230714 - NSAA - Network Security - Authentication and Authorization

Coordinating unit: 230 - ETSETB - Barcelona School of Telecommunications Engineering
Teaching unit: 744 - ENTEL - Department of Network Engineering
Academic year: 2018
Degree: MASTER’S DEGREE IN TELECOMMUNICATIONS ENGINEERING (Syllabus 2013). (Teaching unit Optional)
ECTS credits: 5

Teaching languages: English

Teaching staff
Coordinator: JUAN BAUTISTA HERNANDEZ SERRANO
Others: Segon quadrimestre:
JUAN BAUTISTA HERNANDEZ SERRANO - 31

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

Requirements
Network Security

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>Total learning time: 125h</th>
<th>Hours small group:</th>
<th>39h</th>
<th>31.20%</th>
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<tbody>
<tr>
<td>Self study:</td>
<td>86h</td>
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<td>68.80%</td>
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<table>
<thead>
<tr>
<th><strong>Content</strong></th>
<th><strong>Learning time:</strong></th>
<th><strong>Description:</strong></th>
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| **Crypto Background**     | 19h                | Laboratory classes: 6h  
Self study : 13h  
Description:  
An overview of the necessary cryptographic background |
| **Authentication Protocols** | 48h                | Laboratory classes: 15h  
Self study : 33h  
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. |
| **Access Authentication** | 19h                | Laboratory classes: 6h  
Self study : 13h  
Description:  
Access Authentication, PAP; CHAP, MSCHAP, EAP, RADIUS, DIAMETER, WPA-Enterprise |
| **Web Authentication**    | 19h                | Laboratory classes: 6h  
Self study : 13h  
Description:  
Sessions, Tokens, OAuth, OpenID connect |
| **Mid-term exam**         | 10h                | Laboratory classes: 3h  
Self study : 7h  
Description:  
Theory and lab |
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Final exam

<table>
<thead>
<tr>
<th>Learning time: 10h</th>
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<tbody>
<tr>
<td>Laboratory classes: 3h</td>
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<tr>
<td>Self study: 7h</td>
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Description:
Final exam: theory and lab

Qualification system

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

Bibliography