There is no better way to strengthen interest in science, mathematics or engineering than by working on a research project under the mentorship of a university researcher. It is here that students are able to undertake detailed, focused investigation of challenging problems and to participate in many dimensions of the research process—opportunities rarely possible in schools. While these apprenticeships require great commitment, students who undertake them report that they are more enjoyable, more challenging, and more intellectually motivating.

If you are a high school junior with a keen interest in science, math or engineering and the ability to work independently and responsibly, you might be interested in the High School Honors Science, Engineering and Mathematics Program (HSHSP), a non-credit enrichment program sponsored by the Department of Teacher Education of Michigan State University. Founded in 1958, the HSHSP is the oldest, continuously running program of its kind in the United States.

Located on a beautiful arboretum campus, Michigan State University is one of the top 50 research institutions in the United States, and is an important center for teaching and research. While in residence at the university, participants spend the majority of their time working on research in one of the sciences, engineering or mathematics.

The participant fee for the 2016 HSHSP will be $3,800. This fee covers room, board, and some instructional costs. Participants must provide their own transportation between home and campus at the beginning and end of the program, Sunday evening meals, and other incidentals. Scholarships based on financial need are available. Students interested in such assistance should complete the financial aid statement available on the program website. Applications and supporting materials should be postmarked no later than March 15, 2016. Applicants will be informed of their status by May 1. To find out more about this program, visit the website or contact:

Dr. Gail Richmond, HSHSP Director
620 Farm Lane, Room 319
Michigan State University
East Lansing, MI 48824
517.432.4854
gailr@msu.edu
http://education.msu.edu/hshsp/

We encourage applications from qualified minorities and disabled individuals

Michigan State University is an Equal Opportunity Institution

MICHIGAN STATE UNIVERSITY
HIGH SCHOOL HONORS SCIENCE, ENGINEERING AND MATHEMATICS PROGRAM
1. ELIGIBILITY
Admission to the seven-week program is based upon scholastic ability, maturity, evidence of interest in science, engineering, or mathematics and completion of specified high school courses in science and mathematics. At the time of application the student must be a junior in high school, in the upper 20 percent of high school classes, and have taken at least 3 years of college preparatory mathematics and 2, or more years of science. Approximately 24 participants, usually 16-18 years of age, will be selected. Room and board scholarships will be available to individuals based on financial need. Keep in mind also that financial aid to participants is sometimes available from schools, businesses, and service organizations in your community and you may wish to investigate these possibilities. Only US citizens and permanent residents are eligible for the HSHSP summer program.

Candidates for admission are required to provide the following credentials:

a. A completed application form.

b. A 400-600 word, applicant-written essay describing the nature and origin of your interests in science and in research, what you hope to learn by participating in the program, and what you feel you can contribute should you be selected as a participant.

c. A second essay of the same length in which you describe the impact a book (not a journal) you have read, have had on your thinking or any aspect of your life. This book can be one assigned in a course or one you chose to read for pleasure.

d. A list of books and magazines you have read for your own pleasure (i.e., not assigned as part of school coursework).

e. Letters of recommendation from at least two high school teachers (at least one of whom must be a science teacher) who know you well. In their letter, they should speak to their knowledge, not only of your aptitude but of your motivation, maturity, and independence. A re-stating of your accomplishments is not helpful. Please also ask them to include in their letter their phone number and an e-mail address at which they may be contacted. These must be sent in the mail sealed, with the application or separately. Please DO NOT send electronically.

f. A certified transcript of high school grades and a copy of standardized test scores. A copy or screen shot of your score report from the College Board can suffice. If the student has not taken standardized tests such as ACTs, PSATs, or SATs, an official statement to this effect by the guidance counselor should accompany the transcript.

2. MAJOR OBJECTIVES
The HSHSP is designed as an enrichment program. It will provide experiences that will not typically be duplicated in high school or the first years of college. The primary objective of the HSHSP is to help students develop a deeper understanding of the process of inquiry. Other objectives include having students experience living away from home with peers who have diverse backgrounds but similar interests; acquainting students with life on a university campus; giving students the opportunity to make use of the intellectual, social, and other resources afforded by a university institution and community; and to assist students in learning about various careers and the preparations necessary to enter them.

High ability students frequently suffer from an absence of exposure to authentic experiences and challenge in their science and mathematics curriculum. Even in the best of high school science programs, there is not usually the opportunity for students to investigate a problem of interest in depth. The HSHSP attempts to identify and nurture interest and potential by providing numerous opportunities for participants to test their own talents, motivation, and emotional maturity and to experience growth in all
of these areas. The program has provided a needed stimulus and over the years has received outstanding reviews from participants with respect to the way it prepares them, academically and emotionally, for the program of study they choose in college and beyond.

It is important to understand that the HSHSP is not designed to offer participants a fail-proof project that can be entered into subsequent science competitions; this is not the way authentic research proceeds. Its purpose is to give its participants the unique experience of carrying out research in a university setting and interacting, not only with professional scientists, engineers and mathematicians but with peers who have similar interests. That said, over the past years, many of our participants have subsequently done well in a variety of local, state, regional, and national science competitions including those sponsored by Westinghouse, Intel, and Siemens. Many participants also fare well in the International Science and Engineering Fair. More than 95% of HSHSP participants go on to major in science, mathematics or engineering, attending such outstanding colleges and universities as Harvard, MIT, Cal Tech, Princeton, Brown, Yale, Dartmouth, University of Michigan, Stanford, Columbia, Cornell, Duke, UNC and Michigan State, among others; many are established nationally and internationally recognized researchers.

Comments of former participants include the following:
I have encountered a situation most people would not normally experience until their graduate studies.... The interaction with others who shared my interests and capabilities was unique and wonderful.... Lectures and discussions provide a view of other areas of science, thus making the program well rounded.... The social atmosphere was very relaxed and comfortable.... The research experience is exceptional. Being on a college campus prepares you for college.... I now have an incredible respect for researchers: for their perseverance, intuition, and character.... The HSHSP represents a once-in-a-lifetime experience! I have learned things that I will use for a long time to come, and I have made friends I will treasure forever....

3. PROGRAM DESCRIPTION
Students spend the day working individually in their research areas. The typical weekday schedule is as follows:

- Breakfast (7-8:30am)
- Research - Individual research projects in laboratories Approx. 8:30-12:00, 1:00-5:30 pm
  (Lunchtime is flexible, in light of varying research responsibilities)
- Dinner (5:30-7:00)
- After-dinner Discussions, Seminars, Class & Special Activities 7:00-9:00 pm Monday, Wednesday

Each participant, once accepted will indicate a preference for a research area from a list of general descriptions. Subsequent discussion with the faculty advisor upon arrival will determine the specific research project and procedure. Each participant works on a research project which is part of the mentor’s research program but which provides independence for the participant. The participant is guided by faculty, staff and graduate students who themselves are researchers in this area.

Additional program activities include:
a. daily record-keeping
b. research proposal and final report writing
c. use of the science reference library, use of lab safety procedures
d. a visit to the National Superconducting Cyclotron Laboratory/FRIB and campus observatory/planetarium
e. discussions about college admissions and scholarships and careers in science
f. discussions of careers in science and personal factors which govern career choice
g. discussions of scientific responsibility and implications of scientific discovery
h. conference-style research presentations by students and program evaluation

Students will be required to give a presentation in their high school science class or another appropriate forum, about their research project and program experience upon returning home. Preparation of their project for a local or national science fair also will be encouraged.

4. PROGRAM DIRECTOR
Professor Gail Richmond, Professor of Science & Urban Education, College of Education, Michigan State University.

In addition to Dr. Richmond, there is a senior faculty advisor or mentor for each participant. The faculty mentor is central to the orientation of the participant's research. (S)he selects lab techniques for the project and may assign supervisory personnel. The participant learns different methods to attack the problem, how to define a scientific problem, how to recognize errors when they occur, and to benefit from them. The mentor is the one who outlines the objectives of research and best explains theory. Students will also likely work on a daily basis with other researchers in the mentor’s research group. These individuals may include postdoctoral research associates, graduate students, undergraduate science majors, and technicians.

Upper-level undergraduate or graduate students selected by Dr. Richmond who have backgrounds in science and in research will also serve as program counselors for the HSHSP. Residence hall staff also are available to ensure the safety of program participants and work with program counselors to design and oversee social activities.

5. AVAILABLE FACILITIES
Available campus activities include visiting lecturers, dramatic events, musical performances, films, and planetarium programs. There are facilities for canoeing, swimming, tennis, and team sports. The participants, counselors, and the program director plan together for a number of activities.

Participants will be housed in a residence hall in which there are common lounge, recreational, and dining areas. The living and recreational aspects of the program will be under the direction of two residence counselors (one female and one male), selected by Dr. Richmond and who typically have a background in science and in education.

Students will be housed in the residence hall, two per room, near students attending other academically-oriented programs. Applicants should be aware that residence hall social regulations are much less permissive for high school programs than for college undergraduates. Residence hall regulations are strictly enforced. Any serious infraction of these rules will result in the participant being sent home.

6. SUMMER YOUTH DORMITORY REGULATIONS
Participants who violate these regulations will be subject to disciplinary action; if the action is deemed serious enough, it may result in the participant being sent home.

a. Use or possession of alcoholic beverages, illegal drugs, fireworks or other explosives, dangerous weapons or substances, is strictly prohibited.

b. Intentional damage or theft of university or personal property is strictly prohibited. Disciplinary action will include remuneration.

c. Members of the opposite sex, excepting parents or guardians, are not permitted in participants' living areas. The formal lounges and public meeting rooms are not considered part of the living area.
d. The residence halls will be closed at 11:00 pm. All program participants must be inside the hall by this time, as the building will be locked. Room checks will be done by residence hall staff at midnight each evening.

If this program is to have the advantage of living on campus, there is no alternative to accepting these rules. Personal lifestyle is an important consideration, and we hope that yours is compatible with the program as described.

7. MICHIGAN STATE UNIVERSITY
The 5,100-acre East Lansing campus is one of the most beautiful campuses in the nation. The Red Cedar River bisects the northern 2,000 acres which encompass the most developed area of the campus. Much of the southern portion functions as experimental farms, forests, and natural areas for instruction and research.

Biological research at MSU has focused on molecular biotechnology, food production, genetic diseases, environmental toxicology, new man-made plant species, and pest control systems that reduce hazards to the environment. MSU is the site of a national plant biology center supported by the US Dept. of Energy. It is the site of the Michigan Agricultural Experiment Station with more than 400 research projects and over 300 scientists. Three medical colleges (Human, Osteopathic and Veterinary) are located here, as well as a College of Law. Research in the physical and chemical sciences also encompasses a wide variety of fields. The nation's premier National Superconducting Cyclotron (NSCL) and FRIB (Facility for Rare Isotope Beams) is located on the campus, as well as a Center for Material Sciences, Electron Optics Center, several biotechnology and plastics technology centers, and a state-of-the-art Biophysical Sciences Building.

The university is accessible by car, Amtrak, or transcontinental bus. Capitol City Airport is about 8 miles west of the campus. Flight time from New York is about 3 hours. Daily flights by such carriers as Delta, Southwest, and United Airlines to and from Atlanta, Pittsburgh, Detroit, Newark and Chicago connect the airport to every major metropolitan area.

8. IMPORTANT DATES

March 15
Students should have their applications mailed in and post marked by this date. As evaluation of each application is completed, notification of status will be e-mailed.

March 15
Need-based financial assistance forms due. (post mark date)

May 10
The program should be filled by this date.

June 1
All program fees due.

June 21
Registration and orientation. Students may arrive at any time between 1-6pm. Orientation begins promptly at 7 pm.

August 8
Program ends. Students may leave any time on this date before 2 pm.

9. INSTRUCTIONS FOR APPLICANTS
Please check that you send the following, and make sure that your name is on all pages of your application and accompanying materials:

a. A completed 'Application to Program' available on the Web site, http://www.msu.edu/~hshsp/ which may be downloaded, completed and mailed to:

   Dr. Gail Richmond, HSHSP Director
   Erickson Hall
   620 Farm Lane Room 319
   Michigan State University
   East Lansing, MI 48824-1034

b. A personal essay of 400-600 words. The essay must be neat and should address your interests in scientific research and in attending the HSHSP; what do you think you can contribute and any other significant related events in your life that you feel would be helpful to the Director in evaluating your application. I do not want to receive an essay that details your lifetime awards and honors, but rather an honest and compelling story about why you want to spend 7 weeks of your summer away from family and friends, doing full-time research, and why your participation would make difference in your life.

c. A second essay of the same length in which you describe the impact a book you have read has had on your thinking or any aspect of your life. This book can be one assigned in a course or one you chose to read for pleasure.

d. List the following:
   i. courses you currently are taking (for which you have not yet received a grade).
   ii. books or magazines you have read during the past year that were not assigned by a teacher. (Include non-science readings.)

e. Recommendations from at least two teachers, at least one of whom should be a science teacher you recently have had as an instructor. Please remind them that their letter does make a difference and should speak to your unique strengths as an individual—and should NOT simply be a recap of your resume. (That doesn’t tell me anything about how and what they know about you as an individual and why you might be suited for such a program.) These letters should also reveal something about your motivation, independence, and maturity, so select these individuals carefully.

f. High school transcript including all standardized test scores. Be sure to request that your school send test scores and rank in class (if available). If no test scores are available, a statement to that effect MUST be sent by your school. The absence of some type of standardized test might delay the review of your materials, so be sure to address this in your application!

   NO ELECTRONIC MATERIALS WILL BE ACCEPTED

Recent participants are an excellent source of information and can answer questions if you wish to contact them. Several such individuals and contact e-mails are below.

Florida
Sophia Christodoulou  sophia.christodoulou@live.com  Miami

Indiana
Juia Chael  jrchael98@gmail.com  Munster
For inquiries, Dr. Richmond can be reached at gailr@msu.edu or (517) 432-4854. 

Dr. Gail Richmond, HSHSP Director 
Erickson Hall 
620 Farm Lane Room 319 
Michigan State University 
East Lansing, MI 48824-1034

THE APPLICATION, ESSAYS, LETTERS OF RECOMMENDATION, AND HIGH SCHOOL TRANSCRIPT SHOULD BE POSTMARKED BY MARCH 15, 2016. Later applications will be considered if space is available. Applications for financial assistance should be submitted along with OR as soon as possible after the program application. Requests for financial assistance do not influence the selection process. Please DO NOT EMAIL your paperwork! No electronic materials i.e. applications, letters, etc. will be accepted.