



## 2011-2012 Career Planning Guide CLEAN ENERGY TECHNOLOGY Associate in Applied Arts and Sciences Degree

Shoreline Community College  
16101 Greenwood Avenue North  
Shoreline, Washington 98133

Length of Program: 90 credits - 4 quarters

Completion Award: A.A.A.S. Degree

**Program Advisor:**

Mike Nelson: 206-629-8010 – [mknelson@shoreline.edu](mailto:mknelson@shoreline.edu)

**Enrollment:** Fall, Winter, Spring, Summer

**Approximate Quarterly Costs**

Check quarterly class schedule for Tuition Table

Parking Fee Per Quarter: \$15

Books prices vary widely. Average Quarterly Cost: \$200

Additional Instructional Fees: \$25-\$85

**PROGRAM DESCRIPTION**

The goal of the Clean Energy Technology Program is to provide students with the theoretical and practical knowledge and skills necessary for a career in sustainable design, construction, maintenance and management. Emphasis is on residential and commercial buildings with specialties in passive solar and sustainable (green) building Design and photovoltaic (solar electric) system design. In this program, students obtain a background in alternative energy and an understanding of practices in high performance and zero energy building practices including alternative energy systems, green building techniques, and designing and installing residential and commercial electric, metering and control systems. The program will have a strong- hands-on component through the advantageous location of the Washington State University Zero Energy House which is permanently located on the main campus of Shoreline Community College. This training will enable students to prepare for the Silicon Energy Manufacturing Solar Installation Certification and the National PV Installer Certification through the North American Board of Certified Energy Practitioners NABCEP.

**PROGRAM OUTCOMES**

1. Understand the basics of design for residential and commercial photovoltaic systems, thermal systems, hydro systems, wind systems, and solar domestic water systems.
2. Understand the applied code, associated electrical equipment and performance parameters and attributes required for the design and installation of photovoltaic energy systems.
3. Demonstrate understanding of and installation and troubleshooting skills, maintenance issues and design criteria for photovoltaic energy systems.
4. Understand plumbing code as it applies to solar thermal systems in building, operating and installing solar domestic water systems.
5. Design photovoltaic systems which produce electricity tied to the utility's grid in compliance with codes and safety requirements.
6. Understand building materials, techniques and design considerations, structural insulated panels, and advanced training techniques (including straw bale, adobe, pressed block, cob, natural plasters, etc).
7. Understand the theory, design considerations and installation techniques for solar and radiant heating systems.
8. Understand the history of electricity, energy supply structure, policy issues, global impacts of energy and the production and use of energy sources.
9. Understand types of renewable energy systems and appropriately size and make recommendations for particular situations.
10. Evaluate residential and small commercial building energy use patterns.
11. Perform site audits including energy efficiency, load analysis, definition of the solar window, system siting and sizing.
12. Understand and demonstrate high performance building design.

**CAREER OPPORTUNITIES**

Graduates of this certificate program could work with electricians, builders, architects, equipment manufacturers and distributors, engineers, consultants, utility companies, and governmental officials.

Students may find employment in a variety of regional and national solar installation companies, solar manufacturing industries, electric utilities, architectural firms, and design build firms. Solar electric system specification and evaluation is practiced in places such as Puget Sound Solar, Outback Power Systems, Silicon Energy, Puget Sound Energy, Sparling Electric, Mithun Architects, Burke Electric, Northwest Mechanical, Solar Washington, and others.

**POTENTIAL POSITIONS INCLUDE**

Utility Conservationist; Solar Certification Specialists; Solar Customer Service Professional; Entry Level Energy Consultant; Green Building Project Specialist; Inventory Control Specialist-Solar; Solar-Process Data Miner; Renewable Energy Educational Liaison; Solar PV System Designer; Solar Sales Consultant; Solar Technical Support; Construction Trainee; Energy Auditor; LEED Documenters. Entry level wages range from \$14 to \$25 per hour. For employment outlook, see the U.S. Dept of Labor Occupational Outlook Handbook at <http://www.bls.gov/OCO/>.

# CLEAN ENERGY TECHNOLOGY

## Shoreline Community College: A.A.A.S. Degree

### PROGRAM PREREQUISITES

There are no prerequisites to start this program.

ENGL 101 or BUSTC 215 or an equivalent transfer course is a degree requirement. The prerequisite is College English or ENGL 100 or BUSTC 115 or a COMPASS Test score at the English 101 level.

Completion of CIS 105 or MATH 146 is a degree requirement. The prerequisite for CIS 105 is Math 080 (Elementary Algebra) or an equivalent transfer course or placement into MATH 099 with appropriate COMPASS Test score, and the prerequisite for MATH 146 is completion of MATH 099 (Intermediate Algebra) or an equivalent transfer course or placement into College level math with appropriate COMPASS Test score.

### General Education Requirements

Recommended Selections – See Advisor for other choices.

#### Communication skills (choose one) Cr. Gr.

ENGL&	101	English Composition I		
BUSTC	215	Prof Communications	5	___

#### Quantitative Reasoning (choose one) Cr. Gr.

CIS	105#	Computer Applications		
MATH&	146*	Introduction to Statistics	5	___

#### Human Relations (choose one) Cr. Gr.

BUS	105	Essentials of Human Rela		
BUS	104	Human Relations in Busi		
COMST&	101	Intro to Communication	2-5	___

#### Multicultural Understanding (choose one) Cr. Gr.

BUS	103	Multiculturalism at Work		
CMST	203	Commun Across Differences		
GWS	284	Gender, Race, and Class		
HIST	245	History of American Immigration		
MCS	105	Intro to Multicultural St	3-5	___

**Credits required 15-20**

### CLEAN ENERGY CORE REQUIREMENTS

Choose 20 credits from the following:

^Start with these courses.

NRG	110^	Intro Energy/Built Envir	3-5	___
NRG	120^	Solar Elec Design & Apps	5	___
Nrg	121^	Energy Audit 1	4	___
NRG	130^	Solar Thermal Design	5	___
NRG	200	Zero Energy Bldg Design	5	___
NRG	225	Computer Energy Model	3	___

One required Business course from

BUS	207	Fund of Sustain Bus		
BUS	208	Sustainable Marketing		
BUS	209	Sustainable Business Strategies	5	___

**Choose a minimum of 25 credits**

Student Name \_\_\_\_\_

Student ID Number \_\_\_\_\_

#### APPROVAL TO GRADUATE

Advisor Approval \_\_\_\_\_ Date \_\_\_\_\_

Division Dean Approval \_\_\_\_\_ Date \_\_\_\_\_

Credentials Approval \_\_\_\_\_ Date \_\_\_\_\_

### Program Electives

45-50 additional credits to reach a minimum of 90 credits

BIOL	126	Sustainable Garden/Hort	5	___
BUS&	101	Introduction to Business	5	___
BUS	120	Principles of Marketing	5	___
BUS	141	Purchasing/Supply Mgmt	5	___
BUS&	201	Business Law	5	___
BUS	205	Applied Business Law	5	___
BUS	207	Fund of Sustain Bus	5	___
BUS	208	Sustainable Marketing	5	___
BUS	209	Sustainable Bus Strategies	5	___
BUS	215	Intro to Intl Business	5	___
BUS	240	e-business	5	___
BUS	270	Entrepreneurship	5	___
BUSTC	100	Keyboarding	5	___
BUSTC	115	Fund of Business Commun	5	___
CIS	105#	Computer Applications	5	___
CMST&	220	Public Speaking	5	___
ECON&	201*	Micro Economics	5	___
ECON&	202	Macro Econ (201 is prereq)	5	___
ENGL	100	Analytical Read & Writing	5	___
ENGR&	114	Engineering Graphics	5	___
ENGR	205	Solid Works	3	___
ENVS&	101	Intro to Environmental Sc	5	___
MATH&	146*	Introduction to Stats	5	___
NRG	110	Intro Energy/Built Envir	5	___
NRG	122	Energy Audit 2	4	___
NRG	160	Intro LEED	4	___
NRG	180	Blueprint Reading I	3	___
NRG	290	Renew Energy/Solar Intrn	2-10	___
NRG		additional NRG classes		
PE	284	First Aid and Safety	3	___
PHYS	110*	Concepts PHYS World	5	___

#Math 080 is a prerequisite.

\*Math 099 is a prerequisite. Discuss math placement with an advisor.

**Credits required 45-50**

**Total Credits Required: 90**

Please check online frequently. Other courses may be petitioned for inclusion in the program requirements. The clean energy industry is evolving; therefore the program course list/quarterly class schedule may change. Classes are being added to the class schedule as the year progresses.