ME556 EXPERIMENTAL STRESS ANALYSIS I
Autumn Quarter 2017

SCHEDULE: Lecture: T, Th 8:30-9:20AM, Loew Rm 202
Labs: Nominally 3hrs/week, performed in MEB 123
(additional details on following page)

INSTRUCTOR
Prof. Mark E. Tuttle
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Office Hours: T, Th: 9:30 – 10:30 AM
(or by appointment)

TEACHING ASSISTANT
TBD

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ME LAB ENGINEERS
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COURSE WEBSITE: http://courses.washington.edu/mengr556/

TEXTBOOK: Shukla, A., and Dally, J.W., Experimental Solid Mechanics, 2nd Ed, College House Enterprises LLC, ISBN: 978-1-935673-19-4, 2014

MIDTERM EXAM: Date to-be-determined

FINAL EXAM: Official date: Tuesday, 12 December 2017, 10:30am-12:20pm

COURSE DESCRIPTION
ME 556 is devoted to a general introduction to experimental stress analysis, and is intended primarily for graduate students who wish to emphasize Mechanics, Materials, and Manufacturing during their studies (although all graduate students within the College of Engineering are welcome!). Major topics discussed are itemized below. The "core" of the course consists of topics (1) through (5). Additional topics are introduced/discussed according to the time available and student interest.

1) Review of fundamental "mechanics of materials" and “fracture mechanics” concepts
2) Electrical resistance strain gages & related technologies
3) Load cell design
4) Basic amplifier characteristics
5) Basic elements of digital data acquisition
6) Linear Variable Differential Transformers (LVDT's)*
7) Temperature Measurement*
8) Other topics of interest*

* As time permits

GRADING POLICY:

Midterm	- 25%
Final	- 25%
Lab Reports	- 25%
Homework	- 25%

LABORATORY EXPERIMENTS

Traditional Lab Format: An "open" lab format is used in ME556. That is, once a given lab experiment has been assembled (usually in Rm 123 of the Mechanical Engineering Building) students have roughly one-week to perform each test. Students can perform the experiments either individually or as informal teams, and at any convenient time.

Accommodation for EDGE: Due to the growth of the EDGE program, off-campus students enrolled in ME556 are often located hundreds/thousands of miles away from the UW campus. It is not possible for these students to personally perform the lab experiments. Consequently, a video-taped version of each lab experiment will be available on the course website and can be viewed by all ME556 students. An "Official Data Set" set for each lab will be posted to the course website. This means that students no longer base their reports on the data they collect individually. That is, *all* students (both on-campus students and EDGE students) will create their lab reports using the Official Data Set.

All experiments will still be assembled in MEB 123. Although no longer required, students who are able to come to campus to perform each experiment in-person are very much encouraged to do so…***you will learn more if you perform each experiment yourself.***

As will be discussed in greater depth later in the quarter, MEB 123 can be accessed anytime between 6:30am-9pm, Mon-Sat (i.e., whenever the ME building is open).