- **Course Number and Title:** M E 405. Special Topics: Additive Manufacturing Technologies
- **Catalog Description:** N/A
- **Credit Hours:** 3 Credits (3)
- **Prerequisite(s) / Corequisite(s)**
  Prerequisite(s): CHME 361 or equivalent
  Corequisite(s): None
- **Required:** Elective for BSME Degree
- **Course Availability:** N/A
- **Instructor (Usual):** Dr. Vimal Chaitanya (See https://mae.nmsu.edu/people/faculty.html)
- **Textbook:**
  1. Gibson, I., Rosen, D., and Stucker, B., *Additive Manufacturing Technologies: 3D Printing, Rapid Prototyping, and Direct Digital Manufacturing*, 2nd Ed., Springer, 2015 (ISBN-10: 1493921126 or ISBN-13: 978-1493921126)
  2. ASM Handbook Volume 24: Additive Manufacturing Processes
- **Course Learning Objectives:**
  After completing this course, a student should be able to:
  1) Have an overall understanding of AM technologies, opportunities and challenges
  2) Apply their skill and knowledge in any industry such as aerospace, mechanical, microelectronics, construction, chemical, automotive, energy, medical etc.
- **Topics Covered:**
  - Introduction to Additive Manufacturing (AM) and History of Development
  - Advantages of AM and Future for Manufacturing Industries
  - Pre-processing, Manufacturing, and Post-processing Steps in AM
  - AM Technologies
    - VAT Photopolymerization
    - Fused Deposition Modeling or Fused Filament Fabrication (Extrusion Based)
    - Powder Bed Fusion (PBF)
    - Directed Energy Deposition (DED)
    - Sheet Lamination
    - Material Jetting,
    - Binder Jetting
    - Direct Writing Technologies such as Inkjet Printing
  - Quality Control, in-line monitoring, and Post Processing in AM
  - Impact of Direct Digital Manufacturing and Related Cyber Issues
  - Designing for AM

- Application of AM in Various Fields
- Disruptive Nature of AM and Future Opportunities