The main objective of this course is to train students to solve industry challenges using additive manufacturing technologies.

Teaching methodology

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.

Learning objectives of the subject

The main objective of this course is to train students to solve industry challenges using additive manufacturing technologies.
# Study load

<table>
<thead>
<tr>
<th><strong>Total learning time:</strong></th>
<th>150h</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours large group:</td>
<td>0h</td>
<td>0.00%</td>
<td></td>
</tr>
<tr>
<td>Hours medium group:</td>
<td>60h</td>
<td>40.00%</td>
<td></td>
</tr>
<tr>
<td>Hours small group:</td>
<td>0h</td>
<td>0.00%</td>
<td></td>
</tr>
<tr>
<td>Guided activities:</td>
<td>0h</td>
<td>0.00%</td>
<td></td>
</tr>
<tr>
<td>Self study:</td>
<td>90h</td>
<td>60.00%</td>
<td></td>
</tr>
</tbody>
</table>
## Content

| Module 1: Introduction to user centered design and design thinking | Learning time: 15h  
Practical classes: 6h  
Self study: 9h |
| --- | --- |
| **Description:**  
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. |

| Module 2: Creativity and prototyping | Learning time: 25h  
Practical classes: 10h  
Self study: 15h |
| --- | --- |
| **Description:**  
In this module, students will learn and will apply techniques for creativity and prototyping. |

| Module 3: Best practices for additive manufacturing | Learning time: 25h  
Practical classes: 10h  
Self study: 15h |
| --- | --- |
| **Description:**  
In this module, students will learn best practices for additive manufacturing. |

| Module 4: Solving an industry challenge using additive manufacturing | Learning time: 75h  
Practical classes: 30h  
Self study: 45h |
| --- | --- |
| **Description:**  
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. |
Module 5: Storytelling

Learning time: 10h
- Practical classes: 4h
- Self study: 6h

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

Qualification system

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

Bibliography

Basic:


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

Others resources: