Mathematics Advanced Study Semesters

A semester-long intensive program for undergraduate students interested in pursuing a career in mathematical sciences.

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.
Components of the Program

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 following courses will be offered in the fall of 2015:

**Lie Groups in Two, Three and Four Dimensions**
Instructor: Nigel Higson  
Evan Pugh Professor of Mathematics

**Classical Mechanics and Calculus of Variations**
Instructor: Mark Levi  
Professor of Mathematics

**Introduction to Applied Algebraic Geometry**
Instructor: Jason Morton  
Assistant Professor of Mathematics and Statistics

The program also includes:

**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.

Students with strong mathematical background may choose to work on a semester-long research project with a Penn State faculty member instead of taking one of the three courses. This option is subject to approval by the MASS Director. It involves studying background material during the summer, and students interested in this option should inquire about it by the end of May.

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.

Enrollment

Participants are selected from applicants who will be juniors or seniors during the 2015 MASS session (students who will be sophomores may be admitted in some cases). All participants are expected to have demonstrated a sustained interest in mathematics and a high level of mathematical ability, and to have mastered basic proof techniques. The expected background includes a full calculus sequence, basic linear algebra, and advanced calculus or basic real analysis.

Financial Arrangements

All successful applicants will be awarded the Penn State MASS Fellowship which reduces the tuition to the in-state level. For students currently enrolled in U.S. colleges and universities, best efforts will be made not to increase their out-of-pocket expenses.

Application

Students may apply by going to MathPrograms.org or our website: www.math.psu.edu/mass/

**Deadline for MASS applications: April 4, 2015**

Contact Us

MASS Program  
111 McAllister Building  
Department of Mathematics  
The Pennsylvania State University  
University Park, PA 16802

Phone: 814-865-8462  
Fax: 814-865-3735  
E-mail: mass@math.psu.edu

---

For complete information on the MASS Program at Penn State, visit our website:  
www.math.psu.edu/mass/