ESCUELA SUPERIOR POLITÉCNICA DEL LITORAL
Faculty of Electrical and Computer Engineering
COURSE SYLLABUS
Web Applications Development

1. CODE AND NUMBER OF CREDITS

CODE	FIEC05884	
NUMBER OF CREDITS: 5	**Theoretical: 5**	**Practical: 0**

2. COURSE DESCRIPTION

This course provides students with the knowledge and practical experience needed to design and implement web applications using web standards defined by the W3C (i.e. HTML5, CSS and JavaScript). As part of class workshops, students will model applications that make use of asynchronous web requests following the model proposed by AJAX on the client-side, and the design pattern Model-View-Controller for server-side programming. The server-side technology used in this course implements concepts applicable to any platform. Students will implement a web application to solve a specific problem using concepts of rich Internet applications.

3. PRE-REQUISITES AND CO-REQUISITES

PRE-REQUISITES	FIEC05553 Database System I
CO-REQUISITES	

4. CORE TEXT AND OTHER REQUIRED REFERENCES FOR THE TEACHING OF THE COURSE

CORE TEXT	1. J D Gauchat. HTML5 for Masterminds: How to take advantage of HTML5 to create amazing websites and revolutionary applications. 2nd Edition, 2012, Minkbooks.
REFERENCES	1. Bryan Basham, Kathy Sierra, Bert Bates. Head First Servlets and JSP. 2nd Edition, 2008, O'Reilly Media. 2. Adam Freeman. Pro ASP.NET MVC 4. 4th Edition, 2013, Apress. 3. Chris Pitt. Pro PHP MVC. 1st Edition, 2012, Apress. 4. References available in the web such as: W3C, w3schools, www.asp.net, www.php.org, http://www.python.org/

5. COURSE LEARNING OUTCOMES

At the end of the course, the student will be able to:

1. Build web pages using standards and validate web pages according to the rules published by the W3C.
2. Use an IDE (Integrated Development Environment) to implement and deploy a web application.
3. Describe the HTTP standard concepts and their use.
4. Deploy rich web applications that implement logic at the client side.
5. Implement application logic on the server.
6. Apply concepts for state management in a web application.
7. Apply the MVC (Model-View-Controller) to a Web application that uses a database and updates information.
8. Deploy an application that uses a persistence model supported by an application server.

6. COURSE PROGRAM

I. Introduction to the World Wide Web (2 session –5 hours)
- Introduction
- Overview of available technologies
- Difference between the WWW and the Internet. Brief history
- HTTP protocol
- Web trends
- Web servers

II. Web Standards (6 sessions 15 hours)
- Web development using standards
- Standards for structuring documents (i.e. HTML5)
- Standard for describing the presentation semantics of a document (i.e. CSSI, CSS II, CSS3)
- Standardized Scripting Languages(i.e. JavaScript)

III. Client-side programming (6 sessions - 15 hours)
- Classic web applications
- Introduction to AJAX
- DOM XML manipulation
- DOM HTML manipulation
- Lab practices

IV. Web architectures (1 session – 2.5 hours)
- Concepts
- Platforms and technologies
- Examples

V. Server-side programming (4 sessions – 10 hours)
- Frameworks
- Web applications Lifecycle
- Lab practices

VI. Web services (1 sessions – 2.5 hours)
- Technologies
- Data interchange formats

VII. MVC Model (3 sessions - 7.5 hours)
- Architecture
- Frameworks
- Implementation

VIII. State management (2 sessions – 5 hours)
- State management alternatives
- Cookies
- Security
- Sessions

IX. Web Security (1 session – 2.5 hours)
- Main problems
- Security threats
- Security standards and technologies

X. Final Class Project presentation (2 sessions – 5 hours)

7. WORKLOAD: THEORY/PRACTICE

Five weekly hours distributed into two or three sessions. Some sessions will be carried out in the laboratory.

8. CONTRIBUTION OF THE COURSE TO THE EDUCATION OF THE STUDENT

This course will provide students the knowledge necessary to professionally develop or supervise the development of Web applications using tools and platforms most commonly used as well as state of the art technologies.
Among the knowledge and skills acquired by the student during the course are: the understanding of the web programming model, the communication between platforms, the use of libraries, the capacity of programming on multiple platforms and with various programming languages, the development of a friendly GUI, the importance of using standards, among others.

BASIC TRAINING	PROFESSIONAL TRAINING	SOCIAL SKILLS DEVELOPMENT
	X	

9. THE RELATIONSHIP BETWEEN THE LEARNING OUTCOMES OF THE COURSE AND THE LEARNING OUTCOMES OF THE DEGREE PROGRAM

LEARNING OUTCOMES OF THE DEGREE PROGRAM*	CONTRIBUTION (High, Medium, Low)	LEARNING OUTCOMES OF THE COURSE**	THE STUDENT MUST:
a) Ability to apply knowledge of computing and mathematics appropriate to their discipline.	**HIGH**	4, 5	- Implement programming logic on the client. - Implement programming logic on the server.
b) Ability to analyze a problem, and identify and define the computing requirements appropriate to its solution.	**HIGH**	3, 4, 5, 6, 8	- Implement programming logic on the client. - Implement programming logic on the server. - Design algorithms to solve a given problem.
c) Ability to design, implement, and evaluate a computer-based system, processes, components or programs to meet specific needs.	**HIGH**	4, 5, 6, 7, 8	- Implement programming logic on the client. - Implement programming logic on the server. - Use the MVC design pattern in a web application whose requirements are specified by the instructor.
d) Ability to work effectively in teams to achieve a common goal.	**MEDIUM**	1, 2	- Be part of a web application development team. - Partner with another student during class development workshops.
e) Understanding of professional responsibilities, ethical, legal, and social security.	---		
f) Ability to communicate effectively with a range of audiences.	---		
g) Ability to analyze the local and global impact of computing on individuals, organizations and society.	**LOW**	1	- Describe trends in the world of web application development and its impact.
h) Recognize the need for and ability to engage in continuing professional development.	**MEDIUM**	1, 2, 6	- Survey how to apply some web technologies not covered in detail during the class sessions in order to add some functionality to the software project. - Investigate some functionality provided by JavaScript libraries and use it in a web application. - Investigate the use of maps in a web application and include it in an application. - Read about trends in web

			technologies.
i) Ability to use techniques, skills, and current tools necessary for computing practice.	**HIGH**	2	- Implement web pages and use validation tools to certify the validity of those pages. - Deploy a web application using an IDE and an application server. - Describe basic concepts associated with networks that allow the operation of web applications.
j) Ability to lead, manage or undertake projects.	---		

10. EVALUATION IN THE COURSE

Evaluation activities	
Exams	x
Tests	x
Homework/tasks	x
Projects	x
Laboratory/Experiments	x
Class participation	
Visits	
Other	

11. PERSON RESPONSIBLE FOR THE CREATION OF THE SYLLABUS AND THE DATE OF ITS CREATION

Created by	Ing. Jorge Rodríguez E.
Date	01 MAR 2013

12. APPROVAL

ACADEMIC SECRETARY OF THE ACADEMIC DEPARTMENT	DIRECTOR OF TECHNICAL ACADEMIC SECRETARY
NAME: Sra. Leonor Caicedo G.	NAME: Ing. Marcos Mendoza V.
SIGNATURE:	SIGNATURE:
Date of approval by the Directive Council: ~~2013-334~~ 2013-08-12	ESCUELA SUPERIOR POLITECNICA DEL LITORAL Ing. Marcos Mendoza V. DIRECTOR DE LA SECRETARIA TÉCNICA ACADÉMICA

13. VALIDITY OF THE SYLLABUS

RESOLUTION OF THE POLYTECHNIC BOARD:	13-10-269
DATE:	2013-10-17