

2009 Michigan – Louis Stokes Alliance for Minority Participation (MI-LSAMP) Pre-First Year Programs Application



Program sponsored by the
National Science Foundation



Directions:

Please read carefully and complete all items. Incomplete information may delay processing of your application.

Applications are due by Friday, May 8, 2009. The review of applications will begin immediately, however applications will be accepted until all available openings are filled.

PERSONAL INFORMATION

Name: _____
Last
First
Middle

Home Address: _____

City: _____ State: _____ Zip: _____ Home No.: () _____
 Cellular No.: () _____

Date of Birth: _____ (mm/dd/yyyy) Gender: M F

Email Address: _____

Ethnicity: African American Asian
 American Indian Hispanic
 Caucasian Other (specify): _____

Parent(s)/Guardian(s) Name: _____

Work Telephone Number(s): _____

ACADEMIC / EXTRACURRICULAR

Major academic interests: _____

Career interests: _____

Educational goals: _____

Awards/honors: _____

Extracurricular activities (include volunteer activities): _____

List other pre-engineering, math, science, science projects/experiments or special programs in which you have participated.

Program	Sponsoring Institution	Dates

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The following is a brief description of each university's summer program. Please rank in order of preference, with 1 being your first choice. If you are selected to participate in a MI-LSAMP summer program, your placement may be based on your rankings. **Applications are due by Friday, May 8, 2009.**

Rank	Program Name – University – Description
<input style="width: 50px; height: 25px;" type="text"/>	<p>Engineering and Science Summer Academy (ESSA) – Michigan State University <i>Dates: June 27, 2009 – August 8, 2009</i></p> <p>The ESSA is a six-week, residential, academic intensive program designed to acclimate incoming freshmen with both the academic and environmental aspects to post secondary education. Participants will attend daily classes in Math, English/Writing, Chemistry and an Engineering Seminar course to expose students to post graduation and professional opportunities. Participants will also attend presentations from representatives in all engineering disciplines within the College of Engineering.</p>
<input style="width: 50px; height: 25px;" type="text"/>	<p>Engineering Pre-First Year (EPFY) Program– Wayne State University <i>Dates: July 6, 2009 – July 31, 2009</i></p> <p>The EPFY Program is a four-week commuter program for incoming first year college students. The program will provide daily classes in engineering, mathematics, technical communications, and chemistry. The students will be exposed to material they will encounter in their most critical year, the first year. The students will also be exposed to engineering careers through employer visits and guest presentations. Throughout the four-week program, personal development workshops will be held that will help the students build skills that will facilitate academic success.</p>
<input style="width: 50px; height: 25px;" type="text"/>	<p>Science Pre – First Year (SPFY) Program – Western Michigan University <i>Dates: July 6, 2009 – July 31, 2009</i></p> <p>The SPFY Program is a four-week residential and commuter program for incoming first year college students. Students participate in this on-campus experience that will feature daily classes in chemistry, physics, biology, mathematics, and technical writing. These courses will expose students to material they will encounter during the first year. The students will be exposed to science careers through employer visits and presentations. **Note: Residential students will have the opportunity to move in on Sunday, July 5, 2009.</p>
<input style="width: 50px; height: 25px;" type="text"/>	<p>Professionals in Training Program (PTP) – University of Michigan <i>Dates: June 24, 2009 – August 8, 2009</i></p> <p>The PTP is a six-week residential program for incoming first year engineering students. Student participants experience campus life. The curriculum emphasizes academic, personal, and professional success. It is structured to provide regularly scheduled classes in mathematics, computer programming, communication skills, chemistry, as well as an introduction to engineering as an academic and professional pursuit.</p>
<input style="width: 50px; height: 25px;" type="text"/>	<p>Michigan Math and Science Scholars (MMSS) – University of Michigan <i>Dates: Session 1: June 28, 2009 – July 10, 2009 Session 2: July 12, 2009 – July 24, 2009</i></p> <p><i>NOTE: A letter of recommendation is required from Math or Science Teacher</i></p> <p>The Michigan Math and Science Scholars (MMSS) program is designed to expose students to current developments and research in mathematics and science, and to encourage the next generation of researchers and discoverers to develop and retain a love of science. <i>Please go to page 3 & 4 for available course choices.</i></p>

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A list of courses that are available for the **Michigan Math and Science Scholars Summer Program** is provided below. For a complete course description, please visit www.math.lsa.umich.edu/mmss. Please rank the courses based on your interests with 1 being your first choice.

1st Session

- Combinatorial Combat**
- Play and analyze a variety of two person competitive strategic games. Study such notions as 'formal strategy', "game tree", and "natural outcome" and investigate methods of solving the games
- Climbing the Distance Ladder: How Astronomers Survey the Universe**
- This class will "survey the universe" using lectures, discussions, demonstrations, and computer laboratory exercises. Participants will make frequent digressions to explore the discoveries made possible by knowing the distance to objects and get hands-on experience of using distance as an exploratory tool.
- Crisis, Collapse, Resilience, and Renewal**
- Students will construct and explore computer models of the environment as a dynamic system. The study of the environment involves learning across scientific disciplines as diverse as physics, biology, and anthropology.
- Mathematics and the Internet**
- In Mathematics and the Internet, we'll answer questions related to the exchange of info online and how math plays a part. We'll also learn to use abstract mathematical tools for studying systems, including graph theory, probability, logic theory, and coding theory.
- Roller Coaster Physics**
- Students will study the dynamics of roller coasters and other amusement rides. The following cutting-edge topics in physics will be introduced: high-energy physics, nuclear astrophysics, condensed-matter theory, biophysics, and medical physics
- Dissecting Life: Human Anatomy and Physiology**
- Lecture sessions will cover human anatomy and physiology in detail. Students will gain an understanding of biology, biochemistry, histology and use these as a foundation to study human form and function. Laboratory sessions will consist of first-hand dissections of a variety of exemplar organisms.
- Mathematical Modeling in Biology**
- This course will introduce some of the fundamentals of mathematical modeling and its usefulness in biology, physiology, and medicine. Students will study cell biology, immunology, and many others.
- Genes to Genomics**
- This course will cover basic aspects of Mendelian and molecular genetics, and then focus on a few human disorders in detail. We will introduce human genome sequence as an aid to cloning the genes responsible for these disorders.
- Sampling, Surveys, Monte Carlo, and Inference**
- Study the survey and sampling techniques that allow us to draw meaning conclusions about the whole based on the analysis of a small part.
- Explorations of a Field Biologist**
- Through our explorations of grasslands, forests, and wetlands of southeastern Michigan you will learn many natural history facts (from identifying a turkey vulture to learning how mushrooms relate to tree health). You will also become adept at practicing all the steps of doing science in the field, including making careful observations, testing a hypothesis, sampling and measuring, and analyzing and presenting results. **Note: This class is not for students who prefer to be indoors!**

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2nd Session

Images and Mathematics

- The field of image analysis is one of the most active sources of inspiration for the uses of mathematics. This course will be about the mathematics that underlies the analysis of images and imaging technology. We will introduce our students to methods used to study different problems arising in image analysis, like image segmentation, inpainting and reconstruction; but primarily, we will start exploring the abstract mathematical topics involved, like modeling, inverse problems, harmonic analysis, data compression and information theory

Surface Chemistry

- This course will be divided into three units: applications, properties, and techniques. The first unit will introduce students to surface science that exists within the human body, surfaces in modern science and technology and surfaces found in everyday life. The second unit will examine the basic properties of surfaces. The instrumental methods used to study surfaces will be covered in the last unit.

End of World Mathematics

- Recurrence relations will be the center them of our course. We will have several opportunities to point out that mathematics is full of surprising connections. For example, we will see how the formula for solving quadratic equations can be used to get a formula for Fibonacci number.

Introduction to Laboratory Research methods

- This course will introduce students to some of the basic concepts of laboratory research. Students will learn hands-on laboratory techniques such as tissue isolation, cell culture, and histology.

The Physics of Magic and the Magic of Physics

- In this class students will first study the underlying physics of some classical magic tricks and learn to perform several of these (and create new ones). The "magic" of corresponding (and real) physical phenomena will then be introduced and studied with hands-on, minds-on experiments. Finally, we will visit a number of research laboratories where students can meet some of the "magicians" of physics --- physics students and faculty.

Mathematics of Decisions, Elections, and Games

- You make decisions every day, including whether or not to sign up for this course. The decisions you make under uncertainty says a lot about who you are and how you value risk. To analyze such decisions and provide a mathematical framework, utility theory will be introduced and applied to determine, among other things, the monetary offer the banker makes to contestants in the television show *Deal or No Deal*.

Fibonacci Numbers

- The Fibonacci Numbers are a sequence of numbers where every term is simply the sum of the two preceding terms. This will be the starting point for the exploration of some very substantial mathematical ideas.

Congruent Numbers: Where can a Number be a Triangle?

- Students will investigate the "congruent number problem" and learn a lot of interesting number theory in the process. The journey will begin with the ancient Greeks and take them through Fermat's method of infinite descent, elliptic curves, and modular forms.

'Why Here?' – Reading Diverse Landscape

- Class will be conducted outdoors. Students will compare different but nearby landscapes to generate compelling questions that require field observations of various types. No prior-field work is expected.

Dissecting Life: Human Anatomy and Physiology

- Lecture sessions will cover human anatomy and physiology in detail. Students will gain an understanding of biology, biochemistry, histology and use these as a foundation to study human form and function. Laboratory sessions will consist of first-hand dissections of a variety of exemplar organisms.

Genes to Genomics

- This course will cover basic aspects of Mendelian and molecular genetics, and then focus on a few human disorders in detail. We will introduce human genome sequence as an aid to cloning the genes responsible for these disorders.

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Briefly detail your previous work experience (if any) (please attach paper for additional space):

If you are not able to participate in the Pre-First Year (PFY) Programs, please indicate below:

_____ I am unable to be considered for the PFY Programs for the following reason(s):

_____ I have a summer job.

_____ I am attending another university in the fall (*please indicate university below*).

_____ I am attending another summer program (*please indicate program below*).

_____ I want to take a break this summer.

****** Please include a copy of your high school transcript ******

This program does not discriminate on the basis of race, age, sex, creed, color, religion, sexual orientation, disability, or national origin or ancestry of any applicant or participant.

The Michigan – Louis Stokes Alliance for Minority Participation reserves the right to cancel any program due to lack of funding or insufficient student interest.

To participate in the Pre-First Year Programs, you have committed to attend either Michigan State University, University of Michigan – Ann Arbor, Wayne State University, or Western Michigan University in the Fall 2009..

We will provide a MI-LSAMP Program T-shirt for all participants. Please indicate T-Shirt Size:

Student Signature: _____ Date: _____

Parent/Guardian Signature: _____ Date: _____

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MAIL YOUR APPLICATION TO THE UNIVERSITY WHERE YOU WILL BE AN INCOMING FRESHMAN IN THE FALL 2009

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University of Michigan

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APPLICATION DEADLINE - FRIDAY, MAY 8, 2009