

Xarxes Lineals**2014/2015**

Codi: 42851

Crèdits: 6

Titulació	Tipus	Curs	Semestre
4313797 Enginyeria de Telecomunicacions / Telecommunication Engineering	OB	1	1

Professor de contacte

Nom: Eden Corrales Lopez

Correu electrònic: Eden.Corrales@uab.cat

Utilització de llengües

Llengua vehicular majoritària: anglès (eng)

Grup íntegre en anglès: No

Grup íntegre en català: Sí

Grup íntegre en espanyol: No

Equip docent

Alfred Raul Gimenez Bonastre

Prerequisites

A background in microwave engineering is recommended.

ObjectiusObjectives

The aim of this module is to provide the ability to design components for communications, with particular emphasis on synthesis of linear components, from the mathematical definition of the response to a circuit network, lumped element based, which has the desired response. Different technologies connected to the network synthesis approach will be analyzed. Examples and exercises will be implemented for better understanding of the content.

Competències

- Capacity for working in interdisciplinary teams
- Capacity to design communications components such as routers, commutators, concentrators, emitters and receivers in different bandwidths.
- Student should possess the learning skills that enable them to continue studying in a way that is largely student led or independent
- Students should know how to apply the knowledge they have acquired and their capacity for problem solving in new or little known fields within wider (or multidisciplinary) contexts related to the area of study
- Students should know how to communicate their conclusions, knowledge and final reasoning that they hold in front of specialist and non-specialist audiences clearly and unambiguously

Resultats d'aprenentatge

1. Capacity for working in interdisciplinary teams

2. Choice of the most appropriate technology for subsequent design in terms of performance and band frequency.
3. Design linear devices at different bandwidth frequencies
4. Student should possess the learning skills that enable them to continue studying in a way that is largely student led or independent
5. Students should know how to apply the knowledge they have acquired and their capacity for problem solving in new or little known fields within wider (or multidisciplinary) contexts related to the area of study
6. Students should know how to communicate their conclusions, knowledge and final reasoning that they hold in front of specialist and non-specialist audiences clearly and unambiguously
7. Synthesis devices with linear responses at different bandwidth frequencies

Continguts

Content

- Introduction.
- Analysis of multi-port networks. Parameter definitions.
- Mathematical synthesis of the transfer function.
- Network synthesis - Circuit approach.
- Coupling matrix synthesis.
- Reconfiguration techniques.
- Technology and design techniques.

Metodologia

Methodology

THEORY CLASSES: Participatory classes by means of blackboard and/or slides.

LAB AND EXERCISES: Lab and exercise classes in theory classroom and computer equipped classroom.

AUTONOMOUS WORK: Making notes. Activities. Study.

TUTORIALS: Individual tutorials.

Activitats formatives

Títol	Hores	ECTS	Resultats d'aprenentatge
Tipus: Dirigides			
Exercises	12	0,48	1, 2, 3, 4, 5, 6, 7
Lab	12	0,48	1, 2, 3, 4, 5, 6, 7
Theory classes	26	1,04	2, 3, 7
Tipus: Supervisades			
Tutorials	3	0,12	4, 5, 6
Tipus: Autònomes			
Lab and exercises preparation	17,5	0,7	2, 3, 4, 5, 7
Study	60	2,4	2, 3, 4, 5, 7

Avaluació

Evaluation

Lab (20%)

Student's ability to solve practical problems will be assessed taking into account submitted reports, autonomy in problems resolution during lab sessions, ability to work as a team with other students and diligence.

Exercises (20%)

Exercises solved by the student during classes will be evaluated. Teamwork will be assessed in exercises solved within a student group. Exercises will be evaluated along the course assessing the acquired abilities.

Presentation (20%)

A presentation will be prepared in groups and presented at the end of the course.

Test (30%)

A final test will be done at the end of the term including the contents of the subject.

Attendance and Participation (10%)

The attendance to classes and different activities along the course will be a part of the evaluation. Autonomous work and participation in the proposed activities will also determine a part of final marks.

Final grade = Lab*0.2 + Exercises*0.2 + Presentation*0.2 + Test*0.3 + Attendance*0.1

Activitats d'avaluació

Títol	Pes	Hores	ECTS	Resultats d'aprenentatge
Attendance and Participation	10%	0	0	4
Exercises	20%	2	0,08	1, 2, 3, 4, 5, 6, 7
Lab	20%	15	0,6	1, 2, 3, 4, 5, 6, 7
Presentation	20%	0,5	0,02	6
Test	30%	2	0,08	2, 3, 7

Bibliografia

J. S. Hong, Microstrip Filters for RF/Microwave Applications, 2nd ed., Wiley, 2011.

R. J. Cameron, C. M. Kudsia and R. R. Mansour, Microwave filters for communication systems: fundamentals, design, and applications. Wiley, 2007.

R. E. Collin, Foundations for Microwave Engineering, McGraw-Hill, 1966.

D. M. Pozar, Microwave Engineering, Wiley, 2009.