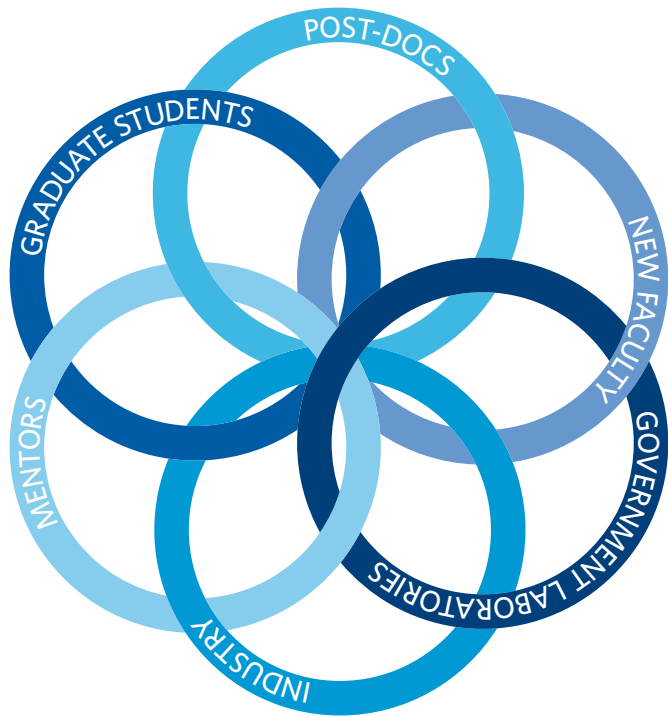


EARLY CAREER

The **Early Career Section** is a new community project, featured here in the *Notices*. This compilation of articles will provide information and suggestions for graduate students, job seekers, junior academics of all types, and those who mentor them. Angela Gibney serves as the editor of this section. This month's theme is Plan for a productive summer. Next month's theme will be Getting ready for the academic job market and applying for grants.

Summer Break: Go Explore the Opportunities

Natalie Hobson



In graduate school, with the stress of qualifying exams, advisor and personal research expectations, thesis writing, and job applications, it can be tempting to save your “break” to catch up on work that is piling up. But the most productive way to spend your time is at summer schools, conferences, workshops, and teaching opportunities that are available to graduate students in the summer. These activities can deepen your connection to the mathematics community, diversify your professional experiences, significantly strengthen your CV, and recharge you in ways you might not expect.

Summer Schools

Summer schools often take place at research institutes. For example, during the summer, the Mathematical Sciences Research Institute (MSRI) offers a variety of two-week programs focused on areas related to the current mathematical theme at MSRI. In some of these, participants attend lectures and participate in breakout sessions. This affords the opportunity to meet other graduate students, and to learn more about a particular research topic in an immersed environment designed for graduate students. At an MSRI summer school, student participants have lunch and snacks with visiting professors and stay in the dorms at Berkeley. This builds community between students and researchers.

The AMS also offers summer learning opportunities through its Mathematics Research Communities (MRCs). These include intensive week-long programs. The MRCs are typically hosted in a nice resort area (for Summer 2019, the MRC will be meeting in West Greenwich, Rhode Island). The structure of the MRCs typically begins with some initial introduction to the problems developed by the research leads, and then students break into groups. For the remainder of the week, these groups tackle research problems. Many MRCs result in journal publications. The

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topic of MRCs varies from summer to summer. Check out the AMS website for what will be offered this summer.

Another program I attended as a graduate student was the Women in Mathematics program at the Institute of Advanced Study (IAS) in Princeton. This is an annual two-week school aimed at supporting women in math. The participants include women from undergraduate to emerita. Each year there is a different mathematical theme. Participants get to stay near Princeton and during the weekend, make trips to New York City, Philadelphia, and tour the Princeton area. In this program, I had the opportunity to engage in many informal conversations with others who have similar struggles in mathematics. Opportunities such as this can help normalize your experience and encourage persistence and success. The friends I made with the other researchers and students there continue to be my closest connections in the math community.

There are many other summer schools and programs available, and one can find out about them by talking to people and looking online. Talk to the graduate coordinator or department chair at your school and ask what programs they are aware of. Often these people get the first emails advertising summer opportunities. You can find postings for summer schools on the homepages of many of the professional organization websites (e.g., AMS, MAA, SACNAS, SIAM, etc.) and advertised on posters around your department.

Conferences and Workshops

Attending conferences and workshops can be a great opportunity to introduce yourself to people in your area and learn more about a particular field. Look for conferences that are happening in other states or countries. Visiting a new location can help you connect with researchers in a region you would otherwise not know. While attending conferences, always make an effort to meet new people. Mealtime and breaks at conferences are often great times to introduce yourself to people you don't know. Having flexibility with your schedule in the summer months can give you the opportunity to start collaborations.

To find out about conferences, talk to your advisor about which ones she or he is attending (try to go along with them!). Some researchers have lists of conferences in their area on their websites (you can often Google and find these lists). Attend nearby AMS and MAA meetings, which are listed on the AMS and MAA websites; often departments will help students pay for their trips.

Teaching and Outreach

There are a number of outreach programs offered in the summer for younger students. Graduate students are often able to lead and assist in the activities and education of the participants. Some include weekly math circles for elementary school students, residential math camps for middle or high school students, or research experiences

for undergraduates. Some programs are residential (such as REUs and summer math camps). Assistants typically live with the participants, sometimes acting as teacher or research assistant during the day and counselors in the evenings. Such an opportunity can provide you with the experience in mentoring younger students in academics and life. These can be very rewarding experiences.

Talk to people to find out about outreach opportunities! Ask your contacts if they know of research assistantships or teaching assistantships in their REUs. Write to the people you meet at conferences and workshops and see if they know of any openings.

Like anything else worth doing, summer programs can be competitive, so if you aren't selected to participate the first time, keep the connections you made in the application process, be persistent, and try again another year. It took me three attempts to become the graduate assistant at MSRI-UP, and it was certainly worth the effort.

Conclusion

What if you are in your last summer? Which of these activities should you prioritize? It depends on your future career interests! If you are looking for a job at a teaching-focused school, then teaching and outreach activities are what you should look for. If your dream is a job at an R1, you may want to prioritize participating in an MRC or summer conference. Of course any of these opportunities will give you experiences to learn, grow, and network.

It is up to you to get the most out of your summer months. Take this time to explore summer schools, conferences, workshops, and teaching opportunities. This will allow you to gain new experiences, visit new places, meet new people, and learn new math. You can still take some time for yourself to relax and recharge. Conference in Hawaii? Why not stay a couple days to "network" on the beach?



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Credits

Photo of Natalie Hobson is courtesy of the author.