FACULTY OF **ENGINEERING**

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

SUBJECT: INTRODUCTION TO DYNAMIC SYSTEMS AND CONTROL

LECTURER: VINCENZO SURACI

E-mail: vincenzo.suraci@uniecampus.it

OBJECTIVES

Provide the methodological basis to:

1. analyze the input-output behavior of linear time-invariant dynamical systems in continuous and discrete time,
2. analyze and design in the frequency domain, analog feedback control systems.

CONTENTS

System's mathematical modeling
Input-State-Output and Input-Output systems
Stability of equilibrium
Linear systems and linearization
Analysis in the time domain
Laplace transform
Frequency response
The feedback control problem
Stability margins
Control law design techniques
PID regulator

LEARNING OUTCOMES

Upon course completion, the student will be able to:

- model and analyze dynamic systems
- to design control law for closed loop linear time-invariant dynamic systems.

ASSESSMENT

Written exam: multiple choice and open questions

RECOMMENDED TEXTBOOKS

- Feedback Control of Dynamic Systems. Gene F. Franklin, J. David Powell, Abbas Emami-Naein, Pearson Education
- Introduction to Dynamic Systems: Theory, Models, and Applications. David G. Luenberger, Wiley