Course guide  
230714 - NSAA - Network Security - Authentication and Authorization

Unit in charge: Barcelona School of Telecommunications Engineering  
Teaching unit: 744 - ENTEL - Department of Network Engineering.

Degree:  
MASTER’S DEGREE IN TELECOMMUNICATIONS ENGINEERING (Syllabus 2013). (Optional subject).  
MASTER’S DEGREE IN ADVANCED TELECOMMUNICATION TECHNOLOGIES (Syllabus 2019). (Optional subject).  
MASTER’S DEGREE IN CYBERSECURITY (Syllabus 2020). (Compulsory subject).

Academic year: 2023  
ECTS Credits: 5.0  
Languages: English

LECTURER  

Coordinating lecturer: Consultar aquí / See here: https://telecos.upc.edu/ca/estudis/curs-actual/professorat-responsables-coordinadors/responsables-assignatura

Others: Consultar aquí / See here: https://telecos.upc.edu/ca/estudis/curs-actual/professorat-responsables-coordinadors/professorat-assignat-idioma

PRIOR SKILLS  
Basic knowledge of Linux OS.  
Understanding of security-related topics; for instance: cryptography, network security protocols, etc.  
Medium-average computer programming skills.

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.

LEARNING OBJECTIVES OF THE SUBJECT  
Upon finishing this course, students should be able to understand how authentication and authorization methods and protocols work at the different OSI layer, to identify the potential threats, and to know best practises and countermeasures.

STUDY LOAD

<table>
<thead>
<tr>
<th>Type</th>
<th>Hours</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours small group</td>
<td>19,5</td>
<td>15.60</td>
</tr>
<tr>
<td>Hours large group</td>
<td>19,5</td>
<td>15.60</td>
</tr>
<tr>
<td>Self study</td>
<td>86,0</td>
<td>68.80</td>
</tr>
</tbody>
</table>

Total learning time: 125 h
## CONTENTS

### Crypto Background

**Description:**
An overview of the necessary cryptographic background

**Full-or-part-time:** 19h  
Laboratory classes: 6h  
Self study: 13h

### Authentication Protocols

**Description:**
Understanding authentication protocols based on something you have, something you are and/or something you know. It includes replay attacks, nonces, SK authentication, PK authentication, DS authentication, passwords, hashed passwords, password cracking, biometrics, 2-factor authentication.

**Full-or-part-time:** 48h  
Laboratory classes: 15h  
Self study: 33h

### Access Authentication

**Description:**
Access Authentication, PAP, CHAP, MSCHAP, EAP, RADIUS, DIAMETER, WPA-Enterprise

**Full-or-part-time:** 19h  
Laboratory classes: 6h  
Self study: 13h

### Web Authentication

**Description:**
Sessions, Tokens, OAuth, OpenID connect

**Full-or-part-time:** 19h  
Laboratory classes: 6h  
Self study: 13h

### Mid-term exam

**Description:**
Theory and lab

**Full-or-part-time:** 10h  
Laboratory classes: 3h  
Self study: 7h
Final exam

Description:
Final exam: theory and lab

Full-or-part-time: 10h
Laboratory classes: 3h
Self study: 7h

GRADING SYSTEM

Mid-term exam: 30%
Final exam: 40%
Assignments: 20%
Attitude: 10%