REU Info Session 2019

Kenneth DeMason

University of Florida

kdemason@ufl.edu

November 3, 2019
Outline

1. Info
2. Applying
3. Advice
Outline

1. Info
   - What is an REU?
   - REU Advantages
   - REU Disadvantages
   - Types of REUs

2. Applying

3. Advice
What is an REU?

- Eight week long research programs at another university
- Several different types. Can be large (~ 50 participants), small (~ 9 participants), project based, etc.
- Usually done during summers after Freshman, Sophomore, and Junior years.
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- Usually done during summers after Freshman, Sophomore, and Junior years.
REU Advantages

- Be exposed to different areas of math
- Develop a feel for mathematical research
- Gain experience giving and attending talks
- Great resume builder
- Get a paid! $\sim$3000
- MAKE CONNECTIONS
REU Advantages

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- Great resume builder
- Get a paid! $3000 (approximately)
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REU Advantages

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- Develop a feel for mathematical research
- Gain experience giving and attending talks
- Great resume builder
- Get a paid! $\sim$3000

**MAKE CONNECTIONS**
EVERYONE here should apply!
REU Advantages

- Applications are FREE! Apply to as many as you want.
- If you are accepted, great! We’ve discussed the advantages.
- Even if you are not accepted, applying will help develop your writing ability. Reuse and refine your applications!
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Sample 1, Jan 2019

This past August, I began my first mathematics research project on Minimal surfaces, of which I have some minor results relating to the catenoid and, independently, variations in surface area under general vector fields. I have since transitioned to investigating Delaunay surfaces under the Ricci Flow. To prepare myself for these projects, I started reading from do Carmo and Montiel & Ros, am completing the graduate analysis sequence, and am taking a course in Curves and Surfaces.
Sample Writng

Sample 2, Nov 2019

In Fall 2018, I began my first math research project on minimal surfaces. I investigated the catenoid, the only minimal surface of revolution. After finding a simple proof of this property, I discovered another property unique to the catenoid not found in the literature. Then, I extended a formula from normal vector fields to general smooth ones. I enjoyed these topics because they were questions I proposed and was later able to solve, and they provided an important foundation for working with surfaces. These projects motivated me to complete the graduate analysis sequence, take a special topics course in curves and surfaces, and study from texts by do Carmo and Montiel & Ros on my own.
REU Disadvantages

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Kenneth DeMason (UF)
Centralized vs. Decentralized

- Centralized: Focus on a particular project. When applying, you’ll be applying to work on this specific project. Most centralized REUs offer multiply projects (2-4).

- Decentralized: Work with a professor/graduate student on a personalized project. More broad, but rarer.
Types of REUs

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- **Decentralized:** Work with a professor/graduate student on a personalized project. More broad, but rarer.
Outline

1. Info

2. Applying
   - Overview
   - The Parts of an Application
   - Timeline
   - Choosing REUs
   - Decisions

3. Advice
Your New Best Friend

https://www.mathprograms.org/db
What is mathprograms.org?

- Where you’ll apply to *most* REUs, upload documentation, manage letter writers,...
- Find information about available REUs
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Let’s take a look at it!
Some REUs have you apply by other means

- https://www.nsfreu.org/
- Via email
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Main components:

- Coversheet
- Cover Letter
- CV
- Transcript
- Letters of Recommendation
- Some may require additional info
The Parts of an Application

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The Parts of an Application

Coversheet (personal info)

- Name, address
- Current institution
- Manage references
The Parts of an Application

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The Parts of an Application

Cover Letter

- Not to be confused with the coversheet!
- Sometimes referred to as a personal statement, research statement...
- Your intellectual autobiography: What are you interested in, why, how did you get there, where do you plan to go from here?
- How will this REU help advance your career?
- One of two places to sell yourself! Make the most of it!
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CV

- Usually optional, but best to put it anyways; it’s the second place to sell yourself
- Research/Research interests
- Extracurricular (Mathematical outreach, teaching, etc.)
- Coursework overview (BRIEF descriptions, date taken, grade received, book used)
- Let’s look at a sample
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With that said, UF’s is...less than ideal

I would suggest purchasing an official transcript ($6), scanning it, and uploading that
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Letters of Recommendation

- Usually need two
- Start cultivating relationships with your professors NOW
- Go to office hours, ask questions (even if you know the answer!), talk to them about their research, etc.
- Try to get one academic letter (a professor who has taught you several times) and one research letter (an advisor you have worked with)
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Timeline

- Generally choose REUs (Nov.- Early Dec.)
- Specifically choose REUs (Dec. - Early Jan.)
- Draft applications; go through several iterations (Mid-late Jan.)
- Final drafts complete (Early Feb.)
- Deadlines (Early Feb. - mid Feb.)
- Decisions (Early March - mid April)
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- (Generally) Determine what size you want, what kind you want, etc.
- (Specifically) Then, browse mathprograms.org and other sites to try and find REUs.
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### Sample REU List

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<thead>
<tr>
<th>REU</th>
<th>Type</th>
<th>Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMALL</td>
<td>C</td>
<td>Number Theory</td>
</tr>
<tr>
<td>UMich</td>
<td>D</td>
<td>N/A</td>
</tr>
<tr>
<td>UCSB</td>
<td>C</td>
<td>Linear Algebra</td>
</tr>
<tr>
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</tr>
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Decisions

- The unofficial deadline for committing to an REU is March 8th or so; you’ll know more or less all the REUs you’ve been accepted to by then.
- If you have not heard back, don’t hesitate to send an email to the REU coordinator!
- If by late March you haven’t heard back, you probably were not accepted
- There are still some REUs I haven’t heard back from...
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Acceptances are rare. Apply to as many as you can!

Hundreds of applicants for maybe 15 spots.

Apply to REUs even if they do not line up with your field of interest. You might get in!
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Outline

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2. Applying

3. Advice
   - Choosing an REU
   - Applications
   - Decisions
   - Attending
   - Resources
Choosing an REU:

- Work your way up to top REUs
  - Freshman, Sophomores, apply to some of the “low level” REUs (you’ll be able to tell based on the university, kinds of research projects, etc.).
  - Some will outright say that they want freshman! E.g., UChicago’s apprentice program
  - Put these REUs in your resume; will help for applying to top REUs as a junior
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Applications:

- Writing applications takes WAY longer than you think! Don’t underestimate it.
- Took me about a month to complete 15 (while reusing many)
- Don’t be afraid to ask for help (peers, advisors, etc.)
- Have a friend who’s good at English/grammar? Get them to read over your app!
- Make a table. List your REUs, how many LoR you need, if you need a CV, how long the personal statement is, deadline, etc.
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Decisions:

- Don’t take rejections to heart. REUs are highly competitive and very hit or miss.
- A lot of luck is involved
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Attending:

- There will be rough times. Research is hard. Don’t be afraid to ask for help.

Have fun! You’re spending your summer at another university. Explore, be adventurous!
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Resources

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https://www.nsf.gov/crssprgm/reu/list_result.jsp?unitid=5044

http://www.ams.org/programs/students/emp-reu

https://sites.google.com/view/mathreu

https://web.math.princeton.edu/~lji/reus/

Questions?