

MESABI RANGE COLLEGE

Course Outline

Course Title: Temperature, Strain, and Analytical Instruments	Submitted By: Robert Stevens
Semester Course Prefix and Number: ECM 2266	Approval Date:
Old Quarter Course Prefix and Number:	Revision Date: 9/6/16
Number of Credits: 3	Number of Lecture Credits: 1
Semester(s) Offered: Fall	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
- 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 a "Hybrid" or "Blended" course with the majority of the learning environment traditional in-class lectures and hands-on lab work which also includes Web-based learning activities to complement face-to-face work. This course is designed to encompass three independent areas of instrumentation that utilize measurement methods that are similar in design and theory. The course covers the terminology, methods, and application of temperature, strain, and analytical measurement. The course provides the knowledge and skills required for operational understanding, proper installation and accurate calibration of the primary elements and transducers used in these measurement areas.

Prerequisites and/or recommended entry skills/knowledge:

Course Prerequisite(s): ECM 1253, ECM 1233, ECM 1243, ECM 1295, ECM 1244
Reading Prerequisite: None
Composition Prerequisite: None
Mathematics Prerequisite: None

Career Programs and Transfer Majors Accessing this Course:

Electrical Controls and Maintenance Diploma
Electrical Controls and Maintenance AAS

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. AASC review and the Chief Academic Officer's approval are required.)

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|---|---|
| 0. <input checked="" type="checkbox"/> None | 6. _____ The Humanities and Fine Arts |
| 1. _____ Communications | 7. _____ Human Diversity |
| 2. _____ Critical Thinking | 8. _____ Global Perspectives |
| 3. _____ Natural Sciences | 9. _____ Ethical and Civic Responsibility |
| 4. _____ Mathematical/Logical Reasoning | 10. _____ People and the Environment |
| 5. _____ History and the Social and Behavioral Sciences | |

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

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

- Identify the thermodynamic principles and measurement scales of heat and temperature.
- Define function of temperature measurement devices
- Identify strain and weight measurement principles
- Define function strain and weight measurement devices.
- Identify the theoretical basis of analytical measurement
- Properly wire, adjust/calibrate and troubleshoot temperature, strain and analytical instruments and circuits.

Student Assessment Methods:

Assessment made of lab assignments, worksheets, and papers using rubrics and check lists. Tests and quizzes of technical knowledge to be given at regular intervals during semester.

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

ECM Laptop Computer Lease with Industrial Software

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

Laptop Computer Lease and Required Tool List

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

Affiliated Mesabi Range College Courses and Programs:

Approvals:

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

Distribution: Original – Instructional Services
Copies: Transfer Specialist, Originating Faculty Member, Records
Revised: December 2012