Summer REU programs, 2017
Annotated List by William Yslas Vélez, December 23, 2016

Information about summer REU programs are available at the NSF website:
http://www.nsf.gov/crssprgm/reu/list_result.cfm?unitid=5044

and also on the AMS website:
shttp://www.ams.org/programs/students/undergrad/emp-reu

There are also summer programs in biostatistics. The following website provides information on some of these summer programs.
http://www.nhlbi.nih.gov/research/training/summer-institute-biostatistics-t15

Mathematics majors, who have a background in programming and have taken a little biology or chemistry, can be quite competitive for programs in biostatistics.

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Most of the REU programs in mathematics are for students in their junior year who have completed at least one proof intensive course and at least some upper division course work in algebra, analysis or linear algebra.

I have read over the descriptions of the proposed activities for the REU sites and commented on programs that fit certain needs of undergraduates. In particular, I looked for those programs that students who have not started upper division courses could apply to. Many REU sites do not list the minimum prerequisites or I may have overlooked some so please look carefully at the REU websites. In cases where I could not determine prerequisites, I did not refer to them.

Most of the summer REU programs require some computing background, so I will not list it separately as a requirement. This computing requirement may consist of either programming skills in some language or facility with some computational package.

Some summer programs that do not appear on the NSF website

1. Brown University, ICERM (https://icerm.brown.edu/summerug/2017/)
2. USC Viterbi (http://gapp.usc.edu/sure)

Assist High School students

1. PROMYS (http://promys.org/counselors). This is a program for gifted high school students and math majors apply to be counselors to work with these high school students.
2. John Hopkins Center for Talented Youth (http://cty.jhu.edu/jobs/summer/positions/index.html).

For Secondary Mathematics Education Majors

1. Illinois State University (https://about.illinoisstate.edu/reu/pages/default.aspx) will recruit eight undergraduate mathematics education majors. I AM NOT SURE THIS PROGRAM WILL RUN IN 2017.

For students interested in research on mathematics education

1. North Dakota State University (http://www.ndsu.edu/cider/reu/). Tracing the roots of undergraduate learning through discipline-based education research.

For students who have completed two semesters of calculus

1. Arizona State University (https://mtbi.asu.edu/SummerProgram), Mathematical and Theoretical Biology Institute: The site says that students who have completed at least their sophomore year and have completed two semesters of calculus are eligible to apply.
2. CUNY Herbert H. Lehman College (https://sites.google.com/site/treespaceworkinggroup/reu-program). The description says that students need one year of college-level mathematics or computer science is required. The research deals with mathematical biology.
3. Michigan State University (http://www.lymanbriggs.msu.edu/SURIEM/). Students must have completed two semesters of calculus.
4. St. Mary's College of Maryland (https://mbi.osu.edu/education/summer-undergraduate-program/). They specifically state that they want students in the early part of their university studies.

For students who have completed two semesters of calculus and linear algebra

1. Central Michigan University (https://www.cmich.edu/colleges/cst/math/research/Pages/REU_and_LURE.aspx) Individual research projects may require additional prerequisites.
2. Grand Valley State University (http://www.gvsu.edu/mathreu/)

For students who have completed three semesters of calculus and linear algebra

1. Oregon State University, Corvalis (http://www.unr.edu/math/student-resources/rusis)

For students who have completed three semesters of calculus, differential equations, and linear algebra

1. Kansas State University (http://www.math.ksu.edu/reu/sumar/). The description states that they will accept some students early in their careers.

For most of these summer REU programs, students do not receive undergraduate college credit. However, for some students, obtaining such credit can be useful. There are a few programs that offer such credit.

Programs where students earn undergraduate credit for participating.

1. Boise State (http://math.boisestate.edu/reu/). Three units of undergraduate credit are received.
2. Oregon State University (http://www.math.oregonstate.edu/~math_reu/). Twelve units (quarter system) of academic credit are earned.

Statistics

1. American Statistical Association (https://drive.google.com/file/d/0B8hZWQ0xl_Ckc29XZTRRSDVZQzg/view). The site does not state prerequisites. I think that a well-prepared sophomore would be competitive.
2. Lafeyette College (https://math.lafayette.edu/opportunities/reu/). One of the three projects deals with betting strategies. This project necessitates a background in probability theory and programming.

Industrial Mathematics

1. NC State University (https://www.math.ncsu.edu/REU/index.php).

International Opportunities or Programs Open to International Students

Several programs now state that international students may apply, though no funding is available for them since NSF restricts funding to U.S. citizens and permanent residents. International students who have the funds to enroll in summer classes at their undergraduate institutions might instead use those funds to participate in a summer research program. The following programs have funding available for a limited number for international students.

1. DIMACS (http://dimacs.rutgers.edu/REU/). The DIMACS/DIMATIA REU program offers an opportunity for students to interact with representatives from our sister site DIMATIA at Charles University. Five or six students from DIMATIA will spend the summer at DIMACS conducting research. Three to five DIMACS students are selected to spend the final week and a half of the program at DIMATIA at Charles University in Prague, Czech Republic. Students selected to participate in this program generally exhibit strong interests in combinatorics.
2. Arizona State University (https://mtbi.asu.edu/SummerProgram), Mathematical and Theoretical Biology Institute. International students are accepted, but on a *very* limited basis.
3. University of Minnesota, Minneapolis (http://www.math.umn.edu/~reiner/REU/REU.html). The website states that non-citizens will receive a stipend of $4000, from which room and board expenses for dormitory and meal plan are deducted.
4. Cold Spring Harbor Laboratory (http://www.cshl.edu/education/urp). Of course a background in the biological sciences is required. Students of any nationality are eligible for the program.
5. ICERM at Brown University Brown University, ICERM (https://icerm.brown.edu/summerug/2017/). Funding is available for a limited number of students who are not US citizens or permanent residents.

6. John Hopkins Center for Talented Youth has programs in other countries. http://cty.jhu.edu/jobs/summer/sites_dates.html

Mathematics and the Biological Sciences

1. Florida International University (http://research.fit.edu/reu-biomath/) The research projects are at the intersection of mathematics and biology.
2. Georgetown University, Department of Biology. Environmental Science and Policy. http://biology.georgetown.edu/REU
3. Indiana University-Purdue University Indianapolis (http://math.iupui.edu/reu). Students will work with faculty from the mathematics and physics department. The topics for 2017 are focused on biological processes.
4. James Madison University (http://www.jmu.edu/mathstat/reu/). One of the two projects for the summer deals with the propagation of disease.
5. Ohio State University (https://mbi.osu.edu/education/summer-undergraduate-program/).
6. Texas A&M University (http://www.math.tamu.edu/REU/). One of the three projects is in algebraic methods in computational biology.
7. University of Connecticut Health Center (http://cqm.uchc.edu/biomath/). Modeling and Simulation in Systems Biology
8. University of Wisconsin-La Crosse (https://www.uwlax.edu/mathematics/activities/reu/). Mathematical models in ecology.
9. Cold Spring Harbor Laboratory (http://www.cshl.edu/education/urp). Of course a background in the biological sciences is required.
10. Dordt College (http://www.dordt.edu/academics/programs/math/statgen/). Statistical Genetics
11. University of Pittsburgh, School of Medicine (http://www.tecbioreu.pitt.edu/). Computational Biology
12. National Institute for Mathematical and Biological Synthesis (http://www.nimbios.org/sre/).
13. CUNY Herbert H. Lehman College (https://sites.google.com/site/treespaceworkinggroup/reu-program). The description says that students need one year of college-level mathematics or computer science is required. The research deals with mathematical biology.
14. Biostatistics and Medical Informatics, University of Wisconsin, Madison (https://biostat.wisc.edu/content/summer-research) Biomedical data Science.

Programs for Women

1. Institute for Advanced Study Program for Women (http://www.math.ias.edu/wam/2017)

Programs with a focus on under-represented students

Many of the summer research programs indicate that they strongly encourage minority and female students to apply. The following programs specifically target minority students.

1. Committee on Institutional Cooperation (http://www.cic.net/Home/Students/SROP/Home.aspx)
2. MSRI-UP (http://www.msri.org/web/msri/education/for-undergraduates/msri-up)

Almost all REU programs are for students who are undergraduates. I did find some for students who graduate in May 2017.

Programs where graduates can apply

1. Park City Mathematics Institute (https://pcmi.ias.edu/program-index/2017). The topic for summer 2017 will be Random Matrices and the prerequisites are listed as advanced calculus and probability theory.

Many of the national labs have internship programs. These internship programs can be for the summer or for a semester. As examples look at the following.

National labs and Government Agencies

1. Argonne National Labs (http://www.anl.gov/education/undergraduates/internship-opportunities).
2. Lincoln Laboratory, MIT (http://www.ll.mit.edu/college/summerprogram.html)
3. US Department of Energy (http://science.energy.gov/wdts/suli/how-to-apply/)
4. NIST (http://www.nist.gov/surfgaithersburg/resprograms.cfm)
5. National Institute for Mathematical Biological Synthesis (http://www.nimbios.org/sre/)
6. Domestic Nuclear Detection Office Summer Internship Program, Homeland Security (http://orau.gov/dndo/)