

Design Technology for Economic, Environmental, and Social Impact

Course code	<i>GRAB014</i>
Level of studies	<i>Graduate</i>
Number of credits	<i>6 ECTS; 36 class hours, 72 hours of self-study,</i>
Course coordinator (title and name)	<i>Lect. Malmo Almonacid Mail: malmo.cid@gmail.com</i>
Prerequisites	<i>Undergraduate diploma</i>
Language of instruction	<i>English</i>

COURSE DESCRIPTION AND OBJECTIVES

Sustainable business managers not only need to know how actual digital business models work but also how to redesign digital tools in order to innovate and reach sustainable goals.

In this course, following the principles of the non-human centered design we will analyze concrete tech examples of the use, limits (bias) and rationality behind current digital technologies. The objective is to offer a space of design possible futures rationalities following a speculative scenario development (foresight) of current sustainability challenges.

Bringing students' own work experiences dealing with difficulties and daily problems to design, implement and manage sustainable business, students will design speculative tech tools and rationalities in order to innovate and facilitate the achievement of sustainable business goals.

This course starts with a critical overview of the reproduction of the linear and extractivist economic model under the argument of innovations that technology and digital transition present. Following this introduction, students bring their own experiences to identify how old patrons continue to be reproducing although the industry claims innovation. Then non-human centered design is introduced as a major critique to the development of technology in the digital era as well as principal tools to design a sustainable speculative rationality to drive technology for sustainable business goals. Following an introduction on the above, this course dives deeper into how we can design a "sustainable non-human centered rationality" in order to drive technology. In this context what kind of new industries we can speculative create following the paths of FinTech, AgriTech, HealthTech, MedTech, InsurTech, EdTech, SpaceTech, and many other xTech industries. What kind of new industries, open new markets and enable opportunities for innovation we can create? How we can apply the convergence of technologies such as Cloud, Big Data, AI, Analytics, Blockchain, Extended Reality, Digital Twins to a "sustainable non-human centered rationality" in order to promote Sustainable Business Model Innovation a.k.a Everything as a Sustainable.

In this course we discuss

- 1- The tension arises between the Digital Innovations and its impact on the economic, social and environmental global crisis context.
- 2- The use of speculative scenarios to design sustainability behind human centered mindset. Thinking out the box.
- 3- The speculative role that major digital enablers of Industry 4.0 such as Big Data, Analytics, Artificial Intelligence, Internet of Things, Cloud, Blockchain, Extended Reality, and Digital Twins can have in a non-human centered sustainable rationality, industrial and business models.

LEARNING OUTCOMES

Course learning outcomes (CLO)	Study methods	Assessment methods
CLO1. To understand how the digital economy continues to reproduce linear economic models arguing innovation.	Lectures, readings, case studies, self-study, groupwork, in class discussions & presentation	Participation in discussions and the quality team projects
CLO2. To systematize daily sustainable work problems to design sustainable projects.	Lectures, readings, case studies, self-study, groupwork, in class discussions & presentation	Participation in discussions and the quality team projects
CLO3. To understand and apply the notions of non-human centered design to sustainable business.	Lectures, readings, case studies, self-study, groupwork, in class discussions & presentation	Participation in discussions and the quality team projects

CLO4. To be able to apply non-human centered design outcome in Impact-Driven Industrial Innovation (xTech)	Lectures, readings, case studies, self-study, groupwork, in class discussions & presentation	Participation in discussions and the quality team projects
CLO5. To apply speculative methodologies in the design of Technology in Impact-Driven Sustainable Model Innovation: Everything as a Sustainable (XaaS)	Lectures, readings, case studies, self-study, groupwork, in class discussions & presentation	Participation in discussions and the quality team projects
CLO6. To evaluate the impact of Digital Enablers of I4.0 in adapting Sustainable rationality driven technology	Lectures, readings, case studies, self-study, groupwork, in class discussions & presentation	Participation in discussions and the quality team projects
CLO7.	Lectures, readings, case studies, self-study, groupwork, in class discussions & presentation	Participation in discussions and the quality team projects
CLO8. To analyze and apply cases and industry examples in explaining the role of strategic technology management for social, economic, and environmental prosperity	Lectures, readings, case studies, self-study, groupwork, in class discussions & presentation	Participation in discussions and the quality team projects
CLO9. CLO8. To be able to integrate Symbiotic Sustainability Models, Industrial Symbiosis, and NGO-Corporate Alliances	Lectures, readings, case studies, self-study, groupwork, in class discussions & presentation	Participation in discussions and the quality team projects

ACADEMIC HONESTY AND INTEGRITY

The ISM University of Management and Economics Code of Ethics, including cheating and plagiarism are fully applicable and will be strictly enforced in the course. Academic dishonesty, and cheating will lead to a report to the ISM Committee of Ethics.

QUALITY ASSURANCE MEASURES

The lecturer will apply multiple teaching methods to keep the students engaged in the topic. Continuous student feedback will be invited and accommodated to improve class experience. Students are encouraged to e-mail the lecturer between the respective classes for any assistance or clarification needed.

COURSE OUTLINE

Sessio n	Topic	In-class hours	Reading assignments ¹
1	Human centered tech rationality driven global collapse	4	Resources provided in the e-learning platform and additional research on use cases and industry examples
2	Sustainable work experience - design a group project	4	Resources provided in the e-learning platform and additional research on use cases and industry examples
3	Sustainable rationality Design	4	Resources provided in the e-learning platform and additional research on use cases and industry examples
4	Non human centered technology for Impact-Driven Sustainable Innovation (xTech)	4	Resources provided in the e-learning platform and additional research on use cases and industry examples
5	Everything as a Sustainable (XaaS): Technology for Impact-Driven Business Model Innovation:	4	Resources provided in the e-learning platform and additional research on use cases and industry examples
6	The role of Digital Enablers in creating Sustainable Ecosystems	4	Resources provided in the e-learning platform and additional research on use cases and industry examples
7		4	Resources provided in the e-learning platform and additional research on use cases and industry examples

¹ Because the course deals with rather dynamic knowledge domain, certain proportion of the lecture and discussion material for the course may be updated and/or delivered just-in-time (uploaded to e-learning or indicated for downloading from the Internet). Students should be committed to follow e-learning system and observe uploaded course material on daily basis.

8	Presentation Projects	4	Resources provided in the e-learning platform and additional research on use cases and industry examples
9	Learning about symbiotic Sustainability Models, Industrial Symbiosis, and NGO-Corporate Alliances	4	Resources provided in the e-learning platform and additional research on use cases and industry examples
		Total: 36 hrs.	

FINAL GRADE COMPOSITION

Type of assignment	Self-study hours	% of the total grade
Preparation and Participation	36	50
Team Projects and Presentations	36	50
Total:	72	100

DESCRIPTION AND GRADING CRITERIA OF EACH ASSIGNMENT

Assessment 1. Preparation and Participation (50%)

Each session includes discussions, debates, and oral questions. Students will be graded based on their preparation for each session, finding relevant examples, and actively participating in debates and answering questions.

Assessment 2. Team Projects and Presentations (50%)

In each session students will present their groupwork and the projects will be graded based on the depth of the analysis and incorporating the requirements for each type of project.

DYSFUNCTIONAL TEAM MEMBERSHIP

At the end of the course, the lecturer will collect peer feedback on team project members' relative performance. In extreme cases where it is determined that a team member did very little, the lecturer reserves the right to lower the grade, or to assign negative grades on the project to that person.

RETAKE

In case of unsatisfactory performance or missed sessions, students will be asked to resubmit the team project individually (further information will be provided during the class).

REQUIRED READINGS

There is no single textbook for this course, rather a diverse set of textbook chapters, articles and cases will be provided to the students through the e-learning platform, and a significant part of the preparation for delivery of the groupworks would require research on companies, industry trends, markets, and particular use cases and scenarios.