Course guide
270518 - SECS - Sustainability, Economics and Social Engagement

Last modified: 25/07/2025

Unit in charge:	Barcelona School of Informatics
Teaching unit:	732 - OE - Department of Management.

Degree:	MASTER'S DEGREE IN INFORMATICS ENGINEERING (Syllabus 2012). (Optional subject).

Academic year: 2025   **ECTS Credits:** 1.5   **Languages:** Catalan, Spanish

LECTURER

Coordinating lecturer:	JOSE MARIA CABRÉ GARCIA
Others:	Primer quadrimestre: JOSE MARIA CABRÉ GARCIA - 10

PRIOR SKILLS

No previous skills

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
CDG2. Capacity for strategic planning, development, direction, coordination, and technical and economic management in the areas of Informatics Engineering related to: systems, applications, services, networks, infrastructure or computer facilities and software development centers or factories, respecting the implementation of quality and environmental criteria in multidisciplinary working environments .

Generical:
CG5. Capacity for the development, strategic planning, leadership, coordination and technical and financial management of projects in all areas of Informatics Engineering, keeping up with quality and environmental criteria.

Transversal:
CTR2. SUSTAINABILITY AND SOCIAL COMMITMENT : Capability to know and understand the complexity of the typical economic and social phenomena of the welfare society. Capacity for being able to analyze and assess the social and environmental impact.

Basic:
CB7. Ability to integrate knowledges and handle the complexity of making judgments based on information which, being incomplete or limited, includes considerations on social and ethical responsibilities linked to the application of their knowledge and judgments.

TEACHING METHODOLOGY

The methodology of learning of this course is a mixture of lectures, talks by experts on various topics in the field of sustainability, research and documentation of discussion groups and classes. At the end of the course must submit a project on the methodology for a sustainable project in all its three aspects: environmental, economic and social.

LEARNING OBJECTIVES OF THE SUBJECT

1.Know and understand the complexity of economic and social phenomena typical of the welfare society. Ability to analyze and assess the environmental impact.
2.Learn the ability to manage an engineering project sustainable with all that that implies
3.Capacity for making, strategic planning, direction, coordination and management of technical and economic projects in all areas of Computer Engineering following quality criteria and environmental

STUDY LOAD

Type	Hours	Percentage
Self study	24,0	64.00
Hours large group	12,0	32.00
Guided activities	1,5	4.00

Total learning time: 37.5 h

CONTENTS

Introduction to sustainability

Description:
The study of sustainability-satisfy the needs of the present without compromising the ability of future generations to meet their own needs, can be conceptually divided into three parts: environmental, economic and social. The goal of sustainability is to define viable projects and reconcile the economic, social, environmental and human activities "three pillars" that should be considered by the community, both businesses and individuals:
· Economic sustainability is given when the activity moves to the environmental and social sustainability is financially possible and profitable.
· Social sustainability: from maintaining social cohesion and ability to work in pursuit of common goals. It would, taking the example of a company, take into account the social consequences of the activity of the same at all levels: workers (working conditions, salary levels, etc..), Vendors, customers, local communities and society at large.
· Environmental sustainability: consistency between the activity in question and the preservation of biodiversity and ecosystems, preventing degradation of the source and sink functions. Includes an analysis of the impacts of the activity in question in terms of flows, resource use difficult or slowly renewable resources and in terms of waste generation and emissions. This last pillar is required for the other two are stable.
The first topic is an introductory chapter to the issue of sustainability. Through a series of slides will go into the meaning of sustainability and what it represents in our world today.

The first topic is an introductory chapter to the issue of sustainability. Through a series of slides will go into the meaning of sustainability and what it represents in our world today. We present several flashes and diagnostics on various aspects of the state of sustainability in the world.

Environmental sustainability

Description:

Environmental sustainability occurs when an activity is moving towards social and economic sustainability has a manageable footprint and environmental impact nondestructive. Often projects are economically viable, but do not consider the social or environmental impact. We must not forget that the world will be sustainable or won't be at all.

The environmental scientific comunity defined nine planetary boundaries from which there would be no turning back if we surpassed them, we have already passed 3 of them.

We must understand that if we want to keep going down the western life style (based on limitless growth) as we know it we are putting more pressure on the planet than it's able to regenerate. Paradoxally underdeveloped countries are the ones that have a minimal footprint.

Global agreements so far to reduce the environmental impact have been a waste of paper. We are going towards a collective suicide.

Economical sustainability

Description:

Economic sustainability is achieved when a project that is environmentally and socially sustainable is possible and financially profitable. Often projects start with enthusiasm and passion but with a short and medium-term vision, without taking into account their long-term viability.

The business graveyard is full of good ideas. Before starting a project it is vital to study carefully its economic viability. Several instruments such as business plans, strategic plans, SWOT analyses ... can help to estimate the profitability of our project.

Social sustainability

Description:

A project can be sustainable economically and with minimum footprint but if it harms a social collective qualitatively or quantitatively higher than the collective that benefits from it, the project will not be considered socially sustainable.

The classical paradigm "invisible hand" where the selfishness makes you "social benefactor" has never been true. Since the Nobel prize John Nash, with their contributions to game theory, shows that if we live in the society and we want to succeed we have to do is look for the best for us and for the others!

Michael Porter and Mark Ramer in their article "Creating Shared Value" (Harvard Business Review Latin America, 2011), explain that companies like GE, Google, IBM, Intel, Johnson and Johnson, Nestle, Unilever and Wal-Mart already have embarked on important efforts to create shared value: consider the social consequences of the activity of the same at all levels: employees (working conditions, salaries, etc), suppliers, customers, local communities and society in general. The Case of Triodos Bank is another evidence.

However, this new paradigm - The key to personal success is finding the common good - is found unbelievable by a lot of people. But it works.

A good way to measure the sustainability of social our projects we propose the Christian Felber with its array of the common good.

Sustainable development of an engineering project.

Description:
An important part of the engineering projects forget a key aspect of it: Sustainability. In order for a engineering project to be viable, long-term, inevitably must incorporate aspects of sustainability. What aspects should be taken into account if we want to develop a sustainable project?

With the help of the sustainability matrix proposed by the STEP group of the UPC we can think about appropiate questions to ask in order to asses the sustainability of a project.

Making a paper on: User manual about how to make a project sustainable

Description:
Students will be divided into groups and according to the documentation worked throughout the year, the conference-discussion attended and class discussions, prepare a guide on how to carry out a project sustainable.

ACTIVITIES

Introduction

Description:
Students, with a previous preparation, participates actively discussing and asking appropiate questions.

Specific objectives:
1

Related competencies :
CTR2. SUSTAINABILITY AND SOCIAL COMMITMENT : Capability to know and understand the complexity of the typical economic and social phenomena of the welfare society. Capacity for being able to analyze and assess the social and environmental impact.
CB7. Ability to integrate knowledges and handle the complexity of making judgments based on information which, being incomplete or limited, includes considerations on social and ethical responsibilities linked to the application of their knowledge and judgments.

Full-or-part-time: 7h
Theory classes: 2h
Laboratory classes: 2h
Self study: 3h

Environmental sustainability

Description:
Students, with a previous preparation, participates actively discussing and asking appropiate questions.

Specific objectives:
1, 2

Related competencies :
CDG2. Capacity for strategic planning, development, direction, coordination, and technical and economic management in the areas of Informatics Engineering related to: systems, applications, services, networks, infrastructure or computer facilities and software development centers or factories, respecting the implementation of quality and environmental criteria in multidisciplinary working environments .
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Full-or-part-time: 5h
Theory classes: 1h
Laboratory classes: 1h
Self study: 3h

The social dimension of sustainability

Description:
Students with a previous preparation, participates actively in the debate asking relevant questions and proposals. Take advantage of the information obtained to incorporate it into the final seminar work.

Specific objectives:
1, 2

Related competencies :
CDG2. Capacity for strategic planning, development, direction, coordination, and technical and economic management in the areas of Informatics Engineering related to: systems, applications, services, networks, infrastructure or computer facilities and software development centers or factories, respecting the implementation of quality and environmental criteria in multidisciplinary working environments .
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CB7. Ability to integrate knowledges and handle the complexity of making judgments based on information which, being incomplete or limited, includes considerations on social and ethical responsibilities linked to the application of their knowledge and judgments.

Full-or-part-time: 5h 30m
Theory classes: 1h
Laboratory classes: 1h
Guided activities: 0h 30m
Self study: 3h

The economic dimension of sustainability

Description:
For the first time the student listens attentively to the speaker. During the second hour is actively involved in the debate. Uses the information obtained to incorporate it into the final seminar work.

Specific objectives:
1, 2

Related competencies :
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CB7. Ability to integrate knowledges and handle the complexity of making judgments based on information which, being incomplete or limited, includes considerations on social and ethical responsibilities linked to the application of their knowledge and judgments.

Full-or-part-time: 5h 30m
Theory classes: 1h
Laboratory classes: 1h
Guided activities: 0h 30m
Self study: 3h

Sustainable development of an engineering project

Description:
Students discuss with their peers and the teacher about these techniques. Uses the information obtained to incorporate it into the final seminar work.

Specific objectives:
1, 2, 3

Related competencies :
CG5. Capacity for the development, strategic planning, leadership, coordination and technical and financial management of projects in all areas of Informatics Engineering, keeping up with quality and environmental criteria.
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CB7. Ability to integrate knowledges and handle the complexity of making judgments based on information which, being incomplete or limited, includes considerations on social and ethical responsibilities linked to the application of their knowledge and judgments.

Full-or-part-time: 5h 30m
Theory classes: 1h
Laboratory classes: 1h
Guided activities: 0h 30m
Self study: 3h

Making sustainable project work

Description:
Make, in team, a work about how to make a sustainable project

Specific objectives:
1, 2, 3

Related competencies :
CG5. Capacity for the development, strategic planning, leadership, coordination and technical and financial management of projects in all areas of Informatics Engineering, keeping up with quality and environmental criteria.
CDG2. Capacity for strategic planning, development, direction, coordination, and technical and economic management in the areas of Informatics Engineering related to: systems, applications, services, networks, infrastructure or computer facilities and software development centers or factories, respecting the implementation of quality and environmental criteria in multidisciplinary working environments .
CTR2. SUSTAINABILITY AND SOCIAL COMMITMENT : Capability to know and understand the complexity of the typical economic and social phenomena of the welfare society. Capacity for being able to analyze and assess the social and environmental impact.
CB7. Ability to integrate knowledges and handle the complexity of making judgments based on information which, being incomplete or limited, includes considerations on social and ethical responsibilities linked to the application of their knowledge and judgments.

Full-or-part-time: 8h 30m
Theory classes: 1h
Laboratory classes: 1h
Guided activities: 0h 30m
Self study: 6h

GRADING SYSTEM

The final grade for the course will, by 80%, note that adequate assessment of the "project" presented, and 20% class participation.

BIBLIOGRAPHY

Basic:
- Eguiguren, M.; Barroso, E. Empresa 3.0: políticas y valores corporativos en una cultura empresarial sostenible. Pirámide, 2011. ISBN 9788436824766.
- Bermejo, R. Manual para una economía sostenible. Los libros de la Catarata, 2011. ISBN 9788483195918.
- Xercavins, J.; [et al.]. Desarrollo sostenible. Edicions UPC, 2005. ISBN 8483018055.
- Dresner, S. Els principis de la sostenibilitat [on line]. Edicions UPC, 2009 [Consultation: 10/10/2022]. Available on: http://hdl.handle.net/2099.3/36834. ISBN 9788498803600.

Complementary:
- Oliveres, A. Diguem prou!: indignació i respostes a un sistema malalt. Angle, 2012. ISBN 9788415002949.

RESOURCES

Hyperlink:
- http://tecnologiaisostenibilitat.cus.upc.edu/