1. Course number and name: **MEEN 3240 – Mechanical & Energy Engineering Lab I**

2. Credits and contact hours: **2 credits**

3. Instructor's or course coordinator's name: **Dr. Xiaohua Li**

4. Text book, title, author, and year: **Lab Manual provided and edited by department**

5. Specific course information

 a. brief description of the content of the course (catalog description): **Mechanical & Energy Engineering Laboratory I. 2 hours. This course is designed to introduce engineering students to experimentation and laboratory procedures. The course will cover uncertainty of measurement and its propagation during experiments involving temperature sensor calibration, power estimation, viscosity and calorimetry.**

 b. prerequisites or co-requisites: **Prerequisite(s): MATH 3410 (or 3310), MEEN 2210, & MEEN 2110**.

 c. indicate whether a required, elective, or selected elective (as per Table 5-1) course in the program: **Required**

6. Specific goals for the course:

MEEN 3240 Course Learning Outcomes	ABET EAC Student Outcomes						
	1	2	3	4	5	6	7
Demonstrate ability to perform statistical error analysis of experimental data.	X					X	
Demonstrate understanding measurements of transport properties.	X					X	
Demonstrate understanding of temperature measurements.	X					X	
Demonstrate understanding basic electrical measurement.	X					X	
Demonstrate ability to design and construct mechanical engineering experiments.	X					X	
Demonstrate understanding of concepts of the First Law of Thermodynamics.	X					X	
Demonstrate understanding fundamentals of energy and power estimation for both solar and wind.	X					X	
Demonstrate ability to present and report scientific data.			X	X	X	X	
Demonstrate ability to control thermal science experiments.						X	

7. Brief list of topics to be covered:

Topics to Be Covered	
Uncertainty & Propagation	Lab & Journal Reporting
Lab Safety	Solar Power Estimation
Air/Liquid Viscosity	Wind Power Estimation
Temperature Sensors	Calorimetry