

340361 - FUIN-C9X01 - Future Internet

Coordinating unit:	340 - EPSEVG - Vilanova i la Geltrú School of Engineering		
Teaching unit:	701 - AC - Department of Computer Architecture		
Academic year:	2019		
Degree:	BACHELOR'S DEGREE IN INFORMATICS ENGINEERING (Syllabus 2018). (Teaching unit Compulsory) BACHELOR'S DEGREE IN INFORMATICS ENGINEERING (Syllabus 2010). (Teaching unit Compulsory) BACHELOR'S DEGREE IN ELECTRONIC SYSTEMS ENGINEERING (Syllabus 2010). (Teaching unit Optional)		
ECTS credits:	6	Teaching languages:	English

Teaching staff

Coordinator: JAVIER MASIP BRUIN

Others: JAVIER MASIP BRUIN

Prior skills

Solid knowledge on network concepts

Requirements

No explicit requisits

Degree competences to which the subject contributes

Specific:

3. CETI2. Ability to select, design, develop, integrate, value, construct, manage, exploit and maintain technologies of machines, programming and nets, keeping suitable costs and quality parameters.
4. CETI4. Ability to select, design, deploy, integrate and manage network and communications infrastructure in an organization.
5. CETI6. Ability to design systems, applications and services based on network technologies, including internet, website, e-commerce, multimedia, interactive services and mobile computing.
6. CETI7. Ability to understand, implement and manage security and safety of computing systems.

Transversal:

1. 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.
2. 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.

Teaching methodology

Theoretical sessions will be handled at the assigned classroom using the multimedia equipment available. The professor will start sessions with the specific topic and will open the room for general discussion, introducing concepts, papers (previously reported) and other initiatives. Sessions must be dynamic, so requiring active participation from students. Papers discussions will be dynamically assigned and timely allocated. Papers discussions at the second half of the semester will be handled by the students individually and discussed through a clustering process within students before definitive public presentation.

Learning objectives of the subject

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Analyze current network technologies, not only current ones, but also those yet in research phase. Acquiring solid knowledge in new Internet technologies, paying special attention in the new network paradigms expected for the coming future. The objective is to provide the student with a clear picture in the overall network concepts from real deployed technologies to unforeseen research innovations.

Study load

Total learning time: 150h	Hours large group:	60h	40.00%
	Hours medium group:	0h	0.00%
	Hours small group:	0h	0.00%
	Guided activities:	0h	0.00%
	Self study:	90h	60.00%

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Content

<p>1. Current network model: Refreshing concepts</p>	<p>Learning time: 11h 36m</p> <p>Theory classes: 1h Practical classes: 2h Laboratory classes: 2h Self study : 6h 36m</p>
<p>Description:</p> <ul style="list-style-type: none"> 1.1. Components and protocols 1.2. Switching technologies 1.3. Layering model 1.4. Internet evolution <p>Related activities:</p> <p>Activity 1: Class discussion</p> <p>Specific objectives:</p> <p>Align concepts about current Internet technologies so the students gets the required background to gat introduced to innovative network paradigms</p>	
<p>2. New network paradigms: Weaknesses</p>	<p>Learning time: 10h 36m</p> <p>Theory classes: 1h Practical classes: 2h Laboratory classes: 2h Self study : 5h 36m</p>
<p>Description:</p> <ul style="list-style-type: none"> 2.1. Functionalities 2.2. New trends <p>Related activities:</p> <p>Activity 1: Paper discussion</p> <p>Specific objectives:</p> <p>Understanding main weaknesses introduced by the new needs required by current and emerging services and aplications offered to users. Knowledge on trends at the reserach level to deal with these weaknesses.</p>	

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<p>3. Reserach trends</p>	<p>Learning time: 21h 48m</p> <p>Theory classes: 2h Practical classes: 4h Laboratory classes: 2h Self study : 13h 48m</p>
<p>Description:</p> <ul style="list-style-type: none"> 3.1. Functions and properties 3.2. Trends in routing, addressing, cloud, data,... 3.3. Internet of things <p>Related activities:</p> <p>Activity 1: Paper discussion</p> <p>Specific objectives:</p> <p>Identify most relevant activities and topics in the research area as well as the starte of the art progress</p>	
<p>(ENG) 4. Routing & addressing</p>	<p>Learning time: 13h 36m</p> <p>Theory classes: 1h Practical classes: 2h Laboratory classes: 2h Guided activities: 3h Self study : 5h 36m</p>
<p>Description:</p> <ul style="list-style-type: none"> 4.1. Functions and properties 4.2. Protocols 4.3. The future <p>Related activities:</p> <p>Activity 1: Paper discussion</p>	

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<p>(ENG) 5. Network management</p>	<p>Learning time: 30h 48m</p> <p>Theory classes: 3h Practical classes: 6h Laboratory classes: 5h Self study : 16h 48m</p>
<p>Description:</p> <ul style="list-style-type: none"> 5.1. QoS and QoE 5.2. Mobility 5.3. Addressing 5.4. Multimedia 5.5. Security 5.6. Efficiency <p>Related activities:</p> <ul style="list-style-type: none"> Activity 1: Lab Activity 2: Papers discussion 	
<p>(ENG) 6. Programmable networks</p>	<p>Learning time: 20h 12m</p> <p>Theory classes: 2h Practical classes: 4h Laboratory classes: 1h Self study : 13h 12m</p>
<p>Description:</p> <ul style="list-style-type: none"> 6.1. SDN 6.2. Data centers 6.3. Cloud networking <p>Related activities:</p> <ul style="list-style-type: none"> Activity 1. Papers discussion 	

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<p>(ENG) 7. Literature overview</p>	<p>Learning time: 37h 24m</p> <p>Theory classes: 4h Practical classes: 8h Guided activities: 3h Self study : 22h 24m</p>
<p>Description:</p> <ul style="list-style-type: none"> 7.1. Research lines 7.2. Evolutionaty vs revolutionary design 7.3. Multilayer architecture 7.4. Green networking 7.5. The future <p>Related activities:</p> <p>Activity 1: Papers presentation</p>	

Qualification system

Final Mark = 50% Presentation + 50% Discussion session

Regulations for carrying out activities

All evaluation activities are mandatory

Bibliography

Basic:

Kurose, James F.; Ross, Keith W. Redes de computadoras : un enfoque descendente. 5a ed. Madrid [etc.]: Pearson, 2010. ISBN 9788478291199.