

Course title: Modeling of Manufacturing Processes	Neptun code: GEIAK403-a
Course coordinator: Dr. Samad Dadvandipour, PhD, associate professor	
type of lesson and number of lessons: lecture (2)	
method of evaluation: colloquium	
curriculum location of the subject: (autumn/spring semester): autumn and spring	
pre-study conditions (<i>if any</i>): -	
The task and purpose of the subject:	
<p>The main aims are as follows:</p> <p>To improve efficiency, reduce waste, and minimize costs.</p> <p>To predict and Forecasting outcomes and identify potential issues before they occur.</p> <p>To control and develop control strategies for maintaining product quality and process stability.</p> <p>To design and assist in the design of new products and processes.</p>	
Course description:	
Modeling manufacturing processes involves creating mathematical, physical, or computer-based representations of the various processes involved in manufacturing. These models help understand, analyze, and optimize production systems.	
Required literature:	
<ol style="list-style-type: none"> 1. Fundamentals of Manufacturing Processes by Mikell P. Groover. 2. Manufacturing Processes for Engineering Materials by Serope Kalpakjian and Steven Schmid. 3. Principles of Modern Manufacturing by Mikell P. Groover. 	
Recommended literature:	
<ol style="list-style-type: none"> 1. Industry 4.0 and Smart Manufacturing - Lee, J., Bagheri, B., & Kao, H. A. (2015). A Cyber-Physical Systems architecture for Industry 4.0-based manufacturing systems. <i>Manufacturing Letters</i>, 3, 18-23. 2. Sustainable Manufacturing - Jayal, A. D., Badurdeen, F., Dillon Jr, O. W., & Jawahir, I. S. (2010). Sustainable manufacturing: Modeling and optimization challenges at the product, process, and system levels. <i>CIRP Journal of Manufacturing Science and Technology</i>, 2(3), 144-152. 3. Additive Manufacturing (3D Printing) - Gibson, I., Rosen, D. W., & Stucker, B. (2010). <i>Additive Manufacturing Technologies: Rapid Prototyping to Direct Digital Manufacturing</i>. 	