

Course guide

205242 - LDPE - Leadership and Professional Development in Engineering

Last modified: 02/04/2024

Unit in charge: Terrassa School of Industrial, Aerospace and Audiovisual Engineering
Teaching unit: 739 - TSC - Department of Signal Theory and Communications.

Degree: BACHELOR'S DEGREE IN AUDIOVISUAL SYSTEMS ENGINEERING (Syllabus 2009). (Optional subject).
BACHELOR'S DEGREE IN CHEMICAL ENGINEERING (Syllabus 2009). (Optional subject).
BACHELOR'S DEGREE IN ELECTRICAL ENGINEERING (Syllabus 2009). (Optional subject).
BACHELOR'S DEGREE IN INDUSTRIAL ELECTRONICS AND AUTOMATIC CONTROL ENGINEERING (Syllabus 2009). (Optional subject).
BACHELOR'S DEGREE IN MECHANICAL ENGINEERING (Syllabus 2009). (Optional subject).
BACHELOR'S DEGREE IN TEXTILE TECHNOLOGY AND DESIGN ENGINEERING (Syllabus 2009). (Optional subject).
BACHELOR'S DEGREE IN AEROSPACE TECHNOLOGY ENGINEERING (Syllabus 2010). (Optional subject).
BACHELOR'S DEGREE IN AEROSPACE VEHICLE ENGINEERING (Syllabus 2010). (Optional subject).
BACHELOR'S DEGREE IN INDUSTRIAL DESIGN AND PRODUCT DEVELOPMENT ENGINEERING (Syllabus 2010). (Optional subject).
BACHELOR'S DEGREE IN INDUSTRIAL TECHNOLOGY ENGINEERING (Syllabus 2010). (Optional subject).

Academic year: 2024 **ECTS Credits:** 3.0 **Languages:** Spanish

LECTURER

Coordinating lecturer: Torres Torres, Francesc

Others: Torres Torres, Francesc

PRIOR SKILLS

It is convenient to have critical thinking and motivation for self-knowledge, self-improvement, and career planning

REQUIREMENTS

None

TEACHING METHODOLOGY

The classes will be divided into an initial part devoted to theoretical exposition by the professor, followed by a discussion session on practical cases drawn from real experiences, generally related to interpersonal skills, with which the recent graduate usually finds himself at first job. There will also be debates on the concept of leadership based on principles and values, key to the development of a professional career in the medium and long term. Specific exercises aimed at self-knowledge, reinforcement of self-esteem and establishing guidelines for self-management of the professional career will be proposed. The students will divide into groups to defend different points of view in the debates.

LEARNING OBJECTIVES OF THE SUBJECT

The main objective is to foster the critical mindset of the students to face the first jobs, as well as to encourage a proactive attitude in the management of the work and of the professional career itself, both in the short and long term, based on in personal and professional growth. Although a STEM degree opens the door to the job market thanks to the technical knowledge and skills acquired during the academic phase, progress in the professional career requires the planned development of transversal skills and a progressive acquisition of management skills and leadership as a greater degree of responsibility is assumed at work. This elective subject begins by presenting the concepts of planning and career development in the field of engineering. A special emphasis is dedicated to the transition stage between academic and professional activity, focusing on the essential aspects, both for a correct entry into the world of work [1], and for the subsequent evolution of the professional career in engineering [2]. The main personal development techniques (PDT) focused on the junior engineer are presented, basically, as executors of tasks, to continue with a greater weight of management and leadership functions as they evolve to the role of an expert senior engineer [3][4]. The seminar is based on the model of professional growth and leadership proposed by the MIT program [5], as well as on the competencies recommended by the European Council for the permanent training of professionals [6].

[1] Walesh, S. G. "Engineering your future: launching a successful entry-level career". Prentice Hall, 1995

[2] Kamm, L. J. "Real world engineering: a guide to achieve career success". IEEE Press, 1991

[3] W.D. Hitt. "The Leader manager. Guidelines for action". IEEE Press, 1988

[4] W.D. Hitt. "Management in action: Guidelines for new managers" IEEE Press, 1984

[5] Bernard M. Gordon-MIT Engineering Leadership Program. "Capabilities of Effective Engineering Leaders". Version 3.7, July 2019

[6] Council of the European Union. "Council recommendations on key competences for lifelong learning". Brussels, 23 May 2018

STUDY LOAD

Type	Hours	Percentage
Self study	45,0	60.00
Hours large group	30,0	40.00

Total learning time: 75 h

CONTENTS

Leadership and Professional Development in Engineering (LDPE)

Description:

1. The concept of a professional career in engineering
 - a. Skills developed in the academic stage
 - b. The transition from the academic stage to the professional stage
 - c. Evolution of the engineer: from executor to manager and leader
2. The junior engineer: the first jobs
 - a. Initiative and leadership in the early stages
 - b. Evaluation of professional performance in engineering
 - c. Main considerations and mistakes to avoid
 - d. Transversal competencies: action oriented to results
3. Professional career development techniques
 - a. The management of self: self-knowledge, self-esteem and self-management
 - b. Personal qualities: values, responsibility and character
 - c. Communication, perception and deception
 - d. Interpersonal relationships: from me to us
 - f. Proactivity, criteria and maturity (common sense)
 - g. Decision making in a VUCA environment (volatile, uncertain, ambiguous and complex)
 - h. Creation and exploitation of opportunities
 - i. Personal growth: 10 fundamental characteristics

Full-or-part-time: 75h

Theory classes: 30h

Self study : 45h



GRADING SYSTEM

Continuous evaluation. It is based on the practical work carried out in groups by the students and their active participation in the debates and presentations. There is not a final exam.

- Participation in class exercises and discussions: 50%
- Group presentation of a specific subject for discussion: 50%

BIBLIOGRAPHY

Basic:

- Walesh, Stuart G. Engineering your future: the professional practice of engineering. 3rd ed. Hoboken, NJ: John Wiley & Sons, 2012. ISBN 9780470900444.
- Kamm, Lawrence J. Real-world engineering: a guide to achieving career success. New York: IEEE Press, 1991. ISBN 0879422793.
- Hitt, William D. The leader manager: guidelines for action. Columbus, Ohio: Battelle Press, 1988. ISBN 9780935470406.
- Hitt, William D. Management in action: guidelines for new managers. Battelle Press, 1986.