

FACULTY OF **ENGINEERING**

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

SUBJECT: MODELLING AND SIMULATION

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OBJECTIVES

This course will teach:

1. Fundamentals of modelling and simulation;
2. Methodologies for mathematical modelling of physical systems;
3. Discretization of continuous-time linear models;
4. Introduction to non-linear and probabilistic systems;

CONTENTS

Classification and limitation of modelling

Recall of differential equations

Mathematical models of main mechanical, electrical, electronic, hydraulic, mechatronic and telecommunication systems

Effects of non-linearities

Probabilistic models and Bayesian networks

Discretization of continuous-time models for computer simulation.

LEARNING OUTCOMES

Upon course completion, the student will be able to

- design mathematical models of systems which are of interest in the field of automatic control,
- study their behaviour by using software simulation.

ASSESSMENT

Written exam: multiple choice and open questions

RECOMMENDED TEXTBOOKS

The course is self-contained.

