

t.SSI - Software-Sicherheit

Person responsible for the course: Marc Rennhard, rema

Credits: 4

Valid for: 2010/2011

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Learning objectives:

The students get a profound introduction to software security. The focus is in the areas "secure software development process", "security-testing of software and systems", and "secure software development with Java". In particular, the students will learn the following competencies:

- You know and understand what must be considered during secure software development.
 - You can apply the principles of secure software development to an arbitrary software development process to turn it into a secure software development process.
 - Using appropriate methods and tools, you can test applications and systems with respect to security and exploit uncovered vulnerabilities.
 - You know typical, security-critical programming errors that are often made and know how you can prevent them in your own programs.
 - You know and understand the security features offered by the Java platform and can apply them to implement a security design or security controls in a reasonable way.
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Course content:

Lecture:

Secure software development process (14 lessons)

- Introduction to software security
- The secure development lifecycle
- Threat modeling
- Security risk analysis
- Security requirements engineering
- Security design / controls

Security-testing (6 lessons)

- Penetration testing
- Finding and exploiting vulnerabilities in web applications
- White-box security-testing using static code analysis

Secure programming with a focus on Java (8 lessons)

- Typical programming errors (buffer-overflows, race conditions...)
- Java platform security

- Java security libraries (JCA, JSSE, JAAS)
- Secure programming of web applications with Java (input validation, access control...)

Lab:

You will work on practical problems corresponding to all major topics of the lecture. The tasks are a mix of security analysis, security design, security-testing and secure programming with Java.

Previous knowledge:

SWE (Software Engineering) and ISI (Internet-Sicherheit) recommended

Teaching method:

Type of lesson:	Number of lessons per week:
Lecture	14 * 2
Tutorial/Practicum	14 * 2
Group teaching	
Block instruction	
Seminar	

Assessment:

According to the table or as specified in writing by the lecture at the beginning of the semester!

Number	Type	Weighting
	Modulendprüfung	80%
	Prüfungen während der Unterrichtszeit	
	Bewertete Praktika	20%

Language of instruction:

Deutsch

Instruction material:

Lecture slides with additional comments

Comments:

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