SYLLABUS

CS 425 – WEB APPLICATION DEVELOPMENT (REQUIRED)
(DÉVELOPPEMENT D'APPLICATIONS WEB)

Course Catalog Description

This course focuses on server-side web application development, especially based on the multi-tier architecture of the J2EE enterprise architecture. The course introduces students to the architecture, system, and components of web applications that are instrumental to the success of many e-commerce websites and enterprise networks. Students will learn key technologies and frameworks in the development of web applications using Java and associated technologies. Topics include client-server architecture, server-side technologies for handling client requests, session handling, user data validation, the MVC framework, advanced HTM and form elements, persistence and database access, and web services.

Course Requirements

- **Pre-requisites**: CS 328 (OO software design and construction)
- **Credit Hours**: 5 ECTS/TN (2.5 US).
- **Program Outcomes (“**Compétences Programme**”)**: 7, 8, 10, 11, 16, 19, 25.
- **ABET Student Outcomes**: 2.

References

- **Textbook:**
  - Required: Tim Downey. *Guide to Web Development with Java: Understanding Website Creation*, Springer, 2012.
  - Optional: Ralph F. Grove. *Web-Based Application Development.* ISBN-13: 9780763759407, 2010.
- **Others:**
  - Online guided course on MUST’s learning platform.
  - Web resources, e.g. http://www.w3schools.com/ , webdesign.about.com/

Instructor/Course Coordinator

Instructor:
Office:
Course coordinator:

Email:
Office Hours:
Teaching Assistant:

Grading Policy

Assessment	*Week*	*Weight*
Midterm		30%
Assignments		10%
Project		20%
Final		40%

Course Learning Outcomes (CLOs)

No.	*CLOs*	*Assessment Methods*	*SOs*
CLO1.	Describe the architecture and the key layers and components of enterprise web applications.		2
CLO2.	Demonstrate an understanding of the conceptual MVC (model-view-controller) model commonly used in web application development.		2
CLO3.	Determine the needs for web database and connectivity for a given application.		2
CLO4.	Employ web client/server communication techniques such as session variables and cookies in the context of a simple web application.		2
CLO5.	Evaluate several alternatives in the design of a web application for a given usage scenario.		2
CLO6.	Design and develop a functional web application using the Java technology suite, reusing standard templates and libraries.		2

Topics

Topics	**Chapter**	**Weeks**
Intro: Internet and web protocols		1
Intro: Client-server architecture		2
Intro: Browser-Server communications		3
The Model-View-Controller architecture		4
Development technologies: HTML, Java, JSP, …		5
Interfacing with databases		6
Controllers, Java Beans and Helpers		7
Review. Midterm exam.		8
Web application components: Authentication & registration		9
Web application components: Search		10
Web application components: Uploading content & email		11
Accounts, Cookies and Carts		12
Web Services		13
Performance, scalability, and security.		14
Final review.		15

Student Outcomes (SOs)

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.

2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
3. An ability to communicate effectively with a range of audiences
4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
6. An ability to develop and conduct appropriate experimentation, analyze, and interpret data, and use engineering judgment to draw conclusions
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Preparation and Approval

Prepared by: ___ Signature:___ __ Date: __

Approved by the Dept.: Signature Date: __