FACULTY OF **ENGINEERING**

DEGREE COURSE: **COMPUTER AND CONTROL ENGINEERING BS**

SUBJECT: MECHANICAL AND THERMAL MEASUREMENTS

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OBJECTIVES

The course is aimed at:

1) Providing students with the basic principles describing measurement instruments.
2) Developing an understanding of the operating principles of several specific thermal and mechanical measurement systems.
3) Providing the means for the treatment of sensors dynamic response for all type of inputs using frequency response.

CONTENTS

The course consists of two parts:

1. General concepts
   - Metrological basic definitions
   - Generalised configuration and functional descriptions of measuring instruments
   - Static and Dynamic generalized performance characteristics of instruments
   - Data acquisition principles and systems.

2. Measuring devices:
   - Motion measurement systems
   - Force, torque and shaft power measurement sensors
   - Pressure and sound measurement transducers
   - Flow measurement devices
   - Temperature measurement instruments.

LEARNING OUTCOMES

At the end of the course, students will:

- learn the basic principles for describing the generalized performance characteristics of measurement instruments
- be able to comprehend the operating principles of the thermal and mechanical measurement systems addressed within the course and to design complete measurement chains based on those sensors
- learn how to treat sensors dynamic response for all type of inputs through frequency response.

ASSESSMENT

Written exam: multiple choice and open questions

RECOMMENDED TEXTBOOKS

Ernest O. Doebelin, "Measurement systems: application and design", McGraw-Hill International Edition