Undergraduate Research in Additive Manufacturing

The NextManufacturing Undergraduate Research in Additive Manufacturing program provides opportunities for undergraduate students seeking hands-on experience in all areas of additive manufacturing (AM) to work alongside graduate students and postdoctoral researchers and under the guidance of a faculty mentor.

About Additive Manufacturing at CMU and the NextManufacturing Center

Additive Manufacturing (AM) is one of the fastest growing areas in the market today. Industry, government and academic institutions are all working to consider or implement AM in their businesses and are looking to universities like CMU for individuals with the knowledge and experience to make that happen. Faculty affiliated with the NextManufacturing Center are leading research in many areas of AM including, but not limited to process modeling, materials (metals, polymers, biomaterials, composites, electronic materials) and process-property relationships, design, robotics and automation, the use of computer science in AM, policy, workforce development, cybersecurity in AM, and more.

Eligibility

- Open to all undergraduate students in good standing at CMU and faculty mentors conducting research in all areas of AM
- Preference will be given to students who have declared the CIT designated minor in Additive Manufacturing
- Students must independently identify and secure commitment from a faculty mentor. Faculty mentors may include but are not limited to the NextManufacturing Center affiliated faculty listed here.

Application

Applicants are required to submit the following materials.

- Transcript and list of current courses
- Statement of interest: no more than 250 words describing your interest in additive manufacturing
- Proposed research area: no more than 250 words describing the research area in which you will participate
- Semester that support is requested: fall or spring
- Letter of commitment, no more than one page in length, from a faculty mentor who will advise you during your research experience addressing:
 applicant’s planned research including specific skills that will be developed and/or knowledge that will be gained by the student
• name of applicant’s peer mentor (graduate student or postdoc from your research group)
• anticipated number of research hours per week

Program Length and Support

The undergraduate research in AM program is semester-based and will run from the first day of classes to the last day of final exams for each fall and spring semester. Participating students may re-apply for additional support for future semesters.

The number of research hours/week can vary somewhat depending upon project needs, student schedules, academic workloads, etc. Per university policy, full time students are limited to a maximum of 10 hours/week of paid work. Students may conduct research for credit and can register for up to 18 units of research.

- For students not electing to do research for credit, support of $12 per hour (maximum of $1800 during the fall or spring semester) is available
- Up to $1200 of support toward materials, supplies, machining and equipment use (including AM equipment for builds, microscopes, etc)

Program Requirements

Participation in the undergraduate research in AM program includes the following requirements.

- Poster presentation at on-campus events
  - Fall program participants are required to present their work during the poster session at the January NextManufacturing Center Meeting
  - Spring program participants are required to present their work via posters (at a minimum) at the May “Meeting of the Minds” undergraduate research symposium. Students must also agree to have their posters on display at the mid-summer NextManufacturing Center Meeting though they are not required to attend in person

Submission Procedure

Application materials must be submitted using the online form as described below.

- Submission process: application materials must be submitted via the NextM Undergraduate Research in AM program form
- Due date: applications are due no later than 5:00 pm on August 1 for fall applicants and December 1 for spring applicants
- Timeline:
  - Candidates will be notified of a decision by August 15 for fall awards and December 15 for spring awards
  - Formal acceptance must be made in writing within 15 days after award notification has been made