

MATH-673

Math Outreach

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Cursus	Sem.	Type
Mathematics		Opt.

Language of teaching	English
Credits	2
Session	
Exam	Project report
Workload	60h
Hours	61
Courses	12
Exercises	4
Project	45
Number of positions	

Frequency

Every year

Remark

The schedules of the other sessions will be planned according to the availability of the participants and the projects implemented.

Summary

This course offers 2nd-, 3rd-, and 4th-year PhD students an exciting opportunity to engage in math outreach activities. Designed for students passionate about communicating mathematics to the public and engaging meaningfully with the community.

Content

The course aims to develop students ability to communicate mathematical concepts effectively to diverse audiences. Students will engage in practical activities such as creating workshops, designing games, creating puzzles, producing videos, writing an outreach article on their research, and producing other types of activities or material. The course encourages participation in outreach events organized by EPFL or the Math Institute, conducted mainly in French but also possible in German, or English.

Building on these practical activities, this project-based module offers students hands-on experience in mathematics outreach and science communication. It offers the time and structure to research, develop, and deliver resources and materials designed for community engagement and public education.

Projects will be designed for and in collaboration with a specific client. Clients may include schools, museums, local libraries, local communities, the EPFL Math Institute or the EPFL Education and Science Outreach Departments (SPE and SPS).

This course develops in a practical way a range of transferable skills relevant to future employment, thus enhancing employability and career prospects.

Structure of the course:

1. Introduction to the Outreach Principle: What, How, and Why (2h lecture)
2. Participation in an Outreach Workshop: (2h practical session)
3. Personal Reflection and Discussion with the Teacher on an individual outreach project. Participants will be allocated to various outreach projects involving EPFL and the Math Institute. (1h)
4. Individual or Group Work with regular meetings involving the instructor and all participants.
 - Personal work: 44h, meetings and discussions: 10h. Speakers from outside the institute could be invited to share their experience at meetings.
 - Actual number of hours will depend on the nature of the projects.
 - Personal work may include reading literature articles and evidence-based research on relevant aspects of the project, self-evaluation and reflection on the project design, and impact measurement.

- Several projects can be carried out in parallel or consecutively
5. Final Project Presentation and Discussions: (2h)

Examples of projects:

- Supervising a group of secondary school students in an introductory mathematical research project. This includes: devising a long-term research topic, guiding students in their approach and thinking process, and helping them present their results both orally and in writing.
- Write a popular article on their research topic
- Design a mathematical popularisation activity for science festivals (e.g. Scientastic, organised by EPFL) and participate in presenting it at the event.
- Organise a series of lectures on mathematical research in schools
- Any initiative on the part of the student is more than welcome, and will be subject to the instructor's approval.

Upon completing the course, students will be able to:

- Develop and deliver effective mathematics outreach projects.
- Create educational resources such as articles, videos, games, or workshops.
- Communicate mathematical concepts clearly to non-specialist audiences.
- Reflect on their outreach work and assess its impact.
- Demonstrate strong science communication skills in verbal, written, visual, and digital formats.

Note

Invited Lecturers to be determined

Keywords

Math Outreach, Science Communication, Hands-on activities

Learning Prerequisites

Required courses

No

Resources

Moodle Link

- <https://go.epfl.ch/MATH-673>