MECH 5107

Experimental Stress Analysis

2010

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Course Outline

1. **Introduction**

2. **Theoretical Analysis**

3. **Strain Measurement**
   Introduction. Types of gauges, resistance, capacitance, inductance and piezoelectric gauges, uses and gauge factors.

4. **Strain Gauge Analysis**

5. **Brittle Lacquers**
   Introduction, selection, application, calibration and testing of brittle coatings. Advantages and disadvantages, temperature and humidity effects. Sensitivity.

6. **Photoelastic Analysis**

7. **Photoelastic Coatings**

8. **Moiré Fringe Analysis**

9. **Non Destructive Testing techniques**

10. **Experimental Work and Demonstrations**

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Course Assessment

PRELIMINARY

This graduate course on Experimental Stress Analysis will consist of lectures, demonstrations, discussion of case histories and experimental work.

The method of assessment in this course will be as follows:

1. A in-class examination (duration 3 hours)
2. A literature search report or presentation
3. An experimental project.

The experimental project involves a laboratory experiment using one of the techniques discussed in the lectures. A brief written report is to be submitted on the project.

Final grade

1. Examination 70%
2. Literature search report or presentation 15%  OR
3. Literature search oral presentation 15%
3. Experimental project report 15%

TOTAL 100%

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REFERENCES