

Directed Reading Program Description

Dylan Spence and Vladimir Eiderman

What is a Directed Reading Program?

Broadly speaking, the purpose of a Directed Reading Program (DRP) is to promote mathematical discourse between undergraduate students and graduate students. Each semester, participating graduate students (the mentors) and undergraduate students (the mentees) will be divided into pairs. These pairs will then initiate a research program that has been selected by the mentor and tailored to the interest and abilities of the mentee. These research programs can take multiple forms, including:

- (1) An introduction to a subject not covered by departmental coursework.
- (2) An in-depth reading of a particular theorem or set of theorems.
- (3) A more advanced treatment of a standard subject.

The only real guideline is that the project should not consist entirely of material covered by the standard departmental coursework.

Typically, mentors and mentees will meet once per week, and the commitment on the part of the mentor is not expected to exceed an hour or two each week. On the other hand, mentees will be expected to commit at least four hours to their project each week. Mentors will receive a stipend as compensation for their service, and mentees will be reimbursed for the cost of a textbook.

At the beginning of each semester, there will be two organizational gatherings. The first will be an informational meeting for the graduate student mentors during which general expectations will be discussed and questions will be answered. Appropriate mentor-mentee interactions and boundaries will be discussed. The second meeting will be a meet-and-greet attended by both the mentors and the mentees. We will introduce the program for the undergraduate mentees and discuss logistics and expectations. Then, the mentees will be introduced to their mentors and have a chance to chat informally. Refreshments will be served.

At the end of each semester, each mentee will give a 15-minute talk about their project at a gathering that will be attended by all of the graduate and undergraduate participants. These presentations will be open for other undergraduate students to attend, and food will be provided. Throughout the semester, mentees will have the opportunity to meet with each other in an informal setting to discuss their projects and share what they have learned with each other.

Benefits to participants

Participation in the DRP is beneficial to undergraduate mathematics students in many ways. Because the DRP partnerships don't function like traditional mathematics courses (no lectures, homework, or tests), they introduce the mentee to the type of mathematics learning one is more likely to experience as a graduate student in mathematics or as a researcher. Additionally, the mentee is introduced to mathematics that may be more advanced or more specialized than the traditional coursework. Importantly, the mentee will gain experience communicating mathematics in the weekly meetings with

the mentor, as they discuss what they have learned during the week, questions they came upon, and where they should turn their attention next.

For the mentors, the experience of sharing their passion and knowledge with their mentees is invaluable and will prepare them for the roles they will play as future professional mathematicians, teachers, and advisors. Often, mentoring an undergraduate allows them to revisit and review topics and theorems and, through the role of teacher and mentor, to gain a deeper understanding of the subject.

Calendar

- **Friday, September 20:** Applications due for both mentors and mentees
- **Tuesday, September 24:** Organizational meeting with graduate students
- **Week of September 23:** Begin weekly meetings
- **Friday, October 4:** Book orders due
- **Week of October 11:** Meet and greet for participants
- **Week of December 9:** End of Semester Presentations

Who should apply?

There will be a nominal requirement that mentors have passed their Tier II exams; however, preference will be given to applicants with more advanced standing. Mentors will be selected based on teaching and mentoring experience as well as content knowledge in the mentees' interest areas. A desire to share your passion and knowledge with your mentee is the main requirement!

The nominal requirement for mentees will be completion of the calculus sequence, though this requirement may be waived in special circumstances. Mentees will be selected based on their interest in learning advanced mathematics, ability to self-motivate, and desire for independent study of mathematics. The desire to devote at least four hours to learning advanced mathematics on top of other coursework is the main requirement!

Contact

- Email with questions: mathdrp@indiana.edu
- Go to the website to apply: <http://www.iu.edu/~mathdrp>