ME 480 – Thermofluid Measurements and Design (W, E)
Spring 2010

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Prerequisites ME 422 (or concurrent)

Description This course introduces analytical, experimental and computational methods for analysis and design of thermofluid systems.

This course has a Writing Intensive (W) Focus designation. The class uses writing to promote learning of thermofluid measurement and design techniques as well as engineering ethical principles. Written assignments include 2 basic laboratory reports, 2 comprehensive laboratory reports, 2 design reports, and 1 ethics essay, which contribute to 90% of the course grade. Close interactions between the instructor and students will be provided while students do assigned writing.

This course has a Contemporary Ethical Issues (E) Focus designation. Engineering ethical issues are fully integrated into the main course material and constitute at least 30% of the course content. Nine hours of class time will be spent discussing engineering ethical issues, such as engineering ethical principles, codes, interpretation, dilemma, and approach to respond to ethical problems. Through the use of lectures, discussions and assignments, students will develop basic competency in recognizing and analyzing engineering ethical issues; how to responsibly deliberate on engineering ethical issues; and making ethically determined judgments.

Textbook Richard S. Figliola, Donald E. Beasley, Theory and Design for Mechanical Measurements, 4th Edition, Wiley, 2005.

Grading

Homework (5)	10%
Basic lab reports (2)	25%
Comprehensive lab reports (2)	30%
Ethics essay (1)	5%
Design reports (2)	30%

Class	Chapter	Topic
1	1	Introduction, basic concepts
2	9	Pressure measurements
3	10	Flow measurements
4	8	Temperature measurements
5		Basic lab 1: pressure and flow measurements

6		Basic lab 2: temperature measurements
7	4	Data analysis 1: probability and statistics
8	5	Data analysis 2: uncertainty analysis
9		Comprehensive lab 1: linear heat conduction
10		Comprehensive lab 2: pressure drop in pipes
11		Thermofluid design 1
12		Thermofluid design 2
13		Engineering ethics 1
14		Engineering ethics 2
15		Engineering ethics 3