



UNIVERSITÀ DI PISA  
**DIPARTIMENTO DI INGEGNERIA DELL'INFORMAZIONE**  
**Dottorato di Ricerca in Ingegneria dell'Informazione**

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Doctoral Course

**“Computer Aided Design for Additive Manufacturing”**

Dr. Carmelo De Maria

*University of Pisa - Italy*

**Short Abstract:** Computer Aided Design (CAD) software facilitates the creation of 3D models, which can be the starting geometry for running a finite element analysis or directly fabricating a part with additive manufacturing (AM) technologies. An effective design takes into account multiples aspects, such as materials properties and the fabrication technologies, which have to be considered since the drawing phase. In particular, AM technologies have reduced both the design constrains and the prototyping costs, becoming an enabling tool for many engineering areas.

Indeed, the Course aims at providing Information Engineers with fundamentals of computer aided design optimized for AM, through frontal lessons and practical CAD sessions.

**Course Contents in brief:**

- Fundamentals of AM technologies (4h)
- the role of engineering drawing; from manual sketch and to computer aided design (CAD) (4h)
- Use of CAD software: part design and assembling (8h)
- Design for Fused Deposition Modelling (theory and practice) (4h)
- Design for Stereolithography (theory and practice) (4h)

**Total # of hours of lecture: 24**

**References:**

- [1] Dennis K. Lieu and Sheryl Sorby, Nelson Education (2017) *Visualization, Modeling, and Graphics for Engineering Design*, ISBN-13: 978-1-4018-4249-9
- [2] Ian Gibson, David W. Rosen, & Brent Stucker (2014). *Additive manufacturing technologies* (Vol. 17). New York: Springer. Online ISBN 978-1-4419-1120-9
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## **CV of the Teacher**

Carmelo De Maria is Assistant Professor of Bioengineering at the Department of Ingegneria dell'Informazione, University of Pisa, and affiliated with the Research Center "E. Piaggio". He is guest professor of bioengineering at Addis Ababa University, and member of the African Biomedical Engineering Consortium secretariat. His research interests are in the field of additive manufacturing/rapid prototyping technologies, with a particular focus in Biofabrication. He has several papers published in international scientific journals (over 70) and in 2016 he received the Young Investigator Award from the International Society for Biofabrication. De Maria has been involved in the different national and international collaborative projects (the H2020 project UBORA and Giotto, the Prin 2017 project Vision).

## **Room and Schedule**

Room: *Aula Riunioni del Dipartimento di Ingegneria dell'Informazione, Via G. Caruso 16, Pisa – Ground Floor*

Schedule:

6 lessons (4 hours each)

- July 4<sup>th</sup> 2022
- July 6<sup>th</sup> 2022
- July 8<sup>th</sup> 2022
- July 11<sup>th</sup> 2022
- July 13<sup>th</sup> 2022
- July 15<sup>th</sup> 2022