


# FRAMWORKS, COMPOSANTS MÉTIERS ET WEB SERVICE

 ECTS  
5 crédits

 Composante  
UFR de  
mathématiques  
et  
informatique  
(UFR27)

 Volume  
horaire  
40h

 Période de  
l'année  
Automne

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### Description

#### Learning Objectives

This graduate course aims at presenting technical software architecture concepts of modern frameworks and components of layered systems.

It develops necessary skills to understand, develop, reason and criticize technical architectures and integration patterns.

#### Prerequisites

- \* Strong background and practice of Java Standard Edition (L3 MIAGE INF2)
- \* Proficiency in development tools : Eclipse IDE, Git, Maven (L3 MIAGE DEVTOOL)
- \* Knowledge of the main Object-Oriented Design patterns (L3 MIAGE ISI5)
- \* Knowledge in Relational Databases and Database structure (L3 MIAGE INF9)
- \* Understanding of XML and JSON

#### Content

- \* Introduction — What are the roles of a software architect ?
- \* Software Architecture : a Framework-based approach
- \* Basics of Software Architecture
- \* Inversion of Control with Jakarta EE8 – CDI
- \* Data format Binding with Jakarta EE8 – JAXB
- \* Rest Architectures and Implementation with Jakarta EE8 — JAXRS
- \* Persistence with Jakarta EE8 — JPA
- \* Message-based communication with Jakarta EE8 — JMS
- \* Business Logic with Jakarta EE8 — EJB
- \* Software Architecture Design: Enterprise Application Patterns
- \* Architecture Integration : Enterprise Integration Pattern

#### Pedagogical Methods

All the content of the course is provided in the EPIs and selected Github repositories. After an introductory session on the general principles of software architecture, and the role of the architect, we will dedicate a course to each main component of the Jakarta EE8 Platform. We'll use a reversed-class approach letting students present a different integration pattern at the beginning of each session from selected textbooks

A long-haul project building up from notions seen in each session

<b>12</b>		Project Integration	Pattern presentations
<b>13</b>		Project Integration	Pattern presentations
<b>+14days</b>	Project Deadline		

### Calendar (initial & apprenticeship)

13 Sessions of 3h

Session	Content	Application	Evaluations
<b>1</b>	Introduction to software architecture Presentation of the project	Presentation of the project	-
<b>2</b>	CDI1	Lab sessions	
<b>3</b>	JAXB	Lab sessions	
<b>4</b>	-	JAXB for the project	
<b>5</b>	JPA	Lab sessions	Pattern presentations
<b>6</b>	-	JPA for the project	Pattern presentations
<b>7</b>	JAXRS	Lab Sessions	Pattern presentations
<b>8</b>	-	JAXRS for the project	Pattern presentations
<b>9</b>	JMS	Lab Sessions	Pattern presentations
<b>10</b>	-	JMS for the project	Pattern presentations
<b>11</b>	EJB	Lab Sessions	Pattern presentations

### Skills

- \* Understand and implement Software Architecture Patterns
- \* Understand and implement Software Integration Patterns
- \* Proficiency in Jakarta EE 8 development.

### Heures d'enseignement

Framworks, composants métiers et Web service - CM      Cours Magistral      20h

Framworks, composants métiers et Web service - TD      Travaux Dirigés      20h