

## Guia docent

### 205228 - CT - Critical Thinking per Impressió 3D

Última modificació: 02/04/2024

**Unitat responsable:** Escola Superior d'Enginyeries Industrial, Aeroespacial i Audiovisual de Terrassa  
**Unitat que imparteix:** 758 - EPC - Departament d'Enginyeria de Projectes i de la Construcció.

**Titulació:** GRAU EN ENGINYERIA DE SISTEMES AUDIOVISUALS (Pla 2009). (Assignatura optativa).  
GRAU EN ENGINYERIA DE TECNOLOGIA I DISSENY TÈXTIL (Pla 2009). (Assignatura optativa).  
GRAU EN ENGINYERIA ELÈCTRICA (Pla 2009). (Assignatura optativa).  
GRAU EN ENGINYERIA ELECTRÒNICA INDUSTRIAL I AUTOMÀTICA (Pla 2009). (Assignatura optativa).  
GRAU EN ENGINYERIA MECÀNICA (Pla 2009). (Assignatura optativa).  
GRAU EN ENGINYERIA QUÍMICA (Pla 2009). (Assignatura optativa).  
GRAU EN ENGINYERIA DE DISSENY INDUSTRIAL I DESENVOLUPAMENT DEL PRODUCTE (Pla 2010). (Assignatura optativa).  
GRAU EN ENGINYERIA EN TECNOLOGIES AEROESPACIALS (Pla 2010). (Assignatura optativa).  
GRAU EN ENGINYERIA EN TECNOLOGIES INDUSTRIALS (Pla 2010). (Assignatura optativa).  
GRAU EN ENGINYERIA EN VEHICLES AEROESPACIALS (Pla 2010). (Assignatura optativa).

**Curs:** 2024 **Crèdits ECTS:** 6.0 **Idiomes:** Anglès

#### PROFESSORAT

**Professorat responsable:** Macarulla Martí, Marcel

**Altres:** Arcal Cunillera, Jordina  
Nicolau Martinez, Marc

#### METODOLOGIES DOCENTS

This is a hands-on course where students will learn and implement Creativity and Design Thinking methodologies to solve a real challenge from the industry, using HP's additive manufacturing technology. They will work hand by hand with HP's industry experts and industrial companies, learning how to identify opportunities for the adoption of 3D printing production. Students will practice how to guide teams into the unknown through the process of experimentation, understanding user needs, generating innovative solutions & reducing the risks of launching new ideas through Minimum Viable Products. During the course different ideas will be developed and the best idea of each group will be printed with the HP additive manufacturing technology. In total, each group will have two prints granted by HP.

#### OBJECTIUS D'APRENTATGE DE L'ASSIGNATURA

L'objectiu d'aquest curs és formar als estudiants per tal que siguin capaços de resoldre reptes plantejats per la indústria utilitzant tecnologies de fabricació additiva.

#### HORES TOTALES DE DEDICACIÓ DE L'ESTUDIANTAT

| Tipus                      | Hores | Percentatge |
|----------------------------|-------|-------------|
| Hores aprenentatge autònom | 90,0  | 60.00       |
| Hores grup mitjà           | 60,0  | 40.00       |

**Dedicació total:** 150 h

## CONTINGUTS

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### Module 1: Introduction to user centered desing and desing thinking

**Descripció:**

In this module, students will learn the basics of user-centered design and design thinking and will apply its processes and tools including: research techniques to understand people and identify user needs, empathy & interpreting reality, workflow, persons & their needs, mapping user needs and looking for patterns.

**Dedicació:** 15h

Grup mitjà/Pràctiques: 6h

Aprenentatge autònom: 9h

### Module 2: Creativity and prototyping

**Descripció:**

In this module, students will learn and will apply techniques for creativity and prototyping.

**Dedicació:** 25h

Grup mitjà/Pràctiques: 10h

Aprenentatge autònom: 15h

### Module 3: Best practices for additive manufacturing

**Descripció:**

In this module, students will learn best practices for additive manufacturing.

**Dedicació:** 25h

Grup mitjà/Pràctiques: 10h

Aprenentatge autònom: 15h

### Module 4: Solving an industry challenge using additive manufacturing

**Descripció:**

This module will be focus on solving a challenge proposed by a company using additive manufacturing. Designed solutions will be printed using HP additive manufacturing technology, one print during the course, and another at the end of the course.

**Dedicació:** 75h

Grup mitjà/Pràctiques: 30h

Aprenentatge autònom: 45h

### Module 5: Storytelling

**Descripció:**

This module will be focused on learn techniques to communicate developed ideas and solutions.

**Dedicació:** 10h

Grup mitjà/Pràctiques: 4h

Aprenentatge autònom: 6h



## SISTEMA DE QUALIFICACIÓ

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The final grade depends on the following assessment criteria:

- 20% classroom deliverables
- 20% midterm deliverable (solutions + first print of the solution)
- 40% final deliverable (final solution and second print of the solution)
- 20% Presentation and video

## BIBLIOGRAFIA

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### **Bàsica:**

- Kelley, Tom; Kelley, David. Creative confidence : unleashing the creative potential within us all. London: William Collins, 2013. ISBN 9780008139384.
- Portigal, Steve. Interviewing users : how to uncover compelling insights. Brooklyn, NY: Rosenfeld Media, 2013. ISBN 9781933820118.
- Osterwalder, Alexander [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, cop. 2014. ISBN 9781118968055.
- Knapp, Jake. Sprint : how to solve big problems and test new ideas in just five days. New York: Simon & Schuster, 2016. ISBN 9781501140808.
- 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.