

## SECRETARÍA ACADÉMICA



### DIRECCIÓN DE EDUCACIÓN SUPERIOR

### SYNTHESIZED SCHOOL PROGRAM

Escuela Superior de Computo	

ACADEMIC PROGRAM: Ingeniería en Sistemas Computacionales

LEARNING UNIT: Web Application Development

LEVEL: III

### AIM OF THE LEARNING UNIT:

OADENNO UNIT.

The student develops Web applications based on Java technology.

#### CONTENTS:

- I. Introduction to Web Applications
- II. Java Servlets
- III. Java Server Pages (JSP)
- IV. Frameworks.

#### **TEACHING PRINCIPLES:**

This unit will be addressed using the project-oriented learning strategy and the heuristic method, therefore, the student will carry out activities that will guide the development of skills of abstraction, analysis and design of efficient algorithms, using Java Web development technologies, implementing computer programs that demonstrate the concepts of the learning unit. The activities to be carried out in class, these will encourage in students some techniques, such as: collaborative and participatory work, brainstorming, graphic organizers, documentary research, worksheets, exposition of complementary topics, led discussion and implement a software project. It is the responsibility of the teacher to decide the features of the project and the developed programs, setting the time for preparation and delivery.

#### **EVALUATION AND PASSING REQUIREMENTS:**

This learning unit will be evaluated from the project portfolio, which is formed of: formative and summative, evaluation, self-evaluation and cooperative evaluation rubrics.

Other means to approve this learning unit:

- Evaluation of previously acquired knowledge, based on the guidelines established by the academy..
- Accreditation in another academic unit of the IPN or other national or international educational institution. in addition to the IPN.

#### **REFERENCES:**

- Bauer C. King, G. (2007). Java Persistence with Hibernate. USA. Ed. Manning. ISBN: 978-19-3239-488-7.
- Brunner, R. (2003). JSP: *Practical Guide for Programmers*. USA. Ed. Morgan Kaufmann. ISBN: 1-55860-836-2.
- Chopra, V. Li, S. Genender, J. (2008). Professional Apache Tomcat. USA. Ed. Willey. ISBN: 978-04-7175-361-2.
- David, G. (2008). Core Java Server Faces (2nd. Ed.), USA. Pearson Education. ISBN: 978-81-3171-944-2.
- Holmes, J. (2006). Struts: The Complete Reference. USA. Ed. McGraw-Hill. ISBN: 978-00-7226-386-2.



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DIRECCIÓN DE EDUCACIÓN SUPERIOR

### SYNTHESIZED SCHOOL PROGRAM

ACADEMIC UNIT: Escuela Superior de Cómputo. ACADEMIC PROGRAM: Ingeniería en Sistemas Computacionales LATERAL OUTPUT: Analista Programador de Sistemas de Información. FORMATION AREA: Professional. MODALITY: Presence. LEARNING UNIT: Web Application Development TYPE OF LEARNING UNIT: Theorical - Practical, Optative. VALIDITY: August, 2011 LEVEL: III. CREDITS: 7.5 Tepic, 4.39 SATCA

#### ACADEMIC AIM

This learning unit contributes to the output profile of the Engineer in Computer Systems, to develop the skills of analysis, design, implementation and evaluation of Web applications, also developed strategic thinking, creative thinking, collaborative and participative work and assertive communication.

Requirements: Object Oriented Programming, the ability to program solutions in a high-level language, from Databases, the ability to design database models, from Computer Networks, use of communication protocols and standards, from Analysis and Object Oriented Design the ability to analyze and design information systems and from Web Technologies the ability to use appropriate technologies for the development of efficient Web-based applications.

#### AIM OF THE LEARNING UNIT

The student develops Web applications based on Java technology.

CREDITS HOURS	LEARNING UNIT DESIGNED BY: Academia	AUTHORIZED BY: Comisión de
THEORETICAL CREDITS / WEEK: 3.0	de ingenieria de Soitware.	General Consultivo del IPN
PRACTICAL CREDITS / WEEK: 1.5	REVISED BY:	
<b>THEORETICAL HOURS / SEMESTER:</b> 54	Subdirección Académica	
PRACTICAL HOURS / SEMESTER: 27		Ing. Rodrigo de Jesús Serrano
AUTONOMOUS LEARNING HOURS: 54	Ing. Apolinar Francisco Cruz Lázaro.	Secretario Técnico de la
<b>CREDITS HOURS / SEMESTER:</b> 81		Académicos



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LEARNING UNIT:

Web Application Development

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THEAAT			<b>_</b>				A		
THEMAT					itroductio	n to web i	Applications	6	
The stude	UNIT OF COMPETENCE The student determines the characteristics of Web applications based on J2EE specification								
No.	CONTENTS		CONTENTS		Teach instru HO	er led- uction URS	Auton Lea HO	omous rning URS	REFERENCES KEY
				т	Р	т	Р		
1.1	J2EE Architecture			1.0		1.0		3B	
1.1.1	Multilayer architect	ures							
1.1.2	The J2EE standard								
1.2	Application Servers			1.0		1.5			
1.2.1	Web Servers								
1.2.2	Tomcat Application	Server							
1.3	Structure of a Web app	lication		1.0	0.5	2.0	1.0		
1.3.1	Directory Structure								
1.3.2	Configuration Files								
			Subtotals:	3.0	0.5	4.5	1.0		
		-	FEACHING PRING	CIPLES					
Framing c	ourse and the team build	ding.							
This unit v	vill address the strategy	of project-ori	ented learning and	d heurist	tics, enab	ling the co	onsolidation	of the following	
learning t	echniques: brainstormi	ng workshee	t, documentary r	esearch	n, led di	scussion,	concept m	apping, project	
protocol a	nd practicals.								
	LEARNING EVALUATION								
Diagnost	ic test								
Project n	ortfolio:								
Reportin	n practicals	30%							
Workshe	et	5%							
Concept	map	5%							
Project p	rotocol	20%							
Self-eval	uation rubrics	5%							
Coopera	tive evaluation rubrics	5%							
Written e	vidence of learning	30%							
	U U								



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THEMATI	C UNIT: II						TITLE: Ja	va Servlets
UNIT OF COMPETENCE The student builds Web applications based on Java Servlet specification								
No.	. CONTENTS		Teacher led- instruction HOURS		Autonomous Learning HOURS		REFERENCES KEY	
				т	Р	т	Р	
2.1 2.2 2.3 2.3.1 2.3.2 2.3.3 2.3.4 2.4 2.5 2.5 This unit v learning t	Introduction to Servlets Life Cycle and the Serv Context of HttpServlets Parameters Sessions Attributes Cookies Filters Connection pool Developing Application	s with Servlets TEAC of project-oriented ng worksheet, do	Subtotals: CHING PRINC d learning and ocumentary r	0.5 1.0 0.5 0.5 0.5 0.5 0.5 0.5 5.0 CIPLES I heurist esearch	0.5 0.5 0.5 1.5 ics, enat	0.5 0.5 1.0 0.5 0.5 1.0 1.0 5.5	2.0 2.0 2.0 6.0 msolidation concept m	3B, 6B of the following apping, project
implemen	tation and practicals.				1			
Project p Reportin Workshe Concept Project ir Self-eval Coopera Written e	ortfolio: g practicals eet Map mplementation uation rubrics tive evaluation rubrics evidence of learning	30% 5% 5% 20% 5% 5% 30%	INING EVALU	JATION				



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Web Application Development

LEARNING UNIT:

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THEMATI	C UNIT:				TITLE: J	ava Server	Pages (JSP)
The stude	ent builds Web application	UNIT OF COMPE ons based on Java Server Page	TENCE es specif	fication			
No.	CONTENTS		Teacher led- instruction HOURS		Autonomous Learning HOURS		REFERENCES KEY
			т	Р	т	Р	
3.1 3.2	Introduction to JSP Elements of JSP: directives, declarations, scriplets, expressions, actions			0.5	0.5 1.5	1.0	2B, 3B,8C
3.3 3.4 3.5	Context: embedded objects, sessions JavaBeans			0.5 1.0 1.0	1.0 3.0 3.0	1.0 2.0 2.0	
		Subtotals:	9.0	3.0	9.0	6.0	
TEACHING PRINCIPLES							
This unit will address the strategy of project-oriented learning and heuristics, enabling the consolidation of the following learning techniques: brainstorming worksheet, documentary research, led discussion, concept mapping, project implementation and practicals.							
LEARNING EVALUATION							
Project p Reporting Workshe Concept Project ir Self-eval Coopera Written e	ortfolio: g practicals et Map nplementation uation rubrics tive evaluation rubrics evidence of learning	30% 5% 5% 20% 5% 5% 30%					



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Web Application Development

LEARNING UNIT:

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THEMAT	IC UNIT: IV				TITLE	E: Frameworks	
UNIT OF COMPETENCE The student builds Web applications based on Java Frameworks							
No.	No. CONTENTS		Teacher led- instruction HOURS		omous ning URS	REFERENCES KEY	
		т	Р	т	Р		
4.1 4.2 4.3 4.4	Model-View-Controller design pattern Basics of STRUTS framework Developing Applications with STRUTS Hibernate	0.5 1.5 1.0 3.0	0.5 0.5	0.5 1.5 1.0 3.0	2.5 2.5 2.5	1B, 4B, 5B, 7B, 8C	
4.0	Subtotals:	9.0	1.5	9.0	7.5		
TEACHING PRINCIPLES This unit will address the strategy of project-oriented learning and heuristics, enabling the consolidation of the following learning techniques: brainstorming worksheet, documentary research, led discussion, concept mapping, project implementation and practicals							
	LEARNING EVAL	UATION					
Project p Reportin Workshe Concept Project i Self-eva Coopera	portfolio: g practicals 30% eet 5% Map 5% mplementation 50% luation rubrics 5% tive evaluation rubrics 5%						



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### DIRECCIÓN DE EDUCACIÓN SUPERIOR



LEARNING UNIT:

Web Application Development

### **RECORD OF PRACTICALS**

No.	NAME OF THE PRACTICAL	THEMATIC UNITS	DURATION	ACCOMPLISHMENT LOCATION
1	Structure of a Web application	I	1.5	Computer labs
2	Simple Servlet	Ш	1.5	
3	Using filters	П	3.0	
4.	Servlet-based application	П	3.0	
5	Simple JSP	Ш	1.5	
6	Objects embedded in JSP	Ш	1.5	
7	JavaBeans	Ш	3.0	
8	Taglibs	Ш	3.0	
9	STRUTS-based application	IV	3.0	
10	Hibernate-based application	IV	3.0	
11	JSF-based application	IV	3.0	
		TOTAL OF HOURS	27	
EVALUATION A	ND PASSING REQUIREMENTS			
The practicals w	orth 30% in each thematic unit.			

The practicals are considered mandatory to approve this learning unit.

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PERIOD	UNIT	E\	ALUATION TERMS			
1	l y ll	Continuous evaluation	70%			
		Written evidence of learning	30%			
2	111	Continuous evaluation	70%			
		Written evidence of learning	30%			
3	IV	Continuous evaluation	100%			
		The learning unit I and II is 309	% worth of the final score			
		The learning unit III is 30% wo	rth of the final score			
		The learning unit IV is 40% wo	rth of the final score			
		Other means to approve this Learning unit:				
		<ul> <li>Evaluation of previously acquired knowledge, based on the guidelines established by the academy.</li> </ul>				
		Accreditation in anoth international education	er academic unit of the IPN or other national or nal institution, in addition to the IPN.			
		If accredited by Special Asses based on guidelines establish this purpose.	ssment or a certificate of proficiency, it will be ed by the academy on a previous meeting for			

KEY	В	С	REFERENCES
1	Х		Bauer C. King, G. (2007). <i>Java Persistence with Hibernate</i> . USA. Ed. Manning. ISBN: 978-19-3239-488-7.
2	Х		Brunner, R. (2003). JSP: <i>Practical Guide for Programmers</i> . USA. Ed. Morgan Kaufmann. ISBN: 1-55860-836-2.
3	Х		Chopra, V. Li, S. Genender, J. (2008). <i>Professional Apache Tomcat</i> . USA. Ed. Willey. ISBN: 978-04-7175-361-2.
4	Х		David, G. (2008). Core Java Server Faces (2nd. Ed.), USA. Pearson Education. ISBN: 978-81-3171-944-2.
5	Х		Holmes, J. (2006). <i>Struts: The Complete Reference</i> . USA. Ed. McGraw-Hill. ISBN: 978-00-7226-386-2.
6	х		Hunter, J. Crawford, W. (2001). <i>Java Servlet Programming</i> . USA. Ed. O'Reilly. ISBN: 978-05-9600-040-0.
7	х		Martín, A. (2008). STRUTS, México. Ed. Alfaomega. ISBN: 978-97-0151-414-6.
8		х	Roldán, D. Valderas, P. Pastor, O. (2010). <i>Aplicaciones Web, un enfoque práctico</i> . México. Ed.Alfaomega, ISBN: 978-60-7785-473-9.



SECRETARÍA ACADÉMICA

**DIRECCIÓN DE EDUCACIÓN SUPERIOR** 



### TEACHER EDUCATIONAL PROFILE PER LEARNING UNIT

#### 1. GENERAL INFORMATION

ACADEMIC UNIT:	Escuela Superior de Cómputo.				
ACADEMIC PROGRAM:	Ingeniería en Siste	emas Computacionales	LI	EVEL III	
FORMATION AREA:	Institutional	Basic Scientific	Professional	Terminal and Integration	
ACADEMY: Ingeniería	de Software		Veb Application Devel	opment.	

SPECIALTY AND ACADEMIC REQUIRED LEVEL: Masters Degree or Doctor in Computer Science.

#### 1. AIM OF THE LEARNING UNIT:

The student develops Web applications based on Java technology.

#### 2. PROFESSOR EDUCATIONAL PROFILE:

KNOWLEDGE	PROFESSIONAL EXPERIENCE	ABILITIES	APTITUDES
<ul> <li>HTML</li> <li>XML</li> <li>CSS</li> <li>JavaScript</li> <li>Ajax</li> <li>Servlets</li> <li>JSP</li> <li>STRUTS</li> <li>Hibernate</li> <li>JSF</li> <li>Knowledge of the Institutional Educational Model.</li> <li>English</li> </ul>	<ul> <li>Two years designing and implementing computer systems.</li> <li>A year designing and implementing Web applications.</li> <li>One year as a Professor of Higher Education.</li> <li>A year in management and collaborative work groups.</li> </ul>	<ul> <li>Analysis and synthesis</li> <li>Leadership</li> <li>Decision making</li> <li>Conflict Management</li> <li>Group management</li> <li>verbal fluency of ideas</li> <li>Teaching skills</li> <li>Information and Communication Technologies skills</li> </ul>	<ul> <li>Responsible.</li> <li>Tolerant.</li> <li>Honest.</li> <li>Respectful.</li> <li>Collaborative.</li> <li>Participative.</li> <li>Interested to learning.</li> <li>Assertive.</li> <li>Social and institutional commitment</li> </ul>

DESIGNED BY

**REVISED BY** 

AUTHORIZED BY

M. en C. Marcario Hernández Cruz COORDINATING PROFESOR

M. en C. Mónica Rivera de la Rosa M. en C. Rubén Peredo Valderrama COLLABORATING PROFESSORS Dr. Flavio Arturo Sánchez Garfias Subdirector Académico Ing. Apolinar Francisco Cruz Lázaro Director