

Training: Capstone Courseware
107 Java Development for Secure Systems

FORM OF TRAINING	MATERIALS	PRICE	DURATION
Traditional	Hardcopy	725 EUR	3 days
Traditional	CTAB Tablet	825 EUR	3 days
Distance learning	Hardcopy	725 EUR	3 days
Distance learning	CTAB Tablet	725 EUR	3 days

LOCATIONS

Krakow - 5 Tatarska Street, II floor, hours: 9:00 am - 4:00 pm

Warsaw - 17 Bielska Street, hours: 9:00 am - 4:00 pm

TRAINING GOALS:

Version 6.0

This course exposes students to the broad range of challenges and techniques that is "**Java security**." Secure coding practice for Java incorporates techniques for **Java SE** and **Java EE**, and increasingly EE applications are using SE techniques such as policy files and **JAAS authentication**. This course spends some time on each platform, so that students will be exposed to SE basics such as access controller, permissions, and policies; and also traditional EE techniques such as web-security declarations and the **EJB authorization model**. Best-practice chapters wrap up coverage of each platform.

The course emphasizes hands-on exercise, and students will spend more than half of their classroom time solving specific security problems. Most labs are organized as scenarios in which a security breach of existing software is possible - students begin by hacking the system in some way. Then the work of the lab is to tighten up the software to eliminate the threat: set a secure policy, sign a file, clean up overexposed parts of an API, require user login, etc.

This version of the course targets Java SE 6 and Java EE 5, but it is largely applicable to Java SE 5 and J2EE 1.4 as well, and groups looking for Java training who know they'll be using those earlier platforms are encouraged to use this course.

CONSPECT:

- Chapter 1. Java SE Security
 - Holistic Security Practices
 - Threats to the User

- The Class Loader and Bytecode Verifier
- System Classes and the Core API
- SecurityManager and AccessController
- Permissions
- Implication
- CodeSources
- Policies
- Configuring Java SE Security
- Dynamic Policies
- Privileged Actions
- Chapter 2. Code Signature and Key Management
 - Encryption and Digital Signature
 - Keystores
 - Keys and Certificates
 - Certificate Authorities
 - The KeyStore API
 - Signing JARs
 - Signed CodeSources
 - Additional Policy Semantics
- Chapter 3. Secure Development Practices: Java SE
 - Code Injection
 - Final Classes and Methods
 - Singletons, Factories, and Flyweights
 - Methods, Collections, and Data Hiding
 - Sealing JARs
 - Code Obfuscation
 - Object Serialization
- Chapter 4. Cryptography
 - Threats to Identity and Privacy
 - The Java Cryptography Extensions
 - The Signature Class
 - SignedObjects
 - The Java Cryptography Extensions
 - SecretKeys and KeyGenerator
 - The Cipher Class
 - Dangerous Practices

- HTTP and JSSE
- Chapter 5. JAAS
 - Pluggable Authentication Logic
 - JAAS
 - Packages and Interfaces
 - Subjects and Principals
 - ANDs and ORs
 - Impersonation Methods
 - Permissions for JAAS Use
 - LoginContext and LoginModule
 - Configuring JAAS
 - CallbackHandler and Callbacks
 - Implementing a JAAS Client
 - Implementing a LoginModule
- Chapter 6. Java EE Security
 - Java EE Servers as Code Hosts
 - Tomcat Security Configuration
 - Declaring Roles
 - Securing URLs
 - HTTP Authentication Schemes
 - Securing EJBs
 - Programmatic Security
 - JAAS in Java EE
 - Realms and LoginModules
 - JAAS in Tomcat
 - JACC
 - Certifying a Java EE Application
 - HTTPS Configuration
- Chapter 7. Secure Development Practices: Java EE
 - Presentation-Tier Vulnerabilities
 - User Accounts
 - MVC and Security
 - Validating User Input
 - SQL Injection
 - Cross-Site Scripting
 - Reflected XSS

- Defeating XSS
- OWASP
- Penetration Testing
- Error Handling and Information Leakage
- Logging and Auditing

REQUIREMENTS:

- Solid [Java programming](#) experience is assumed - Course 103 is excellent preparation.
- Though extensive practical experience with **Java EE development** is not necessary, some knowledge of **Java EE architecture and development** is also recommended - consider Course 108 [Overview of Java EE Development](#), which offers a one-day overview of Java EE development, including architecture and working examples.

Difficulty level



CERTIFICATE:

The participants will obtain certificates signed by Capstone Courseware.

TRAINER:

Authorized Capstone Courseware Trainer.