



PennState

# Mathematics Advanced Study Semesters



The Octacube is a stainless-steel sculpture in the lobby of McAllister Building, home of Penn State's Department of Mathematics. Designed by Professor Adrian Ocneanu, the sculpture represents a regular four-dimensional solid commonly known as the 24-cell.

IMMERSE YOURSELF IN MATHEMATICS

## MASS Program 2018

The Department of Mathematics at Penn State University runs a semester-long intensive program for undergraduate students interested in pursuing a career in mathematical sciences. The Mathematics Advanced Study Semesters (MASS) Program started in 1996 and is held during the fall semester of each year. The program combines advanced learning with research initiation and provides a highly charged interactive environment among a “critical mass” of talented and motivated students, a committed group of strong research faculty, and top graduate students. For a majority of its participants, the MASS program serves as a springboard to graduate studies in mathematics.

The main idea behind MASS—and its principal difference from other honors and research programs—is its comprehensive character. MASS participants are literally immersed in mathematical studies. A key feature of the MASS experience is an intense and productive interaction among the students. The environment is designed to encourage such interaction. A classroom is dedicated full-time to MASS and furnished to serve as a lounge and computer lab outside class times. The students live together in a contiguous block of dormitory rooms and pursue various social activities together. The effect is dramatic: the students find themselves members of a cohesive group of like-minded people sharing a special formative experience.

## MASS 2018 Core Courses

### *A mathematical journey with Fourier series*

Instructor: **Nigel Higson**  
Evan Pugh Professor of Mathematics

### *Comparison geometry*

Instructor: **Anton Petrunin**  
Professor of Mathematics

### *Polynomial interpolation: an introduction to algebraic geometry*

Instructor: **Jack Huizenga**  
Assistant Professor of mathematics

## Components of the Program

**MASS Colloquium**, a weekly lecture series by visiting and resident mathematicians.

**MASS Seminar**, a weekly interdisciplinary seminar that helps to unify all other activities, run by the program director.

The principal part of the program consists of three courses chosen from major areas in Algebra; Number Theory, Analysis, and Geometry; Topology, specially designed and offered exclusively to MASS participants. Each course features three lectures per week, a weekly recitation session conducted by a MASS teaching assistant, weekly homework assignments, a written midterm exam, and an oral final exam.

The program elements total 16 credit hours, all of which are recognized by Penn State as honors credits and are transferable to participants' home universities.

## Financial Arrangements

Successful applicants currently enrolled in U.S. colleges and universities will be awarded the Penn State MASS Fellowship which reduces the tuition to the in-state level. Best efforts will be made not to increase participants' out-of-pocket expenses. In the past, a successful financial arrangement included covering the cost of room and board and provided a small stipend.

## Application

Mail your applications and ask your recommenders to send their letters to the address below.

**Deadline for MASS applications: April 15, 2018**

## Contact Us

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For complete information  
on the MASS Program at  
Penn State, visit our website:

[math.psu.edu/mass](http://math.psu.edu/mass)