Security Requirement (SecReq)

**Module Description**: This module introduces the basic concepts of security requirements. It discusses different security requirements for satisfying different security goals, and abuse case development. Students will be given scenarios of attacks, and analyze the security requirements that could prevent attacks. Students will also learn to create abuse cases based on CAPEC attack patterns.

**Prerequisite Knowledge:** Basic knowledge of threats and attacks; software development lifecycle; software requirements and use cases.

**Length of Completion:** 10 hours

**Level of Instruction:** junior**,** Senior, or graduate level. This module can be included in a software engineering or software security class.

**Learning Setting:** This module is intended for in-class (face-to-face) or online instruction.

# learning outcomes

MODULE LEARNING OUTCOMES

• Explain different security requirements

• Given an attack scenario of an application, provide security requirements the application should have to prevent the attack from succeeding and suggest mitigation strategies to prevent the attack from succeeding.

* Explain the concept of abuse cases
* Create abuse cases based on software requirements specification and CAPEC attack patterns.

# Module Details

**Interconnection:** This module includes the following:

|  |  |  |  |
| --- | --- | --- | --- |
| Lessons | Presentations | Activity/Lab Title and Number of Exercises | Advanced Challenges |
| Security Requirements | X | “Attack Scenarios”  1 exercise | N/A |
| Abuse Case | X | “Abuse Cases Development”  1 exercise | N/A |

**Instructional Files and Online Resources that are Needed:**

Lesson 1: Security Requirements Basics

1. SecReq\_Lesson1\_ Basics\_Presentation.pptx
2. SecReq\_Lesson1\_Basics\_Activity.docx
3. SecReq\_Lesson1\_Basics\_ActivityFiles

Lesson 2: Abuse Cases

1. SecReq\_Lesson2\_ AbuseCase\_Presentation.pptx
2. SeS\_Lesson2\_AbuseCase\_Lab.docx
3. SecReq\_Lesson2\_AbuseCase\_LabFiles

**Assessment:** The assessment guide contains 12 multiple choice and fill in the blank test questions mapped to the lesson learning outcomes as follows:

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 1.1 | X | X |  |  |  |  |  |  |  |  |  |  |
| 1.2 |  |  | X | X | X |  |  |  |  |  |  |  |
| 1.3 |  |  |  |  |  | X |  |  |  |  |  |  |
| 2.1 |  |  |  |  |  |  | X | X | X | X |  |  |
| 2.2 |  |  |  |  |  |  |  |  |  |  | X | X |

See the assessment guide files:

08.SecReq\_AssessmentGuide. Files containing the correct answers to assessment questions are provided in the directory

# lessons

**Overview of Lessons:**

Lesson 1: Security Requirements

### **Lesson 1. The Basics**

**Learning Outcomes:**

Upon completion of Lesson 1:

1.1 Students will be able to explain the difference between security requirements and security goals.

1.2 Students will be able to distinguish between the different security requirements.

1.3 Students will be able to explain the importance of considering security requirements early in the software development lifecycle.

**Warm Up:**

**Lesson:** 02.SecReq\_Lesson1\_ Basics\_Presentation.pptx

**Active Learning Activity:**

03.SecReq\_Lesson1\_Basics\_Activity

Students will need the following data files from the directory 04.SecReq\_Lesson1\_Basics\_ActivityDataFiles. These files can be copied to the students’ system via download:

* Attack Scenario.docx

### **Lesson 2. Abuse Cases**

**Learning Outcomes:**

Upon completion of Lesson 2:

2.1 Students will be able to explain the concept of abuse cases

2.2 Students will be able to identify and create abuse cases.

**Warm Up:**

**Lesson:** 02.SecReq\_Lesson1\_ AbuseCase\_Presentation.pptx

**Lab:** 06.SeS\_Lesson2\_AbuseCase\_Lab.docx

Students will need the following data files from the directory 07.SecReq\_Lesson2\_AbuseCase\_LabFiles. These files can be copied to the students’ systems or made available for them to download.