



NATIONAL UNIVERSITY OF ENGINEERING
COLLEGE OF ELECTRICAL AND ELECTRONICS ENGINEERING

ELECTRONICS ENGINEERING PROGRAM

EE641 – LABORATORY OF CONTROL

I. GENERAL INFORMATION

CODE	: EE641 – Laboratory of Control
SEMESTER	: 9
CREDITS	: 01
HOURS PER WEEK	: 03 (Laboratory)
PREREQUISITES	: EE616 – Control II
CONDITION	: Mandatory

II. COURSE DESCRIPTION

It is a subject of a practical nature and belongs to the area of professional training. Its purpose is to demonstrate correspondence, with their respective limitations between the theory and practice of linear control systems. Using the following tools: Experimental analysis of the transient of a system. Experimental layout of the Bode curves. Analog simulation. Digital simulation.

III. COURSE OUTCOMES

At the end of the course the student will:

- Select correctly the equipment and instruments to be used according to the experience to be developed.
- Properly handles measuring and control instruments, configuring and connecting them correctly.
- Build analog circuits to verify their proper functioning with the measuring and control instruments.
- Interpret the results correctly, generalize and formulate conclusions.
- Compare the experimental results with the theoretical ones verifying the validity of the analog circuits built in the experiences.
- Prepare clear technical reports detailing the process developed, interpreting results and formulating conclusions.

IV. LEARNING UNITS

Laboratory 1: Analysis in the domain of the time of a linear system.

Laboratory 2: Experimental deduction of the transfer function, by frequency response.

Laboratory 3: Analog simulation of a linear system.

Laboratory 4: Digital simulation of a linear system.

V. LABORATORIES

In each class the experience planned for such date is developed.

VI. METHODOLOGY

The course is developed in laboratory sessions. In each experience, the teacher previously presents the laboratory guides. At the end of the laboratory each student team must submit a technical report. In all sessions the active participation of the student is promoted.

VII. EVALUATION FORMULA

The learning will be evaluated through the "D" system.

- This course's final grade is calculated averaging the 05 highest laboratory grades.

$$FA = \frac{L1 + L2 + L3}{3}$$

VIII. BIBLIOGRAPHY

- "Automatic Control Systems, 10th Edition", Farid Golnaraghi, Benjamin C. Kuo. McGraw-Hill, 2016.
- "Digital Control Engineering: Analysis and Design", M. Sami Fadali, Antonio Visioli. Academic Press, 2012.
- "Modern Control Engineering", P.N. Paraskevopoulos. CRC Press, 2001.