

THE 2015 SUMMER MATHEMATICS INSTITUTE

JULY 6–AUGUST 14

**A FREE DAY CAMP
FOR BRIGHT AND GIFTED PRE-COLLEGE STUDENTS**



AN UNPARALLELED EXPERIENCE

Take challenging college-level math courses.

Earn up to eight college credits — FREE.

Work with Oakland University's top-notch faculty.

Open to Michigan's elite mathematics students.

**OAKLAND
UNIVERSITY™**

OAKLAND UNIVERSITY'S SUMMER MATHEMATICS INSTITUTE

THE INSTITUTE

Oakland University's Summer Mathematics Institute, a six-week day camp, provides bright and gifted high school students the opportunity to work with university faculty while taking challenging college-level math classes and earning college credit. All aspects of the day camp are free — including university tuition and fees, books, tutoring and counseling, lunch and supplies.

The institute offers two specifically chosen university courses (four college credits per class) that focus on advanced undergraduate mathematics and statistical concepts including probability theory, number theory, group theory, combinatorics, graph theory, statistics and linear algebra as well as supervised lab activity.

The SMI provides organized tutoring and advanced problem-solving sessions. Participants have access to SMI-designated computer facilities, fully networked with Internet and email access codes. Instruction is provided in the use and ideas behind symbolic mathematical software, such as Maple or Mathematica, which solve sophisticated mathematical questions. Participants also work independently on self-directed mathematical investigations.

THE SCHEDULE

The six-week program runs Monday, July 6 through Friday, Aug. 14, 2015. Classes are Monday through Thursday from 8:30 a.m. – 3:30 p.m. and Friday from 8:30 a.m. – 1 p.m. A free lunch is provided every day.

Closing ceremonies for the program will be held Saturday, Aug. 15, 2015, at a banquet hosted by the institute. The participants' parents, mathematics teachers and school principals are encouraged to attend. At the ceremony, program participants will present mathematical work, highlighting what they learned, and receive a certificate of program completion.

THE HISTORY

The Summer Mathematics Institute was created and is completely funded through the gift of an anonymous donor. Now a top executive at one of the world's leading technology firms, the donor was a participant in a similar program at Oakland University more than 30 years ago. The gift covers all on-campus expenses, including university tuition and fees, books, tutoring and counseling, lunch and supplies.

FACULTY

SMI faculty are selected from OU's full-time Ph.D.-holding faculty.

- Director and instructor: Eddie Cheng, Ph.D., distinguished professor, member of the examination committee and past director of the Michigan Mathematics Prize Competition
- Instructor: László Lipták, Ph.D., professor and chair

ADMISSION CRITERIA

Admission to the Summer Mathematics Institute is selective.

- Participation is limited to 36 students.
- You must possess an exceptional talent and interest in mathematics.
- You must have completed your high school sophomore, junior or senior year. (Those who have completed their freshman year may apply if they possess exceptional talent and have accelerated their mathematical studies.)

ADMISSION DEADLINES

Applicants will be notified of admission by June 1, 2015. Completed materials received by us before May 15, 2015 are guaranteed full consideration.

Send to:

Professor Eddie Cheng, director, Summer Mathematics Institute
Department of Mathematics and Statistics
Oakland University
2200 North Squirrel Road
Rochester, MI 48309-4401

COURSE HISTORY

1999 APM 405 Linear Programming
MTH 302 Introduction to Advanced Mathematical Thinking

2000 APM 405 Combinatorics: Enumeration
STA 226 Applied Statistics

2001 APM 405 Introduction to Graph Theory
MTH 461 General Topology

2002 MTH 256/266 Linear Algebra/Linear Laboratory
MTH 372 Number Theory with Cryptography

2003 MOR 342 Introduction to Operations Research
MTH 302 Introduction to Advanced Mathematical Thinking

2004 APM 405 Combinatorics: Enumeration
MTH 361 Geometric Structures

2005 MTH 205 Introduction to Graph Theory
STA 226 Applied Statistics

2006 MTH 275 Linear Algebra
MTH 372 Number Theory with Cryptography

2007 MOR 454 Linear and Integer Programming
MTH 302 Introduction to Advanced Mathematical Thinking

2008 APM 405 Combinatorics: Enumeration
MTH 462 Geometric Structures

2009 APM 405 Introduction to Graph Theory
APM 367 Design and Analysis of Algorithms

2010 MTH 275 Linear Algebra
MTH 472 Number Theory with Cryptography

2011 MOR 454 Linear and Integer Optimization
MTH 302 Introduction to Advanced Mathematical Thinking

2012 APM 405 Combinatorics: Enumeration
MTH 462 Geometric Structures

2013 APM 405 Introduction to Graph Theory
APM 367 Design and Analysis of Algorithms

2014 MTH 275 Linear Algebra
MTH 472 Number Theory with Cryptography

2015 MOR 454 Linear and Integer Programming
MTH 302 Introduction to Advanced Mathematical Thinking

REGISTRATION CHECKLIST

The application consists of six parts. Please cut and return this panel with application materials (photocopies of the panel are fine). Application materials can be downloaded from the Web at: oakland.edu/mathematics/ousmi.

PART A: GENERAL INFORMATION

Name: _____

Gender (circle one): Male Female

Permanent address: _____

Email address: _____

Telephone number: _____

Date of birth: _____

Soc. Sec. number: _____

Are you a U.S. citizen (circle one)? Y N (If the answer is no, please state your legal status and attach a copy of it.)

Name of parent(s) or guardian(s): _____

School name: _____

School address: _____

Name of your school principal: _____

Name of your sponsoring teacher: _____

What school grade will you complete by June 2015? _____

What mathematics course(s) are you enrolled in? _____

Include information on an attached sheet about any mathematics scores on ACT and/or SAT, performance in science fairs, MATHCOUNTS and/or the Michigan Mathematics Prize Competition, and other evidence of unusual mathematical talent and interest in the theoretical and playful aspects of mathematics and statistics.

Oakland University's highest priority in providing exemplary academic, athletic and social programs for youth is protecting the health, safety and welfare of all participants. Please see oakland.edu/youth for detailed information.

PART B: INTERESTS

Prepare on a separate sheet of paper

- B-1** Describe some areas of mathematical studies and/or experiences (in or out of a classroom) that you have particularly enjoyed, and, for each of these experiences, say a few words about why you enjoyed it.
- B-2** Describe some areas of mathematical studies and/or experiences (in or out of a classroom) that you have not particularly enjoyed, and, for each of these experiences, say a few words about why you didn't enjoy it.
- B-3** Describe your plans and ambitions and how mathematics might support these goals.
- B-4** Describe why you wish to participate in the Summer Mathematics Institute at Oakland University.
- B-5** Sign your name.

PART C: OFFICIAL TRANSCRIPT

- C-1** Include an official transcript or have your school send a copy to the institute.

PART D: PARENT OR GUARDIAN STATEMENT

- D-1** Ask a parent or guardian to sign the following (or similar) statement, showing his or her support for your participation in the Summer Mathematics Institute. This statement provides an assurance that transportation will be provided. To assist in possible car-pooling arrangements, all parents of accepted students will receive the names, addresses, schools and phone numbers of camp participants. The Summer Mathematics Institute is funded by an anonymous donor. We may include pictures of students as well as their accomplishments in a report to the donor.

My child, _____, has my enthusiastic permission to participate in Oakland University's Summer Mathematics Institute. I guarantee transportation to and from the Oakland University campus. I understand that some information about students may be included in a report to the donor.

Parent's or Guardian's Signature: _____

Date: _____

PART E: TEACHER RECOMMENDATION

- E-1** Ask your sponsoring mathematics teacher to write a recommendation on your behalf. The recommendation should include:
- Your name
 - Teacher's name and position
 - School name and address
 - Teacher's telephone number
 - How long the teacher has known you and in what capacity
 - A description of your math problem-solving skills and why you would benefit from the Summer Mathematics Institute

PART F: THE PROBLEM SET

- F-1** Email: echeng@oakland.edu | Web: oakland.edu/mathematics/ousmiproblemset

The Problem Set is designed to reveal your thought processes and how you go about solving a problem (this activity will take a significant amount of time to complete).



JOIN MICHIGAN'S ELITE MATHEMATICS STUDENTS AT OAKLAND UNIVERSITY'S SUMMER MATHEMATICS INSTITUTE

"The summer camp offered a great opportunity for me to jump-start my college education. The classes offered are challenging and give students interested in mathematics the chance to see the subject isn't just plugging numbers into equations and memorizing formulas. I really enjoyed the other students and professors. Both made the experience enjoyable and unforgettable."

— Raymond Kleinberg, previous OUSMI student

Professor Eddie Cheng, director
Summer Mathematics Institute

echeng@oakland.edu | oakland.edu/mathematics/ousmi | (248) 370-3430



Department of Mathematics and Statistics

2200 North Squirrel Road, Rochester, Michigan 48309-4401