

300272 - NETAUTH - Network Security Authentication & Authorization

Coordinating unit:	300 - EETAC - Castelldefels School of Telecommunications and Aerospace Engineering
Teaching unit:	744 - ENTEL - Department of Network Engineering
Academic year:	2019
Degree:	MASTER'S DEGREE IN ADVANCED TELECOMMUNICATION TECHNOLOGIES (Syllabus 2019). (Teaching unit Optional) MASTER'S DEGREE IN APPLIED TELECOMMUNICATIONS AND ENGINEERING MANAGEMENT (MASTEAM) (Syllabus 2015). (Teaching unit Optional)
ECTS credits:	3
Teaching languages:	English

Teaching staff

Coordinator:	Hernandez Serrano, Juan Bautista
Others:	Hernandez Serrano, Juan Bautista León Abarca, Olga

Prior skills

Basic knowledge of Linux OS.
Basic understanding of security-related topics; for instance: cryptography, security protocols, dynamic key management, CIA triad, etc.
Medium-average computer programming skills.

Requirements

None

Degree competences to which the subject contributes

Basic:

CB8. (ENG) CB8 - Que los estudiantes sean capaces de integrar conocimientos y enfrentarse a la complejidad de formular juicios a partir de una información que, siendo incompleta o limitada, incluya reflexiones sobre las responsabilidades sociales y éticas vinculadas a la aplicación de sus conocimientos y juicios.

CB10. (ENG) CB10 - Que los estudiantes posean las habilidades de aprendizaje que les permitan continuar estudiando de un modo que habrá de ser en gran medida autodirigido o autónomo.

Generical:

03 DIS. (ENG) Diseñar aplicaciones de alto valor añadido basadas en las Tecnologías de la Información y las Comunicaciones (TIC), aplicadas a cualquier ámbito de la sociedad.

06 RES. (ENG) Resolver problemas y mejorar procesos en cualquier ámbito social a partir de la aplicación de las TIC, integrando conocimientos de diversos ámbitos y aplicando ingeniería de alto nivel tecnológico.

Transversal:

05 TEQ. TEAMWORK. Being able to work as a team player, either as a member or as a leader. Contributing to projects pragmatically and responsibly, by reaching commitments in accordance to the resources that are available.

03 TLG. 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 classes encouraging the students to participate in the class discussion
Lab sessions that reinforce the contents learnt during the theoretical classes and put them into practice.

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Learning objectives of the subject

Upon finishing this course, students should be able to:

- Know and understand security threats and risks against the management of networks, with special focus on IP networks.
- Known the techniques to audit for vulnerabilities/attacks both networks and hosts.
- Know the techniques to prevent or counteract those security threats.

Study load

Total learning time: 75h	Hours large group:	12h	16.00%
	Hours medium group:	0h	0.00%
	Hours small group:	3h	4.00%
	Guided activities:	12h	16.00%
	Self study:	48h	64.00%

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Content

<p>Introduction to Security</p>	<p>Learning time: 14h 12m</p> <p>Theory classes: 2h Laboratory classes: 0h 36m Guided activities: 4h Self study : 7h 36m</p>
<p>Description: An overview of network security basics (CIA, MACs, digital signatures, dynamic key management, etc.) and an introduction to virtualization of network scenarios.</p>	
<p>Understanding Authentication</p>	<p>Learning time: 16h 36m</p> <p>Theory classes: 4h Laboratory classes: 0h 36m Guided activities: 2h Self study : 10h</p>
<p>Description: Authentication with one of multiple factors: something you know (passwords), something you have (tokens, keys), something you are (biometrics). Includes understanding authentication with secret keys, public keys, the need of nonces, password hashing, salted hashes, proper access control, and secure transmission of credentials.</p>	
<p>Access Authentication</p>	<p>Learning time: 12h 36m</p> <p>Theory classes: 2h Laboratory classes: 0h 36m Guided activities: 2h Self study : 8h</p>
<p>Description: Authentication protocols for network/resource access: PAP, CHAP, EAP with its methods</p>	
<p>Authentication, Authorization and Accounting (AAA)</p>	<p>Learning time: 12h 36m</p> <p>Theory classes: 2h Laboratory classes: 0h 36m Guided activities: 2h Self study : 8h</p>
<p>Description: Authentication, Authorization and Accounting (AAA): RADIUS, DIAMETER, federated cross-layer authentication, EDUROAM</p>	



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Web Authentication	Learning time: 12h 36m Theory classes: 2h Laboratory classes: 0h 36m Guided activities: 2h Self study : 8h
Description: TLS authentication, login forms, session control, Single Sign-On, delegated authentication (OAuth)	

Qualification system

Secure storage / password guessing test: 20%
Final exam: 40%
Authentication/Authorization project: 30%
Subjective: 10%

Bibliography