

205079 - AMP - Agile Methodologies and Processes for the Creation of Innovative Solutions

Coordinating unit:	205 - ESEIAAT - Terrassa School of Industrial, Aerospace and Audiovisual Engineering
Teaching unit:	758 - EPC - Department of Project and Construction Engineering
Academic year:	2019
Degree:	MASTER'S DEGREE IN SPACE AND AERONAUTICAL ENGINEERING (Syllabus 2016). (Teaching unit Optional) MASTER'S DEGREE IN INDUSTRIAL ENGINEERING (Syllabus 2013). (Teaching unit Optional) MASTER'S DEGREE IN AERONAUTICAL ENGINEERING (Syllabus 2014). (Teaching unit Optional)
ECTS credits:	3
Teaching languages:	English

Teaching staff

Coordinator:	Marcel Macarulla Martí
Others:	Jordina Arcal Cunillera Marc Nicolau Martínez

Teaching methodology

The class combines the following teaching methodologies:

- In-class lectures: In these lectures the teacher will introduce the students to the basic concepts, methodologies, techniques & processes. These lectures will be highly engaging to motivate students to share related experiences & relevant examples
- Radical collaboration sessions: In these sessions the teacher will introduce the students to several team ideation techniques to provide the students with the creative confidence and tools to improve their collaboration skills and creativity.
- Team activities & homework: This course is based in learning by doing techniques, so students will unlock their creative potential & spur new ways of thinking through weekly activities that culminate in a motivating & fun challenge.

Learning objectives of the subject

In this course students will learn new cutting edge techniques to manage teams, projects and processes to deliver faster robust solutions to the market, boosting competitiveness & innovation based on Agile methodologies. By the use of User Centered Design students will practice how to guide teams into the unknown through the process of experimentation. They will get familiar with tools to help them understand user needs, generate innovative solutions, learn faster & reduce the risks of launching new ideas through Minimum Viable Products (MVPs). These solutions will be designed and developed for 3D printing production, solving a real challenge proposed by an innovative company.



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Study load

Total learning time: 75h	Hours large group:	16h 30m	22.00%
	Hours medium group:	0h	0.00%
	Hours small group:	10h 30m	14.00%
	Guided activities:	0h	0.00%
	Self study:	48h	64.00%

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Content

<p>Module 1: Introduction to Agile Management</p>	<p>Learning time: 11h Theory classes: 4h Self study : 7h</p>
<p>Description: In this module agile management process and tools will be exposed. In addition, it will be presented a set of team collaboration tools that can be used to work with agile methodologies.</p>	
<p>Module 2: Introduction to User Centered Design, a process for creative problem solving</p>	<p>Learning time: 11h Theory classes: 4h Self study : 7h</p>
<p>Description: In this module it will be explained what is User centered Design and it will be justified the importance of this discipline. The User centered Design process and tools will be presented focusing on:</p> <ul style="list-style-type: none"> - Phases and outcomes (innovation and impact) - Research techniques to understand people and identify user needs - Empathy and interpreting reality (the environment, pain points & shortcuts) -Workflow, personas and their needs - Mapping user needs - Looking for patterns (Insights/opportunities) - Communicating research 	
<p>Module 3: Introduction to 3D printing design</p>	<p>Learning time: 14h Theory classes: 5h Self study : 9h</p>
<p>Description: In this module students will learn the 3D printing best practices for final part production. This knowledge will be delivered by HP' s engineers.</p>	
<p>Module 4: Deep dive into Agile Management and User Centered Design</p>	<p>Learning time: 28h Theory classes: 10h Self study : 18h</p>
<p>Description: In this module students will deep dive into Agile Management and User Centered Design using a case study. Students will develop in groups a product following the principals of Agile Management and User Centered Design. Finally the product will be produced using HP' s 3D printing technology (Multi Jet Fusion)</p>	

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Module 5: Value proposition and lean canvas	Learning time: 11h Theory classes: 4h Self study : 7h
<p>Description:</p> <p>In this module students will learn how to assess the value of a new product and how to apply the lean canvas method. This module also will go in depth in how to analyze the costs of a product produced using the 3D printing technology. Students will apply the explained concepts in order to analyze the viability & feasibility of the created product during the course.</p>	

Qualification system

The final mark depends on two metrics, homework and continuous evaluation (50%) and the final presentation (50%).

Bibliography

Basic:

Kelley, David; Kelley, Tom. Creative confidence: unleashing the creative potential within us all. London: William Collins, 2013. ISBN 9780008139384.

Knapp, J.; Zeratsky, J.; Kowitz, B. Sprint: how to solve big problems and test new ideas in just five days. London: Bantam Press, 2016. ISBN 9780593076118.

Fitzpatrick, Rob. The MOM test: how to talk customers and learn if your business is a good idea when everyone is lying to you. Leipzig: Founder Centric, 2014. ISBN 9781492180746.

Osterwalder, Alex [et al.]. Value proposition design: how to create products and services customers want: get started with--: bad value proposition design: a guide to burning cash, communicating poorly, and spending your short life building stuff nobody wants. Hoboken: John Wiley & Sons, 2014. ISBN 9781118968055.

IDEO.org. The field guide to human-centered design. Design kit, 2015. ISBN 9780991406319.

Jongerius, Pieter. Get Agile: Scrum for UX, design and development. Amsterdam: BIS Publishers, 2012. ISBN 9789063693022.

Complementary:

Ries, Eric. The lean startup: how today's entrepreneurs use continuous innovation to create radically successful businesses. New York: Crown Business, 2011. ISBN 9780307887917.

Kolko, Jon. Exposing the magic of design: a practitioner's guide to the methods and theory of synthesis. Oxford: Oxford University Press, 2011. ISBN 9780190276218.

Portugal, Steve. Interviewing users: how to uncover compelling insights. Brooklyn, NY: Rosenfeld Media, 2013. ISBN 9781933820118.

Maeda, John. The laws of simplicity: design, technology, business, life. Cambridge (Mass.): MIT Press, 2006. ISBN 9780262134729.

Gothelf, Jeff. Lean vs. agile vs. design thinking: what you really need to know to build high-performing digital product teams. Unites states: Sense & respond press, 2017. ISBN 9780999476918.