



*Name of the course:*  
*Course type:*  
*Responsible lecturer:*  
*Content:*

**Additive Manufacturing**

optional

Dr. Sándor Bodzás

A Direct 3D printing technology: Fused Deposition Modelling (FDM), Laminated Object Manufacturing (LOM), Stereo-lithography (SLA); CAD or 3D printing. Transfer of virtual CAD models to AM equipment; Selective Laser Sintering (SLS): working principle and technological parameters; Selective Laser Melting (SLM): working principle and technological parameters; Other AM processes to for 3D printing of the metal parts: Electron Beam Melting (EBM), Direct Metal Laser Sintering (DMLS - EOS), Concept Laser; Rapid tooling for small volume production of the plastic parts: vacuum casting in silicone rubber moulds; Rapid metal casting in small series production (Investment Casting); Innovative manufacturing using EDM (Electrical Discharge Machining). EDM applications; Innovative manufacturing by water jet cutting (WJC) and milling; How to choose the appropriate innovative AM manufacturing method, to be efficient for a specific application, depending on material type, shape complexity, manufacturing series, etc. Medical applications of the 3D printing technologies. How to print medical implants made from biocompatible metal and composite materials.

*Literature:*

- Gebhardt, A., s.a 3D Printing-Understanding Additive Manufacturing, Hanser, 2018.
- Nicolae Balc, Dan Leordean, Editors: "Research and Applications in Manufacturing Engineering", MATEC Web of Conferences – EDP Sciences, France, Volume 299, 2019, ISBN- ISBN: 978-2-7598-9083-5, <https://www.matec-conferences.org/articles/mateconf/abs/2019/48/contents/contents.html>
- Nicolae Balc, Editor: "Modern Technologies in Manufacturing", MATEC Web of Conferences – EDP Sciences, France, Volume 137, 2017, ISBN- ISBN: 978-2-7598-9083-5, <https://www.matec-conferences.org/articles/mateconf/abs/2017/51/contents/contents.html>
- Nicolae Balc, Editor: "Modern Technologies in Manufacturing", Trans Tech Publications - Applied Mechanics and Materials, Switzerland, Vol. 808, 394 pagini, 2015, ISBN-13: 978-3-03835-653-0, <http://www.scientific.net/AMM.808/book>.
- I. Gibson, D. Rosen, B. Stucker: Additive Manufacturing Technologies, Second Edition, Springer, 2015, ISBN 978-1-4939-4455-2