INSTITUTO POLITÉCNICO NACIONAL

SECRETARÍA ACADÉMICA

DIRECCIÓN DE EDUCACIÓN SUPERIOR

SYNTHESIZED SCHOOL PROGRAM

ACADEMIC UNIT: Escuela Superior de Cómputo
ACADEMIC PROGRAM: Ingeniería en Sistemas Computacionales

LEARNING UNIT : IT Governance **LEVEL:** III

AIM OF THE UNIT OF LEARNING:
The student designs the framework of operation of information technologies, based on good corporate governance practices.

CONTENTS:

I. Information Techonlogy
II. Risk management Information Technology
III. Information Security
IV. Information Technology Management
V. Control objectives for Information and related Technology(COBIT)

TEACHING PRINCIPLES

This unit will approach from the case study learning strategy and the teacher will lead her with the heuristic method, with which they carry out learning activities, supported with the following techniques: collaborative, participative work, brainstorming, interspersed questions, graphic organizers, documentary research, exposure of additional topics, directed discussion, laboratory practices and report of the same ones.

EVALUATION AND PASSING REQUIREMENTS

The program will evaluate the students in a continuous formative and summative way, which will lead into the completion of project portfolio. Some other assessing methods will be used, such as revisions, practical´s, class participation, exercises, learning evidences and a final project.

This unit of learning also can be approved through:

- Accreditation in another AU of the IPN or another educational external institution to the national IPN or international.

REFERENCES:

- Calder, A. & Watkins, S. (2008). *IT Governance: A Manager's Guide to Data Security and ISO 27001 / ISO 27002.* (4th edition). USA: Kogan Page. ISBN: 9780749452711.
- Tong, K. (2011). *IT Governance by Examples*. USA: lulu.com. ISBN: 978-1435788688.
- Van Haren Publishing (2007). *IT Governance based on Cobit 4.1 - A Management Guide* (ITSM Library). USA:Van Haren Publishing. ISBN: 978-9087531164.
- Wallace, M. & Webber, L. (2010). IT Governance: Policies & Procedures. 2011 Edition. USA: Aspen Publishers. ISBN: 978-0735591585
- Weill, P. & Ross, J. (2004). IT Governance: How Top Performers Manage IT Decision Rights for Superior Results. USA: Harvard Business Press. ISBN: 978-1591392538

INSTITUTO POLITÉCNICO NACIONAL

SECRETARÍA ACADÉMICA

DIRECCIÓN DE EDUCACIÓN SUPERIOR

ACADEMIC UNIT: Escuela Superior de Cómputo
ACADEMIC PROGRAM: Ingeniería en Sistemas Computacionales
LATERAL OUTPUT: Analista Programador de Sistemas de Información.
AREA OF FORMATION: Professional
MODE: Presence

LEARNING UNIT : IT Governance
TYPE OF UNIT OF LEARNING: Theoretical - practice. Optional.
VALIDITY: August 2011
LEVEL: III
CRÉDITS: 7.5 TEPIC – 4.39 SATCA

ACADEMIC AIM

This unit of learning contributes to the profile of expenditure of the Engineer in Computational Systems, to develop capabilities to analyze and interpret the information technology (IT), as well as the role of engineering in society, professional and personal growth with a focus responsible with the environment through critical thinking, strategic thinking for decision making, consolidation of values, ethical behavior and an attitude of respect for the exercise of the profession.

This unit of learning is related to the previous unit of Analysis and Design Orientated to Objects; the simultaneous units of Project administration and Engineering software and with the consistent one of Business management.

AIM OF THE UNIT OF LEARNING:
The student designs the framework of operation of information technologies, based on good corporate governance practices.

ASSIGNED TIMES
THEORETICAL CREDITS / WEEK: 3.0

PRACTICAL CREDITS / WEEK: 1.5

THEORETICAL HOURS / SEMESTER: 54

PRACTICAL HOURS / SEMESTER: 27

AUTONOMOUS LEARNING HOURS: 54

CREDITS HOURS / SEMESTER: 81

LEARNING UNIT DESIGNED BY:
Proyectos Estratégicos y Toma de Decisiones

REVISED BY:

Dr. Flavio Arturo Sánchez Garfias
Subdirección Académica

APPROVED BY:

Ing. Apolinar Francisco Cruz Lázaro
Presidente del CTCE

AUTHORIZED BY: Programas Académicos del Consejo General Consultivo del IPN 2011

Ing. Rodrigo de Jesús Serrano Domínguez
Secretario Técnico de la Comisión de Programas Académicos

TEMATHIC UNIT: I **TITLE:** Information Technology

UNIT OF COMPETENCE

The student relates the historical and social development organizations, through an overview of information technology.

No.	CONTENTS	Teacher led-instruction HOURS		Autonomous Learning HOURS		REFERENCES KEY
		T	P	T	P	
1.1	General information	0.5				2B, 3B, 5C, 6B, 7C
1.2	General systems theory	0.5	0.5	0.5	0.5	
1.3	Corporate governance and IT governance	0.5		0.5	0.5	
1.4	IT governance structures	0.5		0.5		
1.5	Effective architectures for IT governance	0.5	0.5	0.5	0.5	
1.6	IT governance models for e-business.	0.5		0.5	0.5	
1.7	Formal systems	0.5		1.0		
1.8	Management Information Systems	0.5	0.5	1.5	0.5	
1.9	The digital company	0.5		1.0	0.5	
	Subtotals:	4.5	1.5	6.0	3.0	

TEACHING PRINCIPLES

The temathic unit will approach from the learning strategy study of cases and heuristic method directed by the teacher, which will allow the consolidation of the following technologies of learning brainstorming, documentary research, directed discussion, conceptual maps, test, exhibition in equipment of complementary topics and accomplishment of practice n°1.

LEARNING EVALUATION

Diagnostic Test:	
Project Portfolio:	
Graphic Organizers	5%
Essay	10%
Case analysis and rubric	5%
Documentary Investigation	10%
Resolution of problems	10%
Report of practicals	25%
Written Learning Evidence	30%
Self-Evaluation Rubrics	
Rubric of Co-Evaluation	

TEMATHIC UNIT: II **TITLE**: Risk Management Information Technology

UNIT OF COMPETENCE

The student defines guidelines in the control and prevention of risks of companies with information technology, based on the legal aspects and quantitative methods.

No.	CONTENTS	Teacher led-instruction HOURS		Autonomous Learning HOURS		REFERENCES KEY
		T	P	T	P	
2.1	Definition of the risks of information technology	0.5		0.5	0.5	3B, 7C
2.2	Legal Issues	0.5	0.5	1.5	0.5	
2.3	Risk management information technology	0.5		1.0		
2.4	Control of the risks of information technology	0.5	1.0	1.5	1.0	
2.5	Risk measurement and management of information technology	1.0		1.5	1.0	
	Subtotals:	3.0	1.5	6.0	3.0	

LEARNING STRATEGIES

The present unit will approach from the learning strategy method of cases and heuristic method, using the following technologies of learning: worksheet, documentary research, discussion of concepts, problem solving, exposure equipment and additional topics practical implementation of No 2, reporting the information technology of the company's current situation and the ideal situation of it.

EVALUATION OF THE LEARNINGS

Project Portfolio:

Case studies	10%
Tab work	10%
Report IT case study	20%
Problem resolution	10%
Practice Report	20%
Written Learning Evidence	30%
Self-Evaluation Rubrics	
Rubric of Co-Evaluation	

TEMATHIC UNIT: III **TITLE:** Information Security

UNIT OF COMPETENCE

The student formulates a plan for information security based on the organizational assessement of the company studied.

No.	CONTENTS	Teacher led-instruction HOURS		Autonomous Learning HOURS		REFERENCES KEY
		T	P	T	P	
3.1	Information Security	1.0	1.0	1.0	1.0	1B, 7C
3.2	Environment: physical, logical, organizational.	0.5		1.0	1.0	
3.3	Critical points in information networks.	0.5		1.5		
3.4	Access Security.	0.5	1.0	1.0	1.0	
3.5	Security Technology.	0.5		1.0		
3.6	Cybercrime.	0.5	1.0	1.0	2.0	
3.7	Information Security plan.	0.5		1.5		
3.8	Intrusion Recognition.	0.5		1.0	1.0	
	Subtotals:	4.5	3.0	9.0	6.0	

LEARNING STRATEGIES

This unit will approach form the learning strategy case method and heuristic method, allowing the consolidation of the following learning techniques: cognitive maps of clouds, Co op, directed discussion, documentary research, exhibition equipment issues accomplishment of practices n°3 and n°4 organizational diagnosis and analysis of the security plan of company information.

EVALUATION OF THE LEARNINGS

Project Portfolio:

Cooperative presentation	10%
Charts	10%
Security Plan Report	25%
Report of practical	25%
Written Learning Evidencce	30%

Self-Evaluation Rubrics

Rubric of Co-Evaluation

THEMATIC UNIT: IV **TITLE:** Information Technology Management

UNIT OF COMPETENCE

The student implements the systems of integral information of the company in accordance with the level of government of information technology.

No.	CONTENTS	Teacher led-instruction HOURS		Autonomous Learning HOURS		REFERENCES KEY
		T	P	T	P	
4.1	Types of information systems.	0.5		0.5	0.5	2B, 5C
4.2	Executives support systems (ESS)		0.5	0.5		
4.3	Management information systems (MIS)	0.5	0.5	0.5	0.5	
4.4	Decision support systems (DSS)	0.5	0.5	1.0	0.5	
4.5	Office systems	0.5		1.0		
4.6	Transaction processing systems. (TPS)			1.0	0.5	
4.7	Infrastructure of information technology.	0.5		0.5		
4.8	Managing data resources.	0.5		1.0	1.0	
	Subtotals:	3.0	1.5	6.0	3.0	

LEARNING STRATEGIES

The present unit will approach learning strategy case method and heuristic method, allowing the consolidation of the following learning techniques: documentary research, led discussion, study circles, bad water maps, problem solving, cooperative presentation and accomplishment of practice n°5.

EVALUATION OF THE LEARNINGS

Project Portfolio:

Charts	10%
Cognitive Map	10%
Problem solving	10%
Cooperative Presentation	20%
Practice Report	20%
Written Learning Evidence	30%
Self-Evaluation Rubrics	
Rubric of Co-Evaluation	

THEMATIC UNIT: V **TITLE:** Control objectives for Information and related Technology(COBIT)

UNIT OF COMPETENCE

The student establishes a framework for operation in decision-making and accountability based on the implementation of COBIT.

No.	CONTENTS	Teacher led-instruction HOURS		Autonomous Learning HOURS		REFERENCES KEY
		T	P	T	P	
5.1	Framework.	0.5	0.5	2.0	1.0	4B, 7C
5.2	Structure and objectives.	0.5	0.5	2.0	0.5	
5.3	Process description.	1.0		2.0	0.5	
5.4	Using COBIT methodology to implement the government information technology.	1.0	0.5	3.0	1.0	
	Subtotals:	3.0	1.5	9.0	3.0	

LEARNING STRATEGIES

The present unit will approach the learning strategy case method and heuristic method, which will allow the consolidation which will allow the consolidation of the following learning techniques: documentary research, led discussion, concept mapping, construction of contradictions, provocations, exhibition equipment complementary topics and practical implementation of No 6, implementation of the COBIT methodology to the research firm.

EVALUATION OF THE LEARNINGS

Project Portfolio:

Concept Maps	10%
Problem solving	10%
Report of practices	20%
COBIT Report	30%
Written Learning Evidence	30%
Self-Evaluation Rubrics	
Rubric of Co-Evaluation	

RECORD OF PRACTICALS

No.	NAME OF PRACTICAL	TEMATHIC UNITS	DURATION	ACCOMPLISHMENT LOCATION
1	Requirements engineering for IT	I	4.5	Computer Labs
2	IT risk management	II	4.5	
3	Managing IT security	III	4.5	
4	Vulnerability of an IT system	III	4.5	
5	Design of an IT system	IV	4.5	
6	COBIT development	V	4.5	
		TOTAL OF HOURS	27.0	

EVALUATION AND PASSING REQUIREMENTS:

Practice 1 worth 25% in thematic unit I.
Practice 2 worth 20% in thematic unit II.
Practice 3 worth 10% in thematic unit III.
Practice 4 worth 15% in thematic unit III.
Practice 5 worth 20% in thematic unit IV.
Practice 5 worth 20% in thematic unit V.

PERÍOD	UNIT	EVALUATION TERMS
1	I y II	Continuous evaluation 70% Written learning evidence 30%
2	III	Continuous evaluation 70% Written learning evidence 30%
3	IV y V	Continuous evaluation 70% Written learning evidence 30% The learning unit I is 15% worth of the final score. The learning unit II is 15% worth of the final score. The learning unit III is 30% worth of the final score. The learning unit IV is 20% worth of the final score. The learning unit V is 20% worth of the final score. Other means to pass this Learning Unit: • Official recognition by either another IPN Academic Unit of the IPN or by a national or international external academic institution besides IPN.

KEY	B	C	REFERENCES
1	X		Calder, A. & Watkins, S. (2008). IT Governance: A Manager's Guide to Data Security and ISO 27001 / ISO 27002. (4th edition). USA: Kogan Page. ISBN: 9780749452711.
2	X		Laudon, K. & Laudon, J. (2009). Management Information Systems (11th Edition). USA: Prentice Hall. ISBN: 978-0136078463
3	X		Selig, Gad J. & Wilkinson, J. (2008). Implementing IT Governance: A Practical Guide to Global Best Practices in IT Management. USA: Van Haren Publishing. ISBN: 978-9087531195
4	X		Van Haren Publishing (2007). IT Governance based on Cobit 4.1 - A Management Guide (ITSM Library). USA:Van Haren Publishing. ISBN: 978-9087531164
5		X	Wallace, M. & Webber, L. (2010). IT Governance: Policies & Procedures. 2011 Edition. USA: Aspen Publishers. ISBN: 978-0735591585
6	X		Weill, P. & Ross, J. (2004). IT Governance: How Top Performers Manage IT Decision Rights for Superior Results. USA: Harvard Business Press. ISBN: 978-1591392538
7		X	Tong, K. (2011). IT Governance by Examples. USA: lulu.com. ISBN: 978-1435788688

INSTITUTO POLITÉCNICO NACIONAL

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 Sistemas Computacionales **LEVEL** III

FORMATION AREA:

Institutional	Basic Scientific	Professional	Terminal and Integration

ACADEMY: Poyectos Estrategicos y Toma de Decisiones **LEARNING UNIT:** IT Governance

SPECIALTY AND ACADEMIC LEVEL REQUIRED: Master or PhD in Finance and/or Administration

2. AIM OF THE LEARNING UNIT:

The student designs the framework of operation of information technologies, based on good corporate governance practices.

3. PROFFESSOR EDUCATIONAL PROFILE:

KNOWLEDGE	PROFESSIONAL EXPERINCE	ABILITIES	APTITUDES
• Procedures for software development. • Principles of information software. • Management services information technology • MEI.	• Experience of one year in auditing systems. • Experience of one year in implementation of methodologies for governance of information technology. • Experience of two years in handling groups and collaborative work • Experience of one year as Professor of Higher Education.	• Analysis and synthesis • Leadership • Decision making • Conflict management • Group management • Verbal fluency of ideas. • Teaching skills	• Responsible. • Honest. • Respectful. • Tolerant. • Assertive. • Collaborative. • Participatory.

DESIGNED BY	REVISED BY	AUTHORIZED BY
M en C. Ma. Gabriela Galiñanes Rodríguez Coordinating Profesor M. en C Virginia Medina Mejía Dr. Eduardo Bustos Farías Collaborating Professors	Dr. Flavio Arturo Sánchez Garfias Subdirector Académico	Ing. Apolinar Francisco Cruz Lázaro Director

Date: 2011