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**

   Experimental Methods for Engineers, 8th ed (or 7th ed) J. P. Holman (ISBN: 978-0-07-352930-1)
5. Specific course information

   a. brief description of the content of the course (catalog description): **Mechanical and Energy Engineering Laboratory I. 2 hours (1;3). Principles of experimentation. Measurement techniques and instruments. Statistical analysis of experimental data and error analysis. Presentation of data and report writing. Students will perform a series of experiments in areas of mechanical engineering and will undertake a project where they will design an experiment to obtain data.**

   b. prerequisites or co-requisites: **Prerequisite(s): MATH 3410; MEEN 2210; MEEN 2110, all with a grade of C or better.**

   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 2240 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 temperature measurements.	X					X	
Demonstrate ability to design and construct mechanical engineering experiments.	X				X	X	
Demonstrate understanding of the First Law of Thermodynamics.	X					X	

Demonstrate understanding of the fundamentals of wind and solar energy and power estimation.	X					X	
Demonstrate ability to compile, present and report scientific data.	X		X		X	X	
Demonstrate ability to control thermal science experiments.	X					X	

7. Brief list of topics to be covered:

Topics to Be Covered	
Uncertainty & Propagation	Lab & Journal Reporting
Lab Design & Control	Solar Power Estimation
Viscosity	Wind Power Estimation
Temperature Sensors	Calorimetry