Sustainable Energy Technician Program

Student Information and Application Packet

Fall 2012

Dear Prospective Sustainable Energy Technician student,

I am pleased by your interest in the Sustainable Energy Technician program at Montana State University – Great Falls, College of Technology. This packet contains both program information and an application packet.

The Sustainable Energy Technician program has limited enrollment capacity. **16 students are enrolled in the Fall of each year**. The small class size is advantageous to students, allowing them more individualized attention and more opportunity for hands-on experience. Students are selected on a first come, first served basis from the pool of completed and qualified applications. Please read the materials carefully. Only complete applications will be considered.

For additional information, answers to specific questions, or to set up an appointment, please do not hesitate to contact me.

Sincerely,

Jason Harding
Sustainable Energy Technician Program Director
(406) 268-3708
jason.harding1@msugf.edu

MSU Great Falls College of Technology
Sustainable Energy Technician Program
Program Information

As the push for alternative energy gains strength around the nation and the world, companies are taking advantage of Montana's ample wind resources to develop and produce wind energy. Montana State University – Great Falls recognizes the need to teach and train the workers who will maintain the wind turbines and other alternative energy sources cropping up around the state.

About the Career:

Sustainable Energy Technicians perform general maintenance, operations, and inspections on wind turbines and related facilities. They also perform general and site specific safety awareness, utilize personal protective equipment, conduct electrical troubleshooting, repair and replacement, follow specific lock out/tag out procedures, mechanical/powertrain maintenance, hydraulic troubleshooting and demonstrate climbing proficiency. Technicians conduct visual blade inspection and physical blade repair, bolt torque testing and installation and testing of hardware and software and follow specific driving safety guidelines.

Program Description:

The Sustainable Energy Technician program offers both a one year Certificate of Applied Science (CAS), and a two year Associate of Applied Science (AAS) degree. Both of these credentials prepare graduates for technician jobs in the rapidly expanding sustainable energy industry. CAS program graduates will possess general skills in industrial safety, electrical troubleshooting, hydraulic and pneumatic system operation, and mechanical system repair. AAS program graduates will possess these same skills along with specialized skills in programmable logic controls, digital electronics, and wind turbine operations and maintenance. These specialized skills are built on a strong educational foundation in math, writing, communication, and computing.

Student Outcomes. Upon completion students will:

- Identify and practice safe workplace habits.
- Demonstrate familiarity with basic electrical tools and the ability to troubleshoot a basic electrical system.
- Demonstrate familiarity with basic mechanical tools and the ability to repair a basic mechanical system.
- Demonstrate a basic understanding of hydraulic and pneumatic systems.
- Demonstrate the ability to use personal computers and common operating systems and application software.
- Develop and practice professional standards of workplace communication and interpersonal skills.
- Demonstrate wind industry safety skills including climbing, rescue, and confined space procedures.
- Demonstrate a basic understanding of programmable logic controllers.
- Demonstrate a basic understanding of digital electronics.
- Demonstrate a basic understanding of AC & DC variable speed motor drives.
- Demonstrate an understanding of wind turbine operations and maintenance procedures.
- Demonstrate an understanding of college-level algebra.

Partnerships:

This program was developed as a workforce development project funded by the Department of Labor's Community-Based Jobs Training Grant program. Project partners include the Wind Montana project industrial advisory board and four units of the Montana University System: Montana Tech College of Technology, Montana State University-Northern, Montana State University-Billings College of Technology, and Montana State University-Great Falls College of Technology. All four campuses offer a Sustainable Energy Technician program.

Related Education Courses:

The following courses are required for graduation from the SET program. With the exception of mathematics, which should be taken early, these courses may be taken in any sequence as long as they are completed by the time you are finished with the SET program (1 year for the CAS, and 2 years for the AAS). However past experience has shown that students who complete these courses first are much more likely to be successful in the SET program.

Course Number	Title	Credits
WRIT 104*,±	Workplace Communication	2
CAPP 120*,±	Introduction to Computers	3
M 111*	Technical Mathematics	3
M 121±	College Algebra	3
COMM 135*,±	Interpersonal Communication	3
	Total	**11-14**

* Denotes classes which are required for the CAS Degree
± Denotes classes which are required for the AAS Degree

Math is the biggest contributing factor towards student success or failure:
Many students will need to take prerequisite math classes before taking M 121. The Math Compass test will determine your placement in math. If a student places into M 090, that is where they will start. That student would have to progress through M 090 Introductory Algebra, then to M 095 Intermediate Algebra, and finally to M 121 College Algebra. It is possible for a student to test as low as M 065, which would require them to take M 065 » M 090 » M 095 » M 121. These math classes cannot be taken concurrently, so this process can take up to 4 semesters**.**

There is also the possibility that a student could test directly into M 121, and not have to take M 111 (If a student has completed M121, we have the choice to waive the M 111 requirement). In this case the student will be short of the 61 credits needed for graduation from the AAS program. In this case there are electives that can be substituted for the required number of credits (see list of suggested electives at the end of this document). *To graduate from the AAS program you will need 61 Credits.*

Sustainable Energy Technician Program Courses:

These courses make up the core of the SET Program, and they are taught in the following sequence. Students enter the program Fall Semester 1, and then they progress through the program in the order shown below. Students must pass all of the Semester 1 courses with a C- or better before they proceed to Semester 2, and so on. Program courses are only offered once per year, so students who earn lower than a C- in any course will need to wait a full year to retake the entire course.

Fall Semester 1

Course Number	Title	Credits
SET 101*,±	Introduction to Sustainable Energy	3
EET 120*,±	AC/DC Electronics I	3
SET 102*,±	Industrial Safety and Rigging	3
SET 103*,±	Fundamentals of Mechanical Systems	3
	Total	**12**

Spring Semester 2

Course Number	Title	Credits
EET 121*,±	AC/DC Electronics II	3
ELEC 130*,±	Electric Motors and Generators	3
SET 104*,±	Fundamentals of Hydraulic/Pneumatic Systems	3
	Total	**9**

Fall Semester 3

Course Number	Title	Credits
EET 240±	Electrical Power and Distribution I	3
ELEC 230±	Programmable Logic Controllers	3
SET 201±	Wind Technician Safety	4
SET 202±	Wind Turbine Equipment	3
	Total	**13**

Spring Semester 4

Course Number	Title	Credits
SET 203±	Wind Turbine Operations and Maintenance	3
EET 241±	Electrical Power and Distribution II	3
ELEC 231±	Electronic Drive Systems	3
EET 245±	Digital Electronics	4
	Total	**13**

TOTAL PROGRAM CREDITS CAS	**32**
TOTAL PROGRAM CREDITS AAS	**61**

Recommended electives:

These courses may be helpful to SET program students, especially those who may need a few extra courses to achieve full-time status.

Course Number	Title	Credits
CAPP 156	Microsoft Excel	3
PHYS 110	Survey of Natural Sciences	3
WLDG 094-01	Intro to Welding	3
WLDG 094-01	Intermediate Welding	3

Employer Expectations: Sustainable Energy employers tell us that to be employable, Sustainable Energy technicians must:

- Be able to work in and promote a safe environment
- Be able to climb up to 260 feet on a vertical ladder and work at this elevation
- Be able to work in adverse weather conditions
- Be able to work in confined spaces
- Be able to pass a drug test
- Be able to follow exact instructions
- Be able to work under minimal supervision
- Be able to work with people in a team-oriented environment
- Be prepared to work with electrical hazards
- Be prepared for possible relocation
- Be willing to work overtime and weekends and be on call 24/7 per wind industry expectations
- Have a valid driver's license
- Have a clean driving record
- Have the ability to lift 50 pounds
- Have an aptitude for mechanical and electrical troubleshooting

Sustainable Energy Technician Program Admissions Process

The Sustainable Energy Technician program admissions committee will review completed application packets after May 31. SET, EET, and ELEC courses are restricted entry courses. Only students who have been admitted into the program will be able to enter courses with prefixes of SET, EET, and ELEC. Students must have either completed M090, Introductory Algebra or have a placement score that places them into M095 Intermediate Algebra or a higher level math course. Completion of a Technical Mathematics course may not be used as a substitute for placement into M095.

The complete Sustainable Energy Technician program application packet must be submitted to:

Pam Buckheit
Business Trades and Technology Administrative Assistant
B116
MSU-Great Falls, College of Technology
2100 16th Avenue South
Great Falls, MT 59405

Note: Applications will be date and time stamped as they are received. The first 16 qualified applications will be accepted into the program. Only complete applications of qualified applicants will be considered. To be considered complete and qualified, the applicant must submit all of the required application materials and meet the math entry requirement. Only students in Good Academic Standing will be eligible for program acceptance.

Waiting List: After the 16 slots are filled, up to 10 students will be kept on a waiting list. If accepted students drop out of the program prior to the start of Fall2012 semester, students on the waiting list will be contacted in the order their completed and qualified applications were received, with the exception of veterans and eligible spouses of veterans. Federal Department of Labor regulations require that if there is a waiting list for the formation of a training class, priority of service is intended to require a veteran or eligible spouse to go to the top of that list. Priority of service does not apply to the admission process of the initial 16 program slots. Priority of service applies up to the point an individual is accepted/ enrolled in the program.

MSU-GREAT FALLS COLLEGE OF TECHNOLOGY
SUSTAINABLE ENERGY TECHNICIAN PROGRAM

APPLICATION PACKET COVER AND CHECK-OFF SHEET

Name _____

Address _____

City _____ State _____ Zip Code _____

Telephone (Home) _____ (Other) _____

E-Mail Address _____

Student ID Number _____

☐ As a veteran or eligible spouse of a veteran, I am requesting priority of service, which I understand will move me to the top of any waiting list for admission into the SET program. (Documentation will be requested if priority of service is applied.)

Check-Off List

✓	Item
	Application Packet Cover & Check-off sheet (*personal information must be complete*)
	Documentation of admission to MSU-Great Falls College of Technology and good academic standing. Current students should submit an unofficial copy of their most current academic transcript from Banner Web MyInfo. New students should submit a photocopy of their MSU-GF acceptance letter.
	Proof of math competency. Student must have either completed M090, Introductory Algebra, with a C- or better, or have a math placement score that places them in M095, Intermediate Algebra, or a higher level math course. Completion of a Technical Mathematics course may not be used as a substitute for placement into M095.Submit math placement test score documentation or transcript that shows completion of M090 or higher level math.
	Statement of Understanding. Student must complete a statement of understanding about the physical requirements and demands of working as a sustainable energy technician. Submit signed statement of understanding.

Note: Turn all application materials in at one time so as not to risk misplacement of any items. Incomplete applications will not be reviewed. Please only send required documentation as other supplemental items will be dis carded.

Statement of Understanding

MSU-Great Falls College of Technology
Sustainable Energy Technician Program

Sustainable Energy Technician jobs are physically demanding. Students who cannot meet essential job functions may continue in the program but must realize the opportunity for employment as a sustainable energy technician will be extremely limited. The essential job functions of a sustainable energy technician include the following:
*The following guidelines were provided by the companies and employers that comprise the advisory boards for the Sustainable Energy Technician program and the Wind Montana Grant.

- Weigh less than 260 pounds (260 pounds + 50 pounds equipment = 310 maximum rating for personal protective equipment)
- Be able to climb 260 foot ladders and work at this elevation.
- Have the ability to lift 50 pounds frequently.
- Be able to work in confined spaces. This includes working extended periods of time in a bended, stooped, or other awkward position.
- Be able to pass a drug test.
- Have a valid driver's license.
- Be able to distinguish between colors which typically mark electronic and electrical components.

I have read and understand the essential job functions above. I realize that if I do not meet all of these essential job functions, that my opportunities for employment as a sustainable energy technician are extremely limited.

_____	_____	_____
Name (print)	Signature	Date