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330119 - SC - Communication Systems

Coordinating unit: 330 - EPSEM - Manresa School of Engineering

Teaching unit: 750 - EMIT - Department of Mining, Industrial and ICT Engineering

Academic year: 2019

Degree: BACHELOR'S DEGREE IN ICT SYSTEMS ENGINEERING (Syllabus 2010). (Teaching unit Optional)
BACHELOR'S DEGREE IN INDUSTRIAL ELECTRONICS AND AUTOMATIC CONTROL ENGINEERING (Syllabus 2016). (Teaching unit Optional)
BACHELOR'S DEGREE IN INDUSTRIAL ELECTRONICS AND AUTOMATIC CONTROL ENGINEERING (Syllabus 2009). (Teaching unit Optional)

ECTS credits: 6 Teaching languages: Catalan, Spanish, English

Teaching staff

Coordinator: ILKER DEMIRKOL

Degree competences to which the subject contributes

Specific:

E.30. (ENG) El coneixement de l'arquitectura de les xarxes de comunicacions i la seva aplicació així com la capacitat de dissenyar, desplegar i administrar xarxes de comunicacions, especialment xarxes de computadors.
E.31. (ENG) La capacitat de descriure, programar, utilitzar, avaluar i optimitzar protocols i interfícies de comunicació dels diferents nivells d'una arquitectura de xarxa.
E.32. (ENG) El coneixement dels principals serveis de xarxa i la seva aplicació, així com la capacitat de dissenyar i implementar nous serveis.
E.51. (ENG) La capacitat d'especificar, analitzar, dissenyar i avaluar circuits i sistemes de comunicacions així com el coneixement dels principis i subsistemes que intervenen en els sistemes de comunicacions mitjançant ones radioelèctriques i òptiques.

Transversal:

E.70. (ENG) El coneixement i la capacitat d'usar les eines i instrumentació existents per a l'anàlisi, el disseny, el desenvolupament i la verificació de sistemes electrònics, informàtics i de comunicacions.
E.71. (ENG) Capacitat per desenvolupar les activitats pròpies del grau tenint en compte els estàndards, reglaments i normes reguladores corresponents.
E.72. (ENG) Capacitat per modelar i simular sistemes de l'àmbit del grau i aplicar els resultats a la resolució de problemes d'aquest àmbit.
3. EFFICIENT ORAL AND WRITTEN COMMUNICATION - Level 3. Communicating clearly and efficiently in oral and written presentations. Adapting to audiences and communication aims by using suitable strategies and means.
4. TEAMWORK - Level 3. Managing and making work groups effective. Resolving possible conflicts, valuing working with others, assessing the effectiveness of a team and presenting the final results.
5. EFFECTIVE USE OF INFORMATION RESOURCES - Level 3. Planning and using the information necessary for an academic assignment (a final thesis, for example) based on a critical appraisal of the information resources used.
6. SELF-DIRECTED LEARNING - Level 3. Applying the knowledge gained in completing a task according to its relevance and importance. Deciding how to carry out a task, the amount of time to be devoted to it and the most suitable information sources.
7. THIRD LANGUAGE. Learning a third language, preferably English, to a degree of oral and written fluency that fits in with the future needs of the graduates of each course.

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Learning objectives of the subject

ENG

Study load

Total learning time: 150h	Hours large group:	36h	24.00%
	Hours medium group:	0h	0.00%
	Hours small group:	24h	16.00%
	Guided activities:	0h	0.00%
	Self study:	90h	60.00%

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Content

1. Fonaments de xarxes sense fils (eng)	Learning time: 20h Theory classes: 8h Self study : 12h
Description: ENG	

2. Control d'accés al medi per a sistemes sense fils (ENG)	Learning time: 25h Theory classes: 6h Laboratory classes: 4h Self study : 15h
Description: ENG	

3. Xarxa d'àrea local sense fils (WLAN) (ENG)	Learning time: 30h Theory classes: 6h Laboratory classes: 6h Self study : 18h
Description: ENG	

4. Xarxes Mòbils (ENG)	Learning time: 35h Theory classes: 8h Laboratory classes: 6h Self study : 21h
Description: ENG	

5. Xarxes d'àrea personal sense fils (WPAN) (ENG)	Learning time: 10h Theory classes: 2h Laboratory classes: 2h Self study : 6h
Description: ENG	

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6. Xarxes d'Àrea Estesa sense fils de Baix Consum (LP-WAN) (ENG)	Learning time: 10h Theory classes: 2h Laboratory classes: 2h Self study : 6h
Description: ENG	

7. Xarxes sense infraestructures (ENG)	Learning time: 20h Theory classes: 4h Laboratory classes: 4h Self study : 12h
Description: ENG	

Planning of activities

1. Classe expositiva (ENG)	Hours: 31h Theory classes: 31h

2. Estudi de continguts (ENG)	Hours: 30h Theory classes: 30h

3. Classe de laboratori (ENG)	Hours: 54h Laboratory classes: 24h Self study: 30h

4. Projecte (ENG)	Hours: 22h Theory classes: 2h Self study: 20h

5. Proves (ENG)	Hours: 13h Theory classes: 3h Self study: 10h

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Bibliography

Basic:

Beard, Cory; Stallings, William. Wireless communication networks and systems. Global ed. Boston: Pearson Education Ltd, 2016. ISBN 9781292108711.

Agrawal, Dharma P; Zeng, Qing-An. Introduction to wireless and mobile systems. Fourth edition. International edition. Australia: Cengage Learning, 2016. ISBN 9781305259621.

Complementary:

Rappaport, Theodore S. Wireless communications : principles and practice. 2nd. ed. Upper Saddle River, NJ: Prentice Hall, 2002. ISBN 0130422320.

Goldsmith, Andrea. Wireless communications. Cambridge ; New York: Cambridge University Press, 2005. ISBN 9780521837163.

Others resources: