Master degree in Digital Manufacturing

Subject: ADDITIVE MANUFACTURING

Description of the Content:

Advanced Manufacturing has been identified as one of the key factors for sustainable economic growth, job creation and long-term competitiveness. And within this, additive manufacturing is one of its most important fields and one that is expected to have greater growth and development in the future. Additive manufacturing, frequently associated with the term 3D-Printing, is a technology with great innovative potential that is transforming the way of conceiving, designing and manufacturing products.

This course deals with the different technologies related to Additive Manufacturing and is made up of both theoretical and practical aspects. The fundamental objective is to publicize the basic principles of the process (characteristics, advantages and limitations, fields of application, manufacturing strategies and the initial aspects of the design of this type of parts). Another important part of the course will consist of the design, planning and execution of tests and practical cases.

Character: OPTIONAL

Credits: FIVE

Teaching period: 2nd Year

Face-to-face modality

Language: English

Academic year: 2023-2024

Lecturers: Xabier Cearsolo, Maitane Gabilondo

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CONTENT

- Introduction to Additive Manufacturing and Additive Manufacturing Technologies

- Scanning and reverse engineering for Additive Manufacturing

- Topology Optimization with Solid Edge

- FDM technology (design constraints, slicing program and laboratory practices)

- Stereolitography SLA technology (design constraints, slicing program and laboratory practices)

- HP-4200 Multi Jet Fusion technology (design constraints, slicing program and laboratory practices)

- Metallic materials for Additive Manufacturing

- Laser Metal Deposition (LMD) tecnology (programming and laboratory practices)

- Laser Powder Bed Fusion (LPBF) tecnology (design constraints, slicing and laboratory practices)

BIBLIOGRAPHY

Additive Manufacturing Technologies,Dr. Ian Gibson, Dr. David W. Rosen, Dr. Brent Stucker , Springer, 2010,

Web pages:

http://www.pixelsistemas.com

http://www.metalmecanica.com

http://www.stratasys.com

http://www.3dsystems.com

http://www.eos.info

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http://www.envisiontec.de

http://www.dsm.com

http://www.huntsman.com

http://www.objet.com

http://www.solid-scape.com

http://www.optomec.com

http://www.zcorp.com

http://www.custompartnet.com

http://www.tctmagazine.com

http://www.materialise.com

<u>COMPETENCES</u>

• Know the different Additive Manufacturing technologies, the characteristics of each of them and their fields of application.

<u>EVALUATION SYSTEM</u>

• Written work.