

SUMMER 2023 DRUMS (REU)

Directed Research for Undergrads in Mathematics and Statistics

The Mathematics and Statistics Departments of North Carolina State University invite qualified applicants for a Research Experiences for Undergraduates (REU) program that pairs mathematics and statistics students for interdisciplinary summer research projects. Proposed projects span applications in disease modeling, deep learning, image segmentation, cell structure modeling, and clinical trials; using tools from linear algebra, partial differential equations, probability, sensitivity analysis, parameter inference, optimization, and machine learning. In addition to the technical aspects of the program, students also learn auxiliary skills including mathematical programming, technical writing, applying for graduate school, and preparing scientific presentations.

For the DRUMS program, 12-20 students will work at NCSU for 10 weeks during the 2023 summer and the fall semester. Formal summer activities will be from May 30th – Aug 4th. The work during the fall semester will be conducted online. The time commitment for this part of the program will be approximately 5 hours per week including a 1h weekly remote meeting.

We encourage students of all backgrounds to apply. This includes students who might have nontraditional mathematical and/or statistical training, or who are just beginning their mathematical studies.

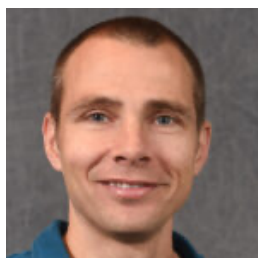
Students will need to submit a curriculum vitae/resume, a transcript (unofficial is fine), and two reference letters. In addition, students should submit a one-page personal statement. One letter should list a local faculty member who is willing to serve as a mentor for the fall semester. The personal statement should include the reason(s) why you wish to participate in the DRUMS REU at NCSU.

Due to restrictions from NSF and NSA, our program is restricted to US citizens and permanent residents, and participants must be undergraduate students at the time of participation.

Students will receive a stipend in the amount of \$6,000 for the 10 weeks, housing, and travel support up to \$500 per student to cover transport to and from NCSU.

Application Deadline: The review of applications begins February 15 and will continue until all slots are filled. Please apply at [mathprograms](http://www.mathprograms.com) (www.mathprograms.com).

Contact Information DRUMS REU (<https://drums.wordpress.ncsu.edu/>)



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Tentative Calendar

Module 1 (Preparation – Online): Online meeting with NCSU faculty mentor 1-2 weeks before the start of the summer module. During this meeting, the group will discuss what to read to prepare for the summer project. Once the teams are finalized, a faculty mentor will reach out to teams (via email) to arrange this meeting.

Module 2 (Summer Research – Hybrid):

Monday (5/29): Arrival at NCSU

Week 1 (5/30-6/2)

- Project presentation
- Safety orientation and welcome reception
- Research seminar: Student teams will present goals for the summer

Week 2-9 (6/5-7/28)

- Work on projects
- Weekly research seminars with student and faculty presentations
- Special topics seminars dedicated to research ethics, applying to graduate school and graduate fellowships, how to give effective presentations, how to write a scientific paper, etc.
- Registration for NCSU summer research symposium

Week 10 (7/31-8/4)

- Complete poster for NCSU summer research symposium
- Complete draft manuscript discriminating results
- Plan fall semester meetings
- NCSU summer research symposium

Saturday (8/5): Departure from NCSU

Module 3 (Continuation – Online): The continuation module starts around September 1st depending on the semester start for students in each team. During the fall semester, the students will have weekly online meetings with the NCSU and local faculty mentors. Local mentors are invited to participate but will mainly serve by facilitating the meetings and helping students adhere to deadlines. Students may submit abstracts to JMM or another conference, and complete and submit their research for publication. Student teams can apply for support for a fall semester face-to-face meeting. This meeting should be scheduled for mid/late October on Fri-Sun or Sat-Mon timeline including a weekday so the NCSU faculty can interact with local faculty and students.