THE OHIO STATE UNIVERSITY
COLLEGE OF ENGINEERING

Introduction to Additive Manufacturing

WELDENG 5027

Credit Hours:
3.00

Course Levels:
Undergraduate (1000-5000 level)
Graduate (5000-8000 level)

Course Components:
Lecture

Course Description:
This course provides an introduction to modern additive manufacturing processes of various materials with an emphasis on use of metals. Explores current applications, limitations, and future uses of AM.

Prerequisites and Co-requisites:
Prereq: MatScEn 3141, or Grad standing in Engineering, or permission of instructor.

Course Goals / Objectives:
- Introduction to the fundamental concepts of additive manufacturing (AM), including steps and design for AM.
- Critically evaluate the applications of AM, describing advantages and disadvantages.
- Application of advanced Welding Engineering principles in Additive Manufacture
- Describe the most common AM processes for polymers, ceramics, and metals.
- Describe process parameter/microstructure/property relationships in common AM processes for metals.
- Gain understanding into defect formation, modeling and microstructure evolution, and microstructure engineering associated to metal AM.
- Present and discuss recent advances on metal additive manufacturing and the future of the technology.

Course Topics:

- Introduction to Additive Manufacturing (AM)
- Design for AM
- AM Process Steps
- Additive manufacturing processes, covering polymers, ceramics, metals and hybrid materials.
- Additive Manufacturing of Metals: Process Parameters, Feedstock, Defects, Modeling, Microstructure control/engineering
- Applications and limitations of AM
- Recent developments and future of AM

Designation:

Elective