MESABI RANGE COMMUNITY & TECHNICAL COLLEGE

Course Outline

Course Title:	**Wind Turbine Instrumentation and Communication**	**Submitted By:**	**Dan Janisch**
Semester Course Prefix and Number:	**WET 2221**	**Approval Date:**	**April 2010**
Old Quarter Course Prefix and Number:		**Revision Date:**	

Number of Credits: 3	**Number of Lecture Credits: 1**	
Semester(s) Offered: Fall Second Year	**Number of Lab Credits: 2**	**Number of Lab Hours: 4**
Class Size: 24	**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 instrumentation, controls, and communication systems. In addition to hands-on experience, students will learn about the instrumentation and communication systems in the classroom. Students will specifically learn about supervisory systems, controls, and reporting systems associated with utility scale wind turbines. In addition to the basic systems, students will also be introduced to Condition Based Monitoring systems used for predictive maintenance of wind turbines.

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 wind turbine systems requiring computer control.
2.) Relate the wind turbine control systems to each other in order to ensure a complete working system.
3.) Troubleshoot and repair components of a wind turbine supervisory and control system.
4.) Demonstrate knowledge of how a wind farm SCADA system operates.
5.) Analyze data from these systems in order to diagnose turbine problems.

Student Assessment Methods:
Written tests and quizzes. Demonstration of abilities by performing hands-on repairs and troubleshooting. 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:

Wind turbine instrumentation, controls, and communication systems.

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

Student will be expected to work with tools and electrical 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