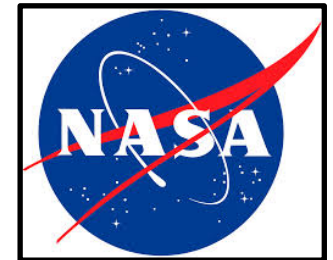
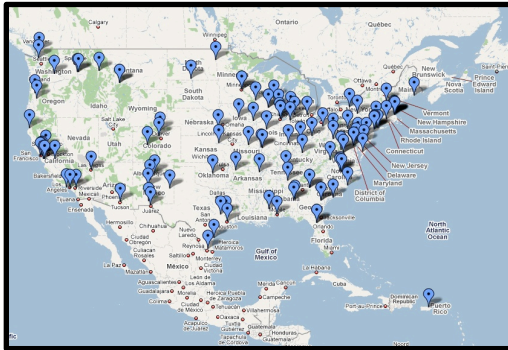




# Summer Research Internships

*What to know, how to apply*

*Prepared by: Eddie Schwieterman*



# What is an REU?

- Research Experience for Undergraduates
- Funded by the NSF (National Science Foundation)
- Encompasses many fields: Astronomy, Physics, Earth Science, Biology, Defense, Oceanography, Math, etc.

# What is an REU?

- A summer (8-10 weeks) of guided research
- Stipends of ~\$4,000-\$5,000
- Travel & Housing Expenses
- Usually cohorts of 5-10 students
- Runs from ~June to ~August
- Opportunities to present research at national conferences
- Potential to be author or co-author on submission to peer-reviewed journal

www.nsf.gov/crssprgm/reu/reu\_search.jsp

astronomy nsf reu

Most Visited University of Washi... Google Calendar Teaching social media and... Inbox (3) - skept... Import to Mendeley science fiction terragen

**NSF** National Science Foundation  
WHERE DISCOVERIES BEGIN

QUICK LINKS

SEARCH

HOME FUNDING AWARDS DISCOVERIES NEWS PUBLICATIONS STATISTICS ABOUT NSF FASTLANE

**Research Experiences for Undergraduates (REU)**

REU Program Overview  
Program Solicitation  
For Students

- Search for an REU Site

For Faculty

**Search for an REU Site**

Email Print Share

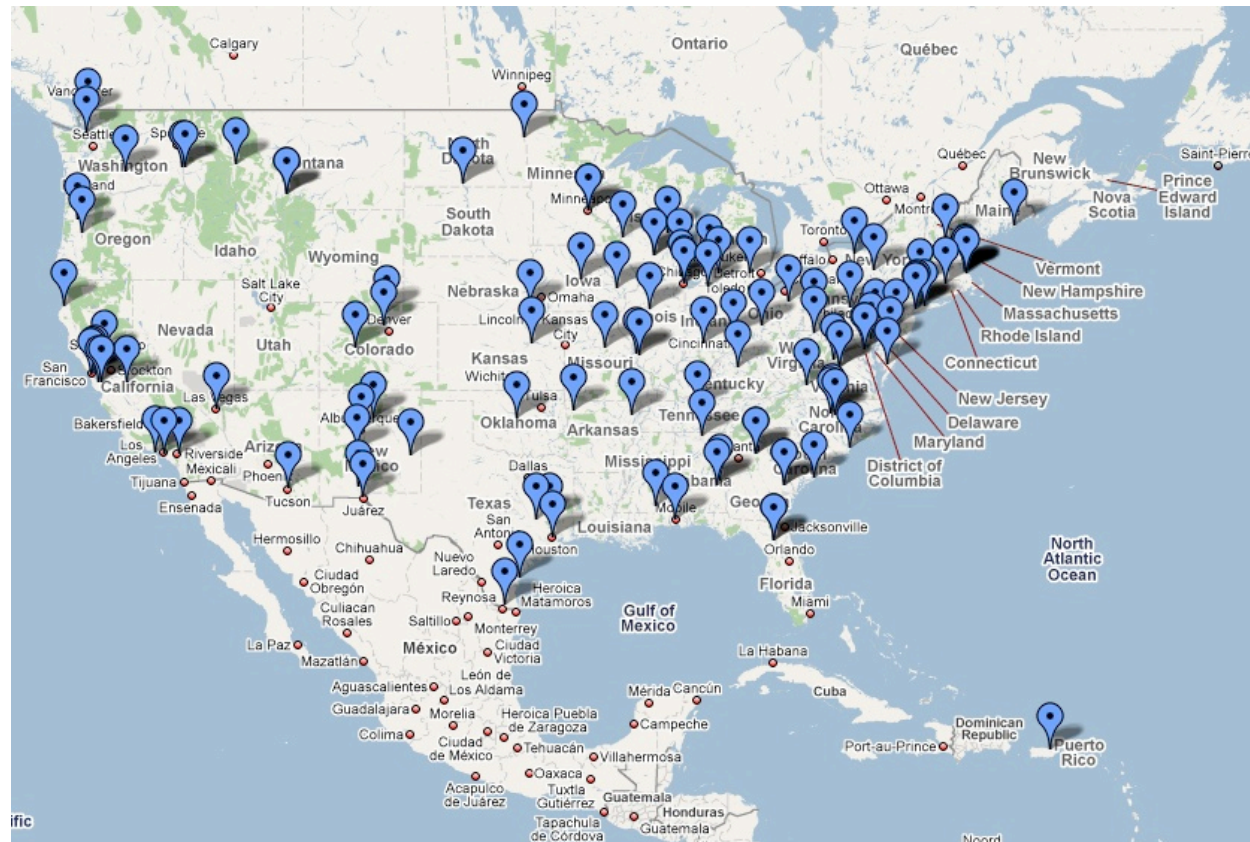
[Astronomical Sciences](#)  
[Atmospheric and Geospace Sciences](#)  
[Biological Sciences](#)  
[Chemistry](#)  
[Computer and Information Science and Engineering](#)  
[Cyberinfrastructure](#)  
[Department of Defense \(DoD\)](#)  
[Earth Sciences](#)  
[Education and Human Resources](#)  
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[Ocean Sciences](#)  
[Physics](#)  
[Polar Programs](#)  
[Small Business Innovation Research \(SBIR\)](#)  
[Social, Behavioral, and Economic Sciences](#)

**SEARCH BY RESEARCH AREAS/KEYWORDS:**

Enter full or partial research areas/keywords separated by commas:  
(e.g. geophysics, ecology, nano, robot, ethics)

[http://www.nsf.gov/crssprgm/reu/reu\\_search.jsp](http://www.nsf.gov/crssprgm/reu/reu_search.jsp)

# Where are REUs?



**Everywhere!**

# Why do an REU?

- Research Experience
- CV/Resume Building
- Summer Job (\$\$\$)
- Chance to meet new people (networking!)
- Opportunity to travel
- Letter writers and references outside your institution

# Usual Application Requirements

- Transcripts
- CV/Resume (or application questionnaire)
- Letters of Recommendation (2-3)
- **Personal Statement**
  - Main essay
  - Programming competencies



# Minimum Qualifications

- Vary somewhat
- Research experience: depends on the program – most like some, many do not like too much
- GPA  $\geq 3.0$
- Math: algebra, geometry, trig, calculus knowledge often assumed
- Freshman/sophomore physics
- Some *programming*



# Application Deadlines & Info

- Applications open in December
- Usually due by **February 1**
- Highly competitive
- Apply to at least 3-5 programs (w/ a range of competitiveness)
- Don't be afraid to email your questions to the program coordinator!

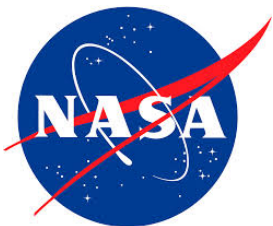
# Gotcha for UW Students

- Most program start in early June
- Some have later start times
- Many will accommodate students on quarter system, but some do not

# Alternatives to REUs

- NASA Internships (see next slides)
- UWSURP ( full & part time options)
- Continue with Pre-MAP mentors or other UW astronomy folks
- ASTR 481 Observing (prerequisite: ASTR 480)
- Other UW Internships

# NASA Centers



# OSSI One Stop Shopping Initiative NIFS

Recruiting NASA Interns, Fellows and Scholars

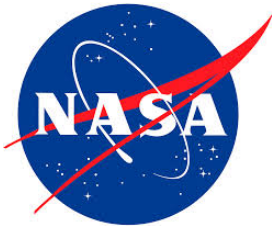
[Home](#) [Search Opportunities](#) [Log In/Register](#)

## Student Search for Opportunity

Your search produced the following results. Click on the opportunity's title to view the detailed information. Use the sorting icons ( ▲ and ▼ ) to sort the list in ascending or descending order.

[Search Again](#)

Action	Opportunity Title	Opportunity Type	Center/Location	Education Level	Session	Possible Disciplines
<a href="#">View</a>	Virtual Acoustic Simulation for Community Noise	Internship	LARC	Freshman Junior Senior Sophomore	Summer 2015	Engineering - Aerospace Eng. Engineering - Computer Eng. Engineering - Electrical Eng. Engineering - Mechanical Eng. Science - Physics Engineering - General
<a href="#">View</a>	CRESST: Short gamma-ray bursts in galaxies clusters	Internship	GSFC	Freshman Junior Master's Senior Sophomore	Summer 2015	Science - Astronomy
<a href="#">View</a>	Balloon Experimental Twin Telescope for Infrared Interferometry (BETTII)	Internship	GSFC	Freshman Junior Senior Sophomore	Summer 2015	Engineering - Aerospace Eng. Engineering - Computer Eng. Engineering - Electrical Eng. Engineering - Mechanical Eng. Science - Astronomy Science - Physical Science Science - Physics Technology - Software Eng. Technology - Systems Eng./Design Technology - Comp Science Engineering - General
<a href="#">View</a>	Planetary Protection, Contamination, and Thermal Coatings	Internship	GSFC	Freshman Junior Sophomore	Summer 2015	Engineering - Aerospace Eng. Engineering - Chemical Eng. Engineering - Materials Eng. Engineering - Mechanical Eng. Engineering - Optical Eng. Engineering - Polymer Eng. Science - Chemistry Science - Physics
<a href="#">View</a>	Designing Deep Space Cubesat Mission Concepts with a Science			Freshman High School - Junior High School - Senior		Engineering - Aerospace Eng. Engineering - Computer Eng. Engineering - Electrical Eng. Engineering - Instrumentation Eng. Engineering - Integrated Eng. Engineering - Mechanical Eng.



<http://goo.gl/VJIJpB> → NASA Internship Home Page

# General Application Tips

- Have an application checklist
- Track everything in a spreadsheet
- Send transcripts early
- Ask your letter writers early
- Write general personal statement first and then tailor to individual program applications

# Who do you ask for a letter?

- Research mentors are the best
- Professors for upper level classes
- Academic advisors
- No family or friends



# Reference Etiquette

- **Ask** politely
- (but don't be afraid to ask)!
- If there is any uncertainty, ask if they will write you a *positive* letter
- Give them **at least** 2 weeks notice
- Try to balance between research & academic references

# Personal Statement Writing

- Start with some good examples
- Write about what makes you qualified
- Do NOT write about “why I love astronomy”
- Include your personal motivation for applying to the internship
  - Specific details about the program and why it appeals to you

# ASTR 581

Manastash Ridge Observatory



- *“Theory and practice of obtaining optical data at a telescope. Preparation, obtaining data with a CCD on a telescope, and subsequent data analysis for completion of a research project. Prerequisite: ASTR 480”*
- Real observing projects at MRO
- Astronomy undergraduate advisor recommends one summer REU/internship and one summer registered for ASTR 481

# List of REU/internship opportunities

To accompany the lecture I have compiled a (partial) list of resources for finding summer research opportunities. Note that REU applications usually open in **December** and are due by **February 1** (with notification by **April 15**). Other programs vary with deadlines. As always, you can email Brett or me or come to our office hours if you have any questions about the application process. Also, your mentors are a great resource for advice.

See following slides...

# Nationwide REU/Summer Internships

## **NSF-REU opportunities in Astronomy:**

[http://www.nsf.gov/crssprgm/reu/list\\_result.jsp?unitid=5045](http://www.nsf.gov/crssprgm/reu/list_result.jsp?unitid=5045)

## **NSF-REU opportunities in Physics:**

[http://www.nsf.gov/crssprgm/reu/list\\_result.jsp?unitid=69](http://www.nsf.gov/crssprgm/reu/list_result.jsp?unitid=69)

## **Other NSF-REU opportunities:**

[http://www.nsf.gov/crssprgm/reu/reu\\_search.jsp](http://www.nsf.gov/crssprgm/reu/reu_search.jsp)

## **NASA Internships (available all year, including the summer):**

<http://goo.gl/VJIJpB>

## **American Astronomical Society (AAS) list of summer opportunities:**

<http://aas.org/jobs/summer-opportunities>

# Alternatives at UW

**Continue working with your Pre-MAP mentors or another astronomy professor/post-doc/grad student. Find people here:**

<http://www.astro.washington.edu/people.php>

**University of Washington Space Grant Undergraduate Research Program:**

[http://www.waspacegrant.org/for\\_students/student\\_internships/wsgc\\_internships/SURP\\_for\\_students.html](http://www.waspacegrant.org/for_students/student_internships/wsgc_internships/SURP_for_students.html)

**Complete listing of summer research programs at UW in all fields:**

<http://www.washington.edu/research/urp/students/find/summeratUW.html>

**Take the summer observing course ASTR 481 (prerequisite: ASTR 480)**

<http://www.astro.washington.edu/users/laws/classpages/a481/>

# Other Advice

**Astro-bites article on applying for REUs:**

<http://astrobites.org/2013/01/05/so-you-want-to-apply-for-an-reu-heres-how/>