

Micro Hydro Project

RENG 201 – 5 Credits – October 2011



Class Description:

This class provides a hands-on experience with the development of a demonstration microhydro project. Students will use the knowledge gained in previous classes to conduct a low cost Pelton Wheel based microhydro project including: site assessment, site surveying with an autolevel, preparation of a written system plan, acquisition of materials, and system assembly. This demonstration project is off-grid and temporary in nature. All materials are to be recoverable for the next class year. This demonstration project may take successive class years to fully complete.

Location:

WEI Headquarters:
Haskell Business Center
1301 Fraser Street, A3
Bellingham, WA 98229



Dates and Times:

The class lectures are scheduled to run on **Tuesday and Thursday evenings at 6:00-9:00 PM** from **October 4th to October 27th**. This provides (8) evening classes to lecture material for the course. Student work teams will conduct their fieldwork outside of class lecture times and independent of the instructor. Work teams will plan and schedule fieldwork outside of class lecture times as needed.

Tuition and Registration:

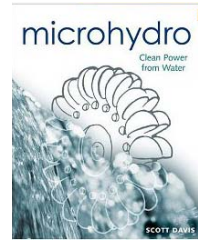
Tuition must be paid before the class begins. Program enrolled students have seniority for this class and should register online three-weeks before the class begins. Continuing education students may begin registering online two-weeks before the class begins. Students may also send class registrations by mail to the following address:

Washington Engineering Institute
Registration Office
PO Box 483
Custer WA 98240

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

School Provided Materials:

- **Lecture Notes:** The school provides lecture handouts as needed.
- **Micro Hydro Clean Power From Water ISBN: 9780865714847.** by Scott Davis, Published by Mother Earth News. The textbooks must be returned at the end of class to gain a transcript grade. A fee of \$30 shall be paid for damaged, lost, or destroyed books.



Student Provided Materials:

- 3 Ring Binder, calculator, engineer calculations pad (green sheets), and small straight edge for linework.
- Laptop computer with wireless capability
- Field work clothing
- Positive, motivated, respectful, and helpful classroom character

Instructor

Dave C. Bren, PE, MSCE Program 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

Education: Master of Science in Civil Engineering
University of Washington

Bachelor of Science in Civil Engineering
University of Washington

Format:

Class Structure: Evenings will typically run in one-hour blocks as follows:

6:00 PM – Class setup and first hour
6:50 PM – Break
7:00 PM – Class
7:50 PM – Break
8:00 PM – Class last hour

Final Exam and Grades:

Students will be graded by lecture attendance (25%), fieldwork participation (25%) and final project grade (50%). The Instructor holds the sole authority to issue grades and shall issue grades based on a 4.0 schedule as follows.

Grading legend

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

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

AU	Class audited with no grade earned
EXP	Experiential credit granted per policy
EDU	Prior education credit granted per policy
I	Incomplete – Instructor Allows Extra Time to Complete
W	Withdrawn from class

October 2011 – Micro Hydro Project – RENG 201

Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		Sunday	
3		4	Site Assessment I	5		6	Site Assessment II	7		8	Meeting Hall	9	
		6:00-9:00 PM <u>Class Project & Measuring Flow:</u> <ul style="list-style-type: none"> ◆ Class Orientation ◆ Class Project ◆ Measuring Stream Flow ◆ Read Chapters 1-3 				6:00-9:00 PM <u>Measuring Pressure:</u> <ul style="list-style-type: none"> ◆ Autolevel Operations ◆ Field Book Notes ◆ Level Loop Elevation Surveying ◆ Pressure and Pipe Loss Calcs 				9:00-NOON Optional			
10		11	System Planning I	12		13	System Planning II	14		15	Meeting Hall	16	
		6:00-9:00 PM <u>System Plan Document:</u> <ul style="list-style-type: none"> ◆ Off Grid ◆ Batteries & Charge Control ◆ System Balance ◆ Stream Profile Drawing ◆ Read Chapter 4 				6:00-9:00 PM <u>System Plan Document:</u> <ul style="list-style-type: none"> ◆ Optimal Flow Rate ◆ System Power Estimate ◆ System Drawing ◆ System Operation and Maintenance Plan 				9:00-NOON Optional			
17		18	Materials Acquisition	19		20	Materials Assembly	21		22	Meeting Hall	23	
		6:00-9:00 PM: <ul style="list-style-type: none"> ◆ Lab and Field Work ◆ Read Chapters 5-7 				6:00-9:00 PM <ul style="list-style-type: none"> ◆ Lab and Field Work 				9:00-NOON Optional			
24		25	Field Assembly	26		27	Removal & Storage	28		29	Meeting Hall	30	
		TBA <ul style="list-style-type: none"> ◆ Assembly Work 				TBA <ul style="list-style-type: none"> ◆ Prove operation, remove, and store for next years class. 				9:00-NOON Optional			



PO Box 483
 Custer WA 98240
admin@weiedu.org
 (360) 739-1428

Class Registration Form 2010 v2.0

Returning students with a Student ID do not need to fill out the gray portions of this form.

Name	
Address	
Phone	
Email	

Class Requested	RENG 201 – Micro Hydro Project
Class Month / Date	October 2011

WAC 490-105-160 – State Licensed School Reporting Requirements:

Student ID #		
SSN #		
Date of Birth		
Gender		
Disability	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Race	<input type="checkbox"/> American Indian or Alaska Native <input type="checkbox"/> Asian <input type="checkbox"/> Black/African American <input type="checkbox"/> Hawaiian Native or Pacific Islander <input type="checkbox"/> Hispanic <input type="checkbox"/> White/Caucasian <input type="checkbox"/> Multi-racial <input type="checkbox"/> Other	
Prior Education	<input type="checkbox"/> Less than high school graduation <input type="checkbox"/> GED <input type="checkbox"/> High School Graduate <input type="checkbox"/> Post H.S., no degree or certificate <input type="checkbox"/> Associate Degree <input type="checkbox"/> Bachelor Degree <input type="checkbox"/> Master or Doctorate Degree	GED Year _____ Graduation Year _____ Graduation Year _____ Graduation Year _____ Graduation Year _____
Name of Last School Attended		

Student Signature

Date