MESABI RANGE COMMUNITY & TECHNICAL COLLEGE

Course Outline

Course Title:	**Wind Turbine Electrical Systems**	**Submitted By:**	**Dan Janisch**
Semester Course Prefix and Number:	**WET 2265**	**Approval Date:**	
Old Quarter Course Prefix and Number:		**Revision Date:**	

Number of Credits: 3	**Number of Lecture Credits: 2**	
Semester(s) Offered: Fall Second Year	**Number of Lab Credits:1**	**Number of Lab Hours:2**
Class Size: 25	**Number of Studio/Demonstration/Internship Credits:**	
Negotiated by AASC on: (date)		

Course Purpose Code:

_____ **0 –** Developmental Courses
_____ **1 –** Non-transferable
__X__ **2 –** Technical course related to career programs
_____ **3 –** College course which has the primary goal of applying certain concepts (e.g. vocal ensemble)
_____ **4 –** Other college course not considered a part of MNTC (e.g. computer science, health, physical education)
_____ **5 –** Course which is intended to fulfill the Minnesota Transfer Curriculum (MNTC) requirements or intended for transfer.
_____ **9 –** Continuing Education/Customized Training specialized credit course (not occurring in 0-5)

Catalog Description:

The course is designed to provide students with the opportunity to gain hands-on experience with tasks related to wind turbine construction, operation and maintenance. In addition to hands-on experience, students will first formally learn about the wind turbine electrical systems in the classroom. Students will specifically learn about the electrical functions of a turbine that are required to generate power from wind. Generators, inverters, power electronics, grid matching, power monitoring, and miscellaneous ancillary systems will be discussed.

Prerequisites and/or recommended entry skills/knowledge:

Course Prerequisite(s):	First Year of Wind Program
Reading Prerequisite:	College Level Reading
Composition Prerequisite:	College Level Writing
Mathematics Prerequisite:	First Year of Wind Program

Career Programs and Transfer Majors Accessing this Course:
Wind Energy Technology, EIAT and IT students with instructor approval.

Minnesota Transfer Curriculum Goal(s) partially met by this course if applicable:
(Notes: No more than two goals may be met by any one course. Curriculum Committee review and the Chief Academic Officer's approval are required.)

0. ____ None
1. ____ Communications
2. Critical Thinking
6. _____ The Humanities and Fine Arts
7. _____ Human Diversity
8. _____ Global Perspectives

3. _____ Natural Sciences
4. _____ Mathematical/Logical Reasoning
5. _____ History and the Social and Behavioral Sciences
9. _____ Ethical and Civic Responsibility
10. _____ People and the Environment

Learning Outcomes: (including any relevant competencies listed in the Minnesota Transfer Curriculum)

Upon completion of this course, the student will be able to:

1.) Identify the different types of wind turbine electrical systems.
2.) Relate the wind turbine electrical systems to each other in order to ensure a complete working system.
3.) Indentify parts of the systems and troubleshoot them.
4.) Repair/replace individual components of the systems to create working systems.
5.) Demonstrate the ability to read blueprints and specify components based on their analysis of the prints and understanding of the electrical systems.

Student Assessment Methods:
Written tests and quizzes. Demonstration of mechanical abilities. Report writing.

Use of Instructional Technology: (includes software, interactive video and other instructional technologies):

Email, Moodle, diagnostic devices and tools.

Outline or Statement of Major Course Content:

- Electrical systems diagnosis and repair.
- Instruction on generators, inverters, power electronics, grid matching, power monitoring, and miscellaneous ancillary systems from various industry leading turbine models.

Additional Special Information: (special fees, directives on hazardous materials, etc.)

Student will be expected to work with tools and heavy equipment in order to maintain a passing grade in this class.

Transfer Information: (Please list colleges/majors that accept this course in transfer.)

Approvals:

Body	Representative Signatures	Date
Curriculum Committee		
Faculty Association		
Academic Affairs Standards Committee		
Chief Academic Officer		

Distribution: Original – Administrative Office
Copies: Curriculum Committee Chair, AASC Chair, Transfer Specialist, Originating Faculty Member, Scheduler, Records
Revised: May 2009