

Course guide

230332 - LTDPE - Leadership and Professional Development Techniques in Engineering

Last modified: 24/05/2024

Unit in charge:	Barcelona School of Telecommunications Engineering	
Teaching unit:	739 - TSC - Department of Signal Theory and Communications.	
Degree:	BACHELOR'S DEGREE IN TELECOMMUNICATIONS TECHNOLOGIES AND SERVICES ENGINEERING (Syllabus 2015). (Optional subject). BACHELOR'S DEGREE IN ELECTRONIC ENGINEERING AND TELECOMMUNICATION (Syllabus 2018). (Optional subject).	
Academic year: 2024	ECTS Credits: 2.0	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-awareness, self-improvement, and career planning.

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Generical:

CG4. (ENG) GREELEC: Capacitat de resoldre problemes amb iniciativa, presa de decisions, creativitat i de comunicació i transmetre coneixements, habilitats i destresa, comprenent la responsabilitat ètic i professional de l'activitat de l'enginyer tècnic de telecomunicació.

CG9. (ENG) GREELEC: Capacitat de treballar en un grup multidisciplinari i en un entorn multilingüe, i de comunicar tant per escrit com de forma oral, coneixements, procediments, resultats i idees relacionades amb les telecomunicacions i l'electrònica.

Transversal:

07 AAT N2. SELF-DIRECTED LEARNING - Level 2: Completing set tasks based on the guidelines set by lecturers. Devoting the time needed to complete each task, including personal contributions and expanding on the recommended information sources.

CT5. (ENG) GREELEC: ÚS SOLVENT DELS RECURSOS DE LA INFORMACIÓ. Gestionar l'adquisició, l'estructuració, l'anàlisi i la visualització de dades i informació en l'àmbit de l'especialitat i valorar de forma crítica els resultats d'aquesta gestió.

CT6. (ENG) GREELEC: APRENTATGE AUTÒNOM. Detectar deficiències en el propi coneixement i superarles mitjançant la reflexió crítica i l'elecció de la millor actuació per ampliar coneixements.

02 SCS N3. SUSTAINABILITY AND SOCIAL COMMITMENT - Level 3. Taking social, economic and environmental factors into account in the application of solutions. Undertaking projects that tie in with human development and sustainability.

Basic:

CB4. (ENG) GREELEC: Que els estudiants puguin transmetre informació, idees, problemes i solucions a un públic tant especialitzat com no especialitzat.

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. The seminar 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
Hours large group	20,0	40.00
Self study	30,0	60.00

Total learning time: 50 h

CONTENTS

Leadership and Professional Development Techniques in Engineering (LTDPE)

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
 - d. Evaluation of professional performance in engineering
2. MIT Model: Effective Engineering Leadership
 - a. Personal qualities: values, responsibility and character
 - b. Transversal capacities: results-oriented action
 - c. The value of technical competence
3. The management of the oneself
 - a. Self-knowledge, self-esteem and self-management
 - b. Proactivity, criteria and maturity (common sense)
 - c. Decision making in a VUCA (volatile, uncertain, complex and ambiguous) framework
 - d. Personal growth: 10 fundamental characteristics

Full-or-part-time: 50h

Theory classes: 10h

Guided activities: 10h

Self study : 30h

GRADING SYSTEM

Continuous evaluation. It will be evaluated based on the practical work carried out in groups by the students and their active participation in the debates and presentations. There is no final exam

BIBLIOGRAPHY

Basic:

- Walesh, Stuart. Engineering your future: launching a successful entry-level career. Financial Times Prentice Hall, 1995. ISBN 9780132210522.
- Kamm, Lawrence J. Real-world engineering : a guide to achieving career success. New York: IEEE Press, 1991. ISBN 0879422793.
- Hitt, W. 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, 1986. ISBN 9780935470208.