection	
Credits	5
Prerequisites	SURV 131
This class introduces students to survey field notes and data collection fundamentals. Students will learn about standard techniques with field notes while conducted practical hands-on field notes exercises for various surveying projects. Students will prepare an example field book with their own hand showing note formatting for various types of surveying projects. In addition, students will learn about standard data collection techniques while conducting practical exercises for various surveying projects. The class includes downloading and file conversion exercises.	

SURV 132	
Robotic and GPS Surveying Equipment	
Credits	5
Prerequisites	SURV 131
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.	

SURV 231	
GPS Mapping	
Credits	5
Prerequisites	SURV 131
This class provides a hands-on experience with Mapping Grade GPS equipment and projects. Students will review office and field equipment practices. The class includes fieldwork for a public utilities mapping project.	

SURV 201	
Civil Engineering & Surveying Law & Ethics	
Credits	5
Prerequisites	None
This class provides a detailed study of the RCW/WAC as it applies to the Civil Engineering and Surveying industry. In addition, the class provides a frank discourse on ethics and standards of practice for the civil / survey industry.	

SURV 232	
DTM Surface Preparation & Machine Automation	
Credits	5
Prerequisites	ENGR 212
This class provides a hands-on experience with Civil 3D to prepare a composite FG/DTM surface. Given and EG surface and a set of construction plans students will prepare a composite FG/DTM surface. The course includes a discussion on GPS machine automation principles to prepare for the machine automation class.	

SURV 233	
GPS for Machine Automation	
Credits	5
Prerequisites	SURV 232
<p>This class provides a hands-on experience with GPS Construction Machine Automation. Students will review office and field equipment practices. The class concludes with a field demonstration of the equipment be vendors.</p>	

SURV 234	
Construction Surveying	
Credits	5
Prerequisites	SURV 132
<p>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.</p>	

Washington Engineering Institute

School Licensing Information

Chapter 8

This school is licensed under Chapter 28C.10 RCW. Inquires or complaints regarding this private vocational school may be made to the:

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