Course guide
270164 - LDPE - Leadership and Professional Development in Engineering

Last modified: 13/07/2023

Unit in charge: Barcelona School of Informatics
Teaching unit: 739 - TSC - Department of Signal Theory and Communications.

Degree: BACHELOR'S DEGREE IN INFORMATICS ENGINEERING (Syllabus 2010). (Optional subject).

Academic year: 2023 **ECTS Credits:** 3.0 **Languages:** Spanish

LECTURER

Coordinating lecturer: FRANCISCO TORRES TORRES

Others: Primer quadrimestre:
FRANCISCO TORRES TORRES - 10

PRIOR SKILLS

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

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
CT3.6. To demonstrate knowledge about the ethical dimension of the company: in general, the social and corporative responsibility and, concretely, the civil and professional responsibilities of the informatics engineer.

Generical:
G1. ENTREPRENEURSHIP AND INNOVATION: to know and understand the organization of a company and the sciences which govern its activity; capacity to understand the labour rules and the relation between planning, industrial and business strategies, quality and benefit. To develop creativity, entrepreneur spirit and innovation tendency.
G9. PROPER THINKING HABITS: capacity of critical, logical and mathematical reasoning. Capacity to solve problems in her study area. Abstraction capacity: capacity to create and use models that reflect real situations. Capacity to design and perform simple experiments and analyse and interpret its results. Analysis, synthesis and evaluation capacity.

TEACHING METHODOLOGY

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

1.OBJETIVOS: El principal objetivo es el de estimular el espíritu crítico de los estudiantes para afrontar los primeros trabajos, así como el de incentivar una actitud proactiva en la gestión del trabajo y de la propia carrera profesional, tanto a corto como a largo plazo, basada en el crecimiento personal y profesional. Si bien un grado STEM abre la puerta al mercado de trabajo gracias a los conocimientos técnicos y las competencias adquiridas durante la fase académica, el progreso en la carrera profesional requiere desarrollar, de forma planificada, competencias transversales y una progresiva adquisición de competencias de gestión y liderazgo a medida que se va asumiendo un mayor grado de responsabilidad en el trabajo. La optativa se inicia presentando los conceptos de planificación y de desarrollo de la carrera profesional en el ámbito de la ingeniería. Se dedica un énfasis especial a la etapa de transición entre la actividad académica y la profesional, centrándose en los aspectos esenciales, tanto para una correcta entrada al mundo laboral [1], como para la posterior evolución de la carrera profesional en la ingeniería [2]. Se presentan las principales técnicas de desarrollo personal (TDP) focalizadas en el ingeniero junior, básicamente como ejecutor de tareas, para seguir con un mayor peso de las funciones de gestión y liderazgo a medida que se va evolucionando al rol de ingeniero senior experto [3][4]. El temaro se basa en el modelo de crecimiento profesional y liderazgo propuesto por el programa del MIT [5], así como en las competencias recomendadas por el Consejo Europeo para la formación permanente de los profesionales [6].

STUDY LOAD

Type	Hours	Percentage
Hours large group	60,0	40.00
Self study	90,0	60.00

Total learning time: 150 h

CONTENTS

CONTENT: Leadership and Professional Development in Engineering

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

ACTIVITIES

Presentation and discussion on a selected topic (15 min)

Description:
Students will present as a group, for discussion in class, one of the 10 principles or values ¿¿considered essential for personal and professional development in the field of engineering. The topic and calendar will be assigned within the first days

Specific objectives:
1

Related competencies :
G1. ENTREPRENEURSHIP AND INNOVATION: to know and understand the organization of a company and the sciences which govern its activity; capacity to understand the labour rules and the relation between planning, industrial and business strategies, quality and benefit. To develop creativity, entrepreneur spirit and innovation tendency.
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Full-or-part-time: 3h
Guided activities: 1h
Self study: 2h

Theory, case studies and class discussion

Description:
In general, each 2h session is self-contained, dedicated to a specific theme. After a brief theoretical presentation, the students will carry out some practical group activity, which will end with a collective debate.

Specific objectives:
1

Related competencies :
G1. ENTREPRENEURSHIP AND INNOVATION: to know and understand the organization of a company and the sciences which govern its activity; capacity to understand the labour rules and the relation between planning, industrial and business strategies, quality and benefit. To develop creativity, entrepreneur spirit and innovation tendency.
G9. PROPER THINKING HABITS: capacity of critical, logical and mathematical reasoning. Capacity to solve problems in her study area. Abstraction capacity: capacity to create and use models that reflect real situations. Capacity to design and perform simple experiments and analyse and interpret its results. Analysis, synthesis and evaluation capacity.

Full-or-part-time: 72h
Theory classes: 29h
Self study: 43h

GRADING SYSTEM

Continuous assessment: It is based on the practical work carried out in groups by the students and their active participation in the debates and presentations in the classroom. There is not a final exam. Each group will present one of the 10 key principles or values ¿¿of personal and professional development, which they will defend against another group that will counter-argument (50% of the grade). Throughout the course, individual and/or group exercises will be proposed for discussion in class, which will have to be posted on ATENEA (50%). You will have to attend at least 80% of the classes to be able to actively participate in the discussions and to be evaluated

BIBLIOGRAPHY

Basic:
- Walesh, Stuart G. Engineering your future : launching a successful entry-level technical career in today's business environment. 3rd ed. Hoboken, New Jersey: John Wiley & Sons, Inc., [2012]. ISBN 9780470900444.
- Kamm, Lawrence J. Real-world engineering : a guide to achieving career success. New York: IEEE Press, 1991. ISBN 978-0879422790.
- Hitt, William D. Management in action- Guidelines for new managers. IEEE Press, 1984. ISBN 0-7803-1008-x.
- Hitt, William D. The Leader-manager: guidelines for action. Columbus, Ohio: Battelle Press, 1988. ISBN 9780935470406.
- Gordon, Bernard M. Capabilities of Effective Engineering Leaders [on line]. versió 4. MIT Engineering Leadership Program, 2021 [Consultation: 22/09/2023]. Available on: https://gelp.mit.edu/sites/default/files/images/Capabilities_v4.0.pdf.