Graduate Certificate in 3D Engineering and Additive Manufacturing

This graduate certificate is designed for graduate students or working professionals wishing to achieve a better grasp of additive manufacturing (AM, also known as 3D printing). Weekend classes offer flexibility. The courses provide hands-on exposure to state-of-the-art equipment. This certificate is a great addition to a résumé or transcript for those seeking future employment in the AM industry. The program is designed to create a more AM-knowledgeable workforce for companies wishing to expand their AM manufacturing capabilities.

ADMISSION REQUIREMENTS
• A bachelor's degree in mechanical, aerospace, electrical, or materials engineering, or a related field in engineering or science (or anticipated completion of such degree within one year)
• An official transcript or a current résumé demonstrating sufficient professional or academic preparation for the program
• A single letter of recommendation from a supervisor or faculty member

APPLICATION PROCESS
All documents and application form must be submitted to the UTEP Graduate School at http://www.utep.edu/graduate

COURSES
MECH 5351: Introduction to 3D Engineering and Additive Manufacturing
Graduate credits: 3
Duration: 1 semester
Style: Combination of lectures, exercises, tours, live demonstrations, projects, and exams
Topics:
• 7 AM process categories as per ISO/ASTM 52900
  - Process chain
  - AM system manufacturers
  - Materials
• Post-processing
• AM vs. conventional manufacturing
• Large-scale AM
  - BAAM system demonstration
• Introduction to 3D scanning
• Introduction to AM software
  - Materialise Magics
  - Stratasys Insight
  - GOM Inspect

MECH 5354: Design Studio I
Graduate credits: 3
Duration: 2 weeks
Style: Comprised of 2 hands-on projects
Printers: Desktop & industrial
• Material extrusion
Topics:
• Software
  - Simplify 3D
  - Stratasys Insight
• Introduction to design optimization
MECH 5352: Design for 3D Engineering and Additive Manufacturing
Graduate credits: 3
Duration: 1 semester
Style: Combination of lectures, exercises, tours, live demonstrations, projects, and exams
Topics:
- Design for additive manufacturing
  - General
  - Technology specific
- Software
  - Autodesk Fusion 360
  - Autodesk Netfabb
- Topology optimization
- Shape optimization
- Simulations
  - Static and dynamic stresses
  - Thermal
- STL file repair

MECH 5353: Advanced 3D Engineering and Additive Manufacturing
Graduate credits: 3
Duration: 1 semester
Style: Combination of lectures, exercises, tours, live demonstrations, projects, and exams
Topics:
- Hybrid AM
- ASTM standards, testing, and qualification
- In situ monitoring
- Process parameter development
- Characterization
  - Mechanical
  - Metallurgical
  - Environmental
  - Metrology
- Material production
- Correction of AM part defects
  - General
  - Technology specific

CERTIFICATE PROGRAM WEBSITE:
http://www.utep.edu/engineering/mechanical/academic-programs/professional/professional.html

FOR MORE INFORMATION, PLEASE CONTACT:
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