

Course guide

270088 - CSI - Information Systems Concepts

Last modified: 11/07/2025

Unit in charge: Barcelona School of Informatics
Teaching unit: 747 - ESSI - Department of Service and Information System Engineering.
Degree: BACHELOR'S DEGREE IN INFORMATICS ENGINEERING (Syllabus 2010). (Optional subject).
Academic year: 2025 **ECTS Credits:** 6.0 **Languages:** Catalan

LECTURER

Coordinating lecturer: MARC ALIER FORMENT

Others: Primer quadrimestre:
MARC ALIER FORMENT - 11, 12, 13
JOSE LUIS BELTRAN ANDREU - 11, 12
ÀLEX RUBIO QUINTANA - 13

PRIOR SKILLS

B1 level of English to read some articles that we will use.

Professional fields in which SIO is projected:

Consultants, computing services enterprises and departments, that develop information systems projects for public or private organizations. Development and innovation in the field of Engineering and Management of Services and Information Systems.

REQUIREMENTS

- Prerequisite BD
- Prerequisite EEE

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:

- CES1.1. To develop, maintain and evaluate complex and/or critical software systems and services.
- CES1.9. To demonstrate the comprehension in management and government of software systems.
- CES2.2. To design adequate solutions in one or more application domains, using software engineering methods which integrate ethical, social, legal and economical aspects.
- CES3.2. To design and manage a data warehouse.
- CSI1. To demonstrate comprehension and apply the principles and practices of the organization, in a way that they could link the technical and management communities of an organization, and participate actively in the user training.
- CSI2.1. To demonstrate comprehension and apply the management principles and techniques about quality and technological innovation in the organizations.
- CSI2.2. To conceive, deploy, organize and manage computer systems and services, in business or institutional contexts, to improve the business processes; to take responsibility and lead the start-up and the continuous improvement; to evaluate its economic and social impact.
- CSI2.5. To demonstrate knowledge and capacity to apply business information systems (ERP, CRM, SCM, etc.).
- CSI2.6. To demonstrate knowledge and capacity to apply decision support and business intelligence systems.
- CSI3.1. To demonstrate comprehension of the principles of risks evaluation and apply them correctly when elaborating and executing operation plans.
- CSI3.2. To develop the information system plan of an organization.
- CSI3.5. To propose and coordinate changes to improve the operation of the systems and the applications.
- CSI4. To participate actively in the specification, design, implementation and maintenance of the information and communication systems.
- CSI4.1. To participate actively in the specification of the information and communication systems.
- CT2.4. To demonstrate knowledge and capacity to apply the needed tools for storage, processing and access to the information system, even if they are web-based systems.
- CT3.2. To know and describe the main processes of the functional areas of a company and the existent links between them, which make possible the coordination and integration in a group.
- CT3.5. To identify the use possibilities and benefits which can be derived from an application in the different business software typologies and existent ICT services.
- CTI1.1. To demonstrate understanding the environment of an organization and its needs in the field of the information and communication technologies.

Generical:

- G2. SUSTAINABILITY AND SOCIAL COMPROMISE: to know and understand the complexity of the economic and social phenomena typical of the welfare society. To be capable of analyse and evaluate the social and environmental impact.
- G4. EFFECTIVE ORAL AND WRITTEN communication: To communicate with other people knowledge, procedures, results and ideas orally and in a written way. To participate in discussions about topics related to the activity of a technical informatics engineer.

TEACHING METHODOLOGY

The CSI/SIO course is characterized by a three-part structure that includes theory classes, problem-solving classes, and laboratory sessions.

During the laboratory sessions, a project will be developed that spans the entire academic year. Although the project will consist of various partially evaluated submissions, its final grade will constitute the total score for the laboratory component (LAB).

On the other hand, the problem-solving classes will focus on solving and submitting problems, developing minor projects, thematic debates, and student-led presentations. The Continuous Assessment (CA) grade will be calculated as the arithmetic mean of the grades obtained in the submissions made during these sessions.

LEARNING OBJECTIVES OF THE SUBJECT

- 1.CSI-M0 Understand the concepts of organization, business, information system, and computer information system.
- 2.CSI-M1-ObjGral. Identify, distinguish and relate the basic concepts about the meaning of the information system of a human organization, and its close relations with other concepts.
- 3.CSI-M2-ObjGral. Understand the types of uses of information systems in organizations, as well as major current alternatives, both for transactional information systems, decision-making as communicational, with special practical emphasis on ERP systems.
- 4.CSI-M3-ObjGral. Understand how information systems can be strategic for organizations, options for their planning, and how they can integrate the business in a context of international standards of computer auditing and governance.
- 5.CSI-M4-ObjGral. Learn about the history and current role of information systems in businesses, within a context of international standards for quality and organization of computer work.
- 7.CSI-M5-ObjGral. Synthesize a conceptual map for IS in organizations with an to the transversal case of the course, and know both the prospective studies relevant to the issues of CSI and its projection to the rest of the GEI, and beyond.

STUDY LOAD

Type	Hours	Percentage
Hours large group	13,0	8.67
Hours medium group	30,0	20.00
Guided activities	2,0	1.33
Self study	105,0	70.00

Total learning time: 150 h

CONTENTS

Introduction to Information Systems

Description:

Concepts of organization, company, information system and computer information system. Understand and apply the principles of organizations.

Basic Concepts of Information Systems

Description:

Analysis of the intrinsic functions of the information system. Components of the information system. Organizational purposes of the information system. Relationship of the information system with the productive and decision subsystems.

Information Systems in Organizations

Description:

Historical evolution of computer information systems. Purpose, architecture and conditioning of different categories of information systems. Impact and application of information systems for management and BI.

Information Systems Strategy and Planning

Description:

Information systems as a tool for strategic business integration. Strategic planning of information systems and information technologies. International rules for governance and auditing of information systems.

History and Role of Information Systems in Companies

Description:

Evolution of the IS function in the organizational context. Responsibilities and tasks related to the IS function. Professional roles and jobs associated with the IS function. Current challenges for the IS function.

Synthesis and Application of Information Systems in Organizational Contexts, Prospective Studies and Projections

Description:

In this section, students dedicate themselves to the construction and synthesis of a conceptual map on Information Systems (IS) within organizations, making special application to the transversal case discussed during the subject. In addition, the projection of this knowledge beyond the course is explored providing a comprehensive view of the potential and scope of these systems in different sectors.

ACTIVITIES

Theory classes

Description:

The teacher will teach the theoretical classes using various methods that may include exhibitions with or without the support of transparencies. These sessions may also include interactive discussions with the students, based on the content and consultation materials proposed, such as cases, articles, or audiovisual materials. It is essential that students study these materials in advance in order to participate effectively in these discussions.

Specific objectives:

1, 2, 3, 4, 5, 7

Related competencies :

CSI1. To demonstrate comprehension and apply the principles and practices of the organization, in a way that they could link the technical and management communities of an organization, and participate actively in the user training.

CSI4. To participate actively in the specification, design, implementation and maintenance of the information and communication systems.

G2. SUSTAINABILITY AND SOCIAL COMPROMISE: to know and understand the complexity of the economic and social phenomena typical of the welfare society. To be capable of analyse and evaluate the social and environmental impact.

G4. EFFECTIVE ORAL AND WRITTEN communication: To communicate with other people knowledge, procedures, results and ideas orally and in a written way. To participate in discussions about topics related to the activity of a technical informatics engineer.

Full-or-part-time: 28h

Self study: 15h

Theory classes: 13h

Problem-solving sessions

Description:

During problem sessions, students will work in small groups to analyze and solve real problems related to information systems, thus encouraging critical thinking and decision-making. Each group of students will prepare and perform regular presentations about their solutions, thus facilitating collaborative learning and effective communication. In addition, these sessions will include open debates where all students can contribute their points of view, encourage constructive dialogue and promote active and participatory learning .

Specific objectives:

1, 2, 3, 4, 5

Related competencies :

CSI11. To demonstrate comprehension and apply the principles and practices of the organization, in a way that they could link the technical and management communities of an organization, and participate actively in the user training.

CSI4. To participate actively in the specification, design, implementation and maintenance of the information and communication systems.

G2. SUSTAINABILITY AND SOCIAL COMPROMISE: to know and understand the complexity of the economic and social phenomena typical of the welfare society. To be capable of analyse and evaluate the social and environmental impact.

G4. EFFECTIVE ORAL AND WRITTEN communication: To communicate with other people knowledge, procedures, results and ideas orally and in a written way. To participate in discussions about topics related to the activity of a technical informatics engineer.

Full-or-part-time: 30h

Self study: 15h

Practical classes: 15h

Project concepts of information systems

Description:

Throughout the course there will be a group practice in which the concepts learned during the course will be worked on.

Specific objectives:

7

Related competencies :

G2. SUSTAINABILITY AND SOCIAL COMPROMISE: to know and understand the complexity of the economic and social phenomena typical of the welfare society. To be capable of analyse and evaluate the social and environmental impact.

G4. EFFECTIVE ORAL AND WRITTEN communication: To communicate with other people knowledge, procedures, results and ideas orally and in a written way. To participate in discussions about topics related to the activity of a technical informatics engineer.

Full-or-part-time: 80h

Self study: 50h

Laboratory classes: 30h

Final Exam

Specific objectives:

1, 2, 3, 4, 5

Related competencies :

CSI1. To demonstrate comprehension and apply the principles and practices of the organization, in a way that they could link the technical and management communities of an organization, and participate actively in the user training.

CSI4. To participate actively in the specification, design, implementation and maintenance of the information and communication systems.

G2. SUSTAINABILITY AND SOCIAL COMPROMISE: to know and understand the complexity of the economic and social phenomena typical of the welfare society. To be capable of analyse and evaluate the social and environmental impact.

G4. EFFECTIVE ORAL AND WRITTEN communication: To communicate with other people knowledge, procedures, results and ideas orally and in a written way. To participate in discussions about topics related to the activity of a technical informatics engineer.

Full-or-part-time: 12h

Self study: 10h

Guided activities: 2h

GRADING SYSTEM

The final grade of the course is calculated as the average of the laboratory project grade (LAB) and the theory grade (T). The latter is determined by continuous assessment (AC), provided the student has completed at least 80% of the required submissions during problem classes. If the student does not achieve this minimum, they will have to take a final exam. In this case, the theory grade (T) will be calculated as a combination of 60% of the final exam (E) and 40% of the continuous assessment (AC).

If problem submissions $\geq 80\% \Rightarrow T = AC$

Otherwise, $T = E * 0.6 + AC * 0.4$

FINAL Grade = $(LAB + T) / 2$

The competence in sustainability and social commitment will be assessed in submissions made in problem classes.
The competence in effective communication will be assessed with presentations and individual problem submissions.

BIBLIOGRAPHY

Basic:

- Gómez Vieites, Á.; Suárez Rey, C. Sistemas de información: herramientas prácticas para la gestión empresarial. 4a ed. ampl. y act.. Paracuellos del Jarama, Madrid: Ra-Ma, 2011. ISBN 9788499641225.
- Laudon, K.C.; Laudon, J.P. Sistemas de información gerencial. 14a ed. México: Pearson Educación, 2016. ISBN 9786073236966.
- Jawadekar, W.S. Management information systems: text and cases. 4th ed. McGraw-Hill, 2011. ISBN 9780070146624.
- O'Brien, J.A.; Marakas, G.M. Management information systems. 10th ed. McGraw-Hill/Irwin, 2011. ISBN 9780071221092.

Complementary:

- McNurlin, B.C.; Sprague, R.H.; Bui, T. Information systems management in practice. 8th ed., Pearson int. ed. Upper Saddle River, New Jersey: Prentice Hall/Pearson Education, 2009. ISBN 9780131579514.
- Amat Salas, O. Análisis económico-financiero. 20a ed. Barcelona: Gestión 2000, 2008. ISBN 9788496612945.
- Piattini Velthuis, M.G.; Hervada Vidal, F. Gobierno de las tecnologías y los sistemas de información. Madrid: Ra-Ma, 2007. ISBN 9788478977673.

RESOURCES

Hyperlink:

- <http://www.isaca.org/Knowledge-Center/cobit/Documents/cobiT4.1spanish.pdf>-
<http://sunsite.informatik.rwth-aachen.de/Publications/CEUR-WS/Vol-344/paper15.pdf>