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Math Undergraduate Research Information Session

October 30, 2026
WWH 109

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Math Undergraduate Research Information Session

Your first step into research

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October 30, 2026 WWH 109

Today's questions

1. What counts as research?
2. Which pathway fits your interests and preparation?
3. How do you find and contact a mentor?
4. Which opportunities should you investigate now?
5. What does a good first research experience involve?

Program details are a dated snapshot. Follow the linked official pages before applying.

What is research?

Research investigates a question whose answer is not already known to the investigator.

- Define a question; choose a method; examine evidence.
- Revise the question or method when an approach fails.
- Explain what the result establishes and what remains uncertain.

Research describes the work. An internship, course, assistantship, or fellowship can provide the setting.

A first project can be small

Example: numerical solutions of an ordinary differential equation

1. Reproduce a known solution using Euler's method.
2. Compare errors as the step size decreases.
3. Investigate a parameter regime where the method behaves poorly.
4. Formulate and test a narrower question with your mentor.

Reproduction is preparation. A new question, careful comparison, or explanation can develop from it.

Illustrative project, not a claim of novelty or a guaranteed publication.

Research pathways

Pathway	What it offers
Independent study	Credit; a reading project or supervised investigation
NYU funding	Support for a project or research training
University summer programs	Structured research with faculty and peers
National laboratories	Research connected to scientific facilities and missions
Corporate research	Research questions connected to a company's priorities

These categories overlap. Check the actual project, mentorship, and funding.

Preparation depends on the project

Project type	Examples of useful preparation
Proof-based mathematics	Proof writing; relevant analysis, algebra, or discrete math
Modeling and simulation	Linear algebra; differential equations; numerical methods
Data and computation	Probability/statistics; Python; reproducible calculations
Interdisciplinary work	The domain's concepts, methods, and data practices

Ask the mentor which skills are essential now and which you can learn during the project.

NYU MATH: SURE Program

- Aimed at juniors and advanced sophomores in undergraduate mathematics.
- Selection considers grades, coursework, and fit with the faculty mentor.
- Secure a mentor; develop a project description and research timeline.
- Summer 2027: applications open late January; deadline early March.

AM-SURE is indefinitely canceled; its prospective applicants are directed to SURE.

Source: NYU Mathematics: SURE Checked October 29, 2026

NYU: DURF and early research training

DURF Research Grants: University-wide

- Administered by the Dean's office.
- Up to $1,250 per grant for justified project expenses.
- Current CAS first-years, sophomores, juniors, and first-term seniors.
- Application includes a proposal, budget, and mentor recommendation.

FAST Grants: research-skill training for first- and second-year CAS students.

The portal's listed October 28, 2026 deadline has passed. Check for the next cycle; do not assume housing is included.

Source: NYU: DURF Research Grants Checked October 29, 2026

Source: NYU: FAST Grants Checked October 29, 2026

Independent study and honors

- A reading course can develop into a research project.
- Need a mentor.
- Agree on the scope, meeting schedule, credits, and final deliverable.
- NYU mathematics independent study offers 2–4 credits.
- For the honors research component via independent study, the department specifies two semesters and an approved final deliverable.
- You need to register for it, like a regular course.

Confirm the route that applies to your degree with the honors advisor.

Source: NYU Mathematics: Independent Study Checked October 29, 2026

NSF Research Experiences for Undergraduates

- Apply to individual REU sites, not to NSF centrally.
- NSF-supported participants must be U.S. citizens, U.S. nationals, or permanent residents.
- Participants receive stipends; many sites also assist with housing, meals, or travel.
- Most summer deadlines fall in January–March; each site sets its rules.

Search both the REU directory and NSF's ETAP system.

Source: NSF: REU information for students Checked October 29, 2026

Academic fellowships beyond NYU

SIAM–Simons Undergraduate Summer Research Program

- Applied mathematics and computational science.
- U.S. college/university enrollment; undergraduate in September 2027.
- U.S. citizens/permanent residents; applications expected in late 2026.

Caltech SURF

- Ten weeks; mentor agreement and a research proposal required.
- Visiting students eligible; minimum GPA 2.5/4.0.
- 2027 applications open November 1; deadline February 22.

Source: SIAM–Simons program Checked October 29, 2026

Source: Caltech SURF: Application Information Checked October 29, 2026

National laboratories and research institutes

DOE SULI

- Research at Department of Energy laboratories.
- U.S. citizens/permanent residents; GPA at least 3.0; additional coursework and enrollment criteria.
- Summer 2027 deadline: January 6, 2027, 5 p.m. ET.

Flatiron Institute, New York City

- Computational mathematics, neuroscience, biology, astrophysics, and quantum physics.
- Undergraduate research opportunities are listed; check each opening for eligibility and dates.

Source: DOE SULI Checked October 29, 2026

Source: DOE SULI: Eligibility Checked October 29, 2026

Source: Simons Foundation: Undergraduate Opportunities Checked October 29, 2026

Corporate research and sponsored research

Google Student Researcher

- BS/MS opportunities include applied math, statistics, operations research, and related technical fields.
- One application can be considered across relevant Google teams, including DeepMind.
- Current Fall 2026 U.S. posting: anticipated close November 27; may close earlier.

Amazon SURE

- Amazon-sponsored research at partner universities.
- Host universities set application requirements; verify the current cycle.

Source: Google Careers: Student Researcher, BS/MS, Fall 2026 Checked October 29, 2026

Source: Amazon Science: SURE Checked October 29, 2026

More options, with important restrictions

Microsoft Undergraduate Research Internship

- Twelve weeks; rising juniors/seniors in computing or related majors.
- Published summer 2027 deadline: October 5, 2026, already passed.

Amgen Scholars: U.S. academic host programs

- Science and biotechnology; foundation-funded university research.
- U.S. citizens/permanent residents; eligible sophomores through non-graduating seniors; GPA at least 3.2.
- Interest in a PhD or MD–PhD; deadline February 1, 2027.

Source: Microsoft Research: Undergraduate Internship Checked October 29, 2026

Source: Amgen Scholars: U.S. Program Checked October 29, 2026

International students: check eligibility early

- NSF-funded REUs, SULI, and the U.S. Amgen Scholars program have citizenship/residency restrictions.
- Caltech campus SURF accepts eligible international students; JPL placements have separate restrictions.
- Company roles and institute internships have posting-specific requirements.
- Discuss any required work authorization with NYU's international student advisors before committing.

An opportunity's research fit does not establish eligibility or work authorization.

Source: Caltech SURF: International Student Eligibility Checked October 29, 2026

Source: NSF REU Eligibility Checked October 29, 2026

Finding mentors and projects

1. Start with a topic you like, or an instructor whose approach you value.
2. Make a shortlist of 5–10 potential mentors.
3. Read their research descriptions and one recent abstract.
4. Identify a specific connection to your preparation or interests.
5. Ask whether they supervise undergraduates and have suitable projects.

Look across Courant (Math, CS, CDS), Tandon, Langone, and other departments. Availability and program approval vary.

Source: Courant Faculty Directory Checked October 29, 2026

A first email to a mentor

Subject: Undergraduate research inquiry: [specific topic]

Dear Professor [Name],

I am a [year/major] student interested in your work on [specific topic]. Your [paper/project/course] caught my attention because [specific reason].

I have completed [relevant courses] and have experience with [relevant skill or project]. I can commit approximately [hours/week] during [term].

Would you be available for a brief meeting to discuss whether there is a suitable reading or research project? I have attached my résumé.

Best,

[Name]

Personalize each email. Do not cc a group of professors.

Expectations and good mentorship

- Agree on weekly time, meeting frequency, and how to request help.
- Keep notes on questions, attempted approaches, and results.
- Bring specific questions and updates to meetings.
- Define a feasible first milestone and a final deliverable.

Persistence matters. Continuous availability is not a requirement for good research.

Reliable and responsible research

- Distinguish reproduced results from new findings.
- Preserve sources, data provenance, code, and parameter choices.
- Report failed approaches and limitations honestly.
- Follow applicable human-subjects, privacy, and data-access rules.
- Ask the mentor about AI-tool policies; verify any generated claims, code, and references.

For example, Caltech SURF requires applicants to consult program or mentor rules on generative AI.

Source: Caltech SURF: Application and AI Policy Checked October 29, 2026

Application calendar

When	Action or published milestone
Now	Shortlist mentors; prepare CV/transcript; ask recommenders
November 1	Caltech SURF application opens
Late 2026	SIAM–Simons applications expected to open
January 6, 2027	SULI deadline, 5 p.m. ET
Late January	NYU SURE application opens
February 1	U.S. Amgen Scholars deadline
February 22	Caltech SURF deadline
Early March	NYU SURE deadline; exact date pending

Dates are from the linked program pages on earlier slides, checked October 29, 2026. Verify again before applying.

Your next steps

1. Choose programs and verify your eligibility.
2. Identify potential mentors and contact them individually.
3. Prepare your CV, transcript, and a short research-interest paragraph.
4. Record deadlines and recommendation requirements in one place.

Questions or help with a mentor email?
tsm4@nyu.edu

Enjoy the investigation, including the parts that do not work at first.

Appendix: eligibility at a glance

Program	Citizenship/residency	Other key filter
NSF REU	U.S. citizen/national/PR	Site-specific criteria
SIAM–Simons	U.S. citizen/PR	U.S. institution; continuing undergraduate
SULI	U.S. citizen/PR	GPA $\geq$ 3.0; coursework/enrollment rules
Amgen U.S.	U.S. citizen/PR	GPA $\geq$ 3.2; eligible class years
Caltech SURF	International eligible on campus	Visiting GPA $\geq$ 2.5; mentor agreement
Google/Flatiron	Check each posting	Degree, skills, location, authorization

PR = permanent resident. Summary only; full official requirements control.

Appendix: evaluating an opportunity

- Who is the mentor, and how often will you meet?
- What is the research question and your contribution?
- What are the pay, housing, travel, and other costs?
- What preparation and time commitment are required?
- What will you produce: a report, proof, code, poster, or talk?
- Are the host, application route, and funding arrangements verifiable?

A company name or a general careers page is not enough to establish a research opportunity.

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