Michigan Tech

SUMMER YOUTH PROGRAMS

2014
SUMMER CAMP?

"YEAH, IT’S KIND OF LIKE THAT"
It’s true—our programs aren’t ordinary, and neither are our students. They’re performing chemical diagnostics, making movies, and launching hand-built rockets. They come from across the country and around the world to learn engineering, film production, molten metal casting, and more—all in an adventurous, fun, and hands-on way.

For more than forty years, Michigan Tech faculty, graduate students, role models, and other professionals have been leading Summer Youth Programs—Mind Trekkers Summer Camps for students completing grades 6–8 and Pre-College Explorations and Competitive Scholarship Programs for students completing grades 9–11—built around activities, field trips, and team projects. Are you ready to learn more?

Your next summer adventure begins here . . .
What is the difference between Pre-College Explorations and Mind Trekkers Summer Camps?

Both are weeklong programs meant to offer students an exciting, hands-on exploration in a specific area of interest. Mind Trekkers Summer Camps are offered to students completing grades 6–8, while Pre-College Explorations are for students completing grades 9–11. In addition, Michigan Tech offers competitive scholarship programs in specific areas of study to academically high-achieving students completing grades 9–11.

How large is each exploration?

Explorations are limited to twenty or fewer students to enable instructors to give one-on-one instruction. Some—like backpacking and mountaineering—are kept smaller to ensure safety. We train and employ more than 150 instructors, activity counselors, residence counselors, and staff. We intentionally keep our student-to-staff ratio low at about 10:1.

What is the daily schedule? (The Competitive Scholarship Programs schedule may differ.)

**Sunday**

- 9:00 AM–3:00 PM | Registration and activities
- 3:00 PM | Campus tour (parents welcome)
- 5:00 PM | Dinner
- 6:00 PM | Mandatory orientation and commuter meeting (parents welcome)
- 7:00–9:30 PM | Recreational activities
- 9:30 PM | Floor time, get-to-know-you meeting
- 10:30 PM | In-room quiet time
- 11:00 PM | Lights out

**Monday–Friday**

- 7:30–8:30 AM | Breakfast
- 9:00 AM–NOON | Exploration sessions
- NOON–1:00 PM | Lunch
- 1:15–4:30 PM | Exploration sessions
- 4:30–6:00 PM | Dinner (Friday: checkout begins)
- 6:00–10:00 PM | Recreational activities/supervised free time (Friday: dance)
- 10:00 PM | Floor time
- 10:30 PM | In-room quiet time
- 11:00 PM | Lights out

What will I be doing in the evenings?

Everything! Our full-time counseling staff plans and leads so many evening and weekend activities that you won’t have a minute to be bored. A few activities have a minimal charge, like going for ice cream or to the movies, but most are free. You can:

- Go bowling
- See a movie
- Play board games
- Compete in basketball, volleyball, soccer, and tennis
- Perform in a variety show
- Play 4-square/ladder ball
- Do arts and crafts, like tie-dye and jewelry making
- Tour the Keweenaw Peninsula
- Swim (pool or beach)
- Play Ultimate Frisbee
- Golf (bring your own clubs)
- Fish (bring your own pole and license)
- Dance
- Hike and jog on the waterfront
- Shop the Campus Bookstore and local stores
- Make fast-food runs
- Hang out with friends
- Relax in the Michigan Tech Library
- Mountain bike
- Explore a state park
If I stay for more than one exploration, do I have to leave campus during the weekend?

For participants who elect to come for two or more consecutive weeks of Summer Youth Programs, we offer exciting weekend activities in the area. Stayover fees are $100 per weekend and include meals, lodging, and supervised excursions. Weekend activities can include beach barbecues, copper mine tours, a trip to historic Fort Wilkins State Park, hiking, kayaking, boat tours, and more.

Who will I room with?

Our residence halls are divided by gender, and we take great care to match participants with a roommate who is close in age, but from a different place.

We encourage participants to broaden their horizons and room with someone new. However, some students prefer rooming with someone they already know, like a sibling or friend. These requests are honored whenever possible. Both friends must request each other on the appropriate form in their Confirmation Packets. If you request to room with a friend but your friend does not request you, you will not be placed together, and it will not be possible to switch rooms when you arrive.

Where will I stay?

Our live-in participants enjoy a taste of campus living in Michigan Tech’s largest residence hall, Wadsworth Hall. Staff and participants are housed in self-contained, secure areas. Participants have access to residence hall laundry facilities (minimal fee), recreation areas, and lounges. We have full-time, live-in counselors who provide supervision, interact with participants, and help ensure safety.

Where can my family stay in the area?

Many people use their trip to Michigan Tech as a vacation for the entire family. The area is well known for its scenic beaches and waterfalls, unique shopping, historical downtowns, and tourist attractions. Cottages, hotels, bed and breakfasts, and camping facilities are available in the immediate area. For more information, visit www.keweenaw.info.

Where is Michigan Tech?

Michigan Tech is located in Houghton, Michigan, near the shores of Lake Superior in the beautiful Upper Peninsula. Preparing your transportation arrangements early will ensure smooth travels and allow our staff to prepare for your arrival and give you a warm welcome.

There are several travel options available to you:

**Summer Youth Programs Charter Bus:** Michigan Tech offers chaperoned charter bus service from select locations in the Midwest—tentatively Lansing, Detroit, Bay City, Gaylord, Kalamazoo*, Chicago*, Milwaukee*, Green Bay*, and Iron Mountain*. Space is available on a first-come, first-served basis, with preference given to round-trip riders. Students are picked up on Saturday evening and travel through the night, arriving to campus on Sunday morning. This is the most popular way for students to travel; you will have the opportunity to meet staff and fellow students before arriving at Michigan Tech. Fees are outlined below:

- Round trip $250—Includes a $25 nonrefundable deposit. After June 1, there are no refunds. You may choose to be picked up and dropped off at different locations and still qualify for the round-trip rate.
- One-way $150—Includes a $25 nonrefundable deposit. After June 1, there are no refunds.

Charter bus payments must be paid in full within ten days of purchase. Charter transportation requests are not guaranteed until you receive confirmation from SYP. If you request a seat after we have reached full capacity, you will receive a full refund of any transportation fees paid (including the $25 deposit).

**Car:** Often, students choose to travel to campus with family. The local area offers plenty of beautiful scenery, attractions, and lodging options for families if they choose to stay for your program. Directions and lodging information can be found at www.mtu.edu/admissions (see Visiting Campus).

Students are not permitted to drive during our programs, so those arriving alone by car will be assigned a parking area and their keys will be stored in the SYP safe.

**Air:** Houghton County Memorial Airport (CMX) is only fifteen minutes from campus and is serviced by United Airlines. Students who fly to Houghton will be met and transported to Michigan Tech by Summer Youth Programs staff members wearing official shirts and nametags. Visit www.united.com for more information.

*July 13–26 only*
Can I commute?

Programs are available at a reduced fee for students who wish to provide their own daily transportation. Lunch is included, and commuters are invited (and strongly encouraged) to attend evening recreational activities. Commuting students must reside with adults (parents, relatives, or family friends). The Summer Youth Programs office will need the student’s local address and phone number, and the participant must agree to follow all of the live-in student rules while on campus.

Note: Several of our explorations involve travel or late-evening activities and are not available to commuters. See exploration descriptions for details.

How much do Summer Youth Programs cost?

We remain one of the most affordable programs in the nation, and we intentionally keep our costs low so that our programs are accessible to as many people as possible. Fees may vary; please see exploration descriptions for specific costs.

- **MIND TREKKERS SUMMER CAMPS AND PRE-COLLEGE EXPLORATIONS—LIVE-IN SYP WEEK 1 (JUNE 29–JULY 3): $695 PER EXPLORATION; SYP WEEKS 2, 3, 4 (JULY 13–AUGUST 2): $875 PER EXPLORATION**
  A nonrefundable $100 deposit per exploration is required to guarantee your enrollment; please mail within ten days of submitting your online or paper application.

- **MIND TREKKERS SUMMER CAMPS AND PRE-COLLEGE EXPLORATIONS—COMMUTER SYP WEEK 1 (JUNE 29–JULY 3): $360 PER EXPLORATION; SYP WEEKS 2, 3, 4 (JULY 13–AUGUST 2): $450 PER EXPLORATION**
  A nonrefundable $100 deposit per exploration is required to guarantee your enrollment; please mail within ten days of submitting your online or paper application.

- **COMPETITIVE SCHOLARSHIP PROGRAMS**
  Women in Engineering and Engineering Scholars Program have a $295 non-refundable registration fee (due upon acceptance). Women in Computer Science and Rail and Intermodal Transportation have a $100 non-refundable registration fee (due upon acceptance). Available to students in grades 9–11 only. Do not send payment with your application. To complete your enrollment, your registration fee will be due within ten days of being accepted into the program. You will be notified about acceptance in mid-May.

- **STAYOVER FEE: $100 PER WEEKEND**
  For students registered for two or more consecutive weeks who wish to remain on campus during the weekend. Includes room and board, activities, and supervised excursions to local attractions. No stayovers on July 3 or August 2.

- **EARLY ARRIVAL/LATE DEPARTURE: $75 PER DAY**
  Includes room and board, supervision, and activities. Students must obtain prior approval from the SYP office. No late departures on July 3 or August 2.

Are there discounts available for attending multiple explorations?

Yes, students attending more than one week of Summer Youth Programs will receive a $50 discount for each additional week after the first. Please note discount on Payment Form.

Do you offer financial awards?

Yes, there are several awards available to Summer Youth Programs participants.

- **MICHIGAN TECH ALUMNI/STAFF AWARD**
  Children and grandchildren of Michigan Tech alumni and staff are eligible for one $50 award per child each summer. Applied after confirmation is received from Human Resources or the Michigan Tech Alumni Association. Not applicable to Scholarship Programs.

- **SUMMER YOUTH PROGRAMS MERIT AWARD**
  Students who provide transcripts (including GPA and class rank) may be eligible for financial merit awards, determined by funds received through individual, corporate, and foundation sponsors each year.

- **MICHIGAN TECH SCHOLARSHIPS**
  If you enroll at Michigan Tech in the fall of 2014, you will be eligible to apply for undergraduate scholarships exclusively available to SYP participants. View www.mtu.edu/finaid/students/current/sydia for details.

Can I cancel my enrollment?

If you cancel your exploration before June 1, 2014, you are eligible for a refund of enrollment fees minus each $100 nonrefundable deposit per exploration. There are no refunds after June 1.

What happens if my exploration is canceled?

If your exploration is canceled by the SYP office (an unlikely event), we will assist you in selecting another open exploration or refund your entire payment, at your discretion.
What if my program is full?

We are always happy to help you find another exploration that fits your interests. Or if you prefer, we can place your name on a waiting list and notify you if space becomes available. If you haven’t been transferred from a waiting list to an exploration by the start of the program, your entire payment (including the deposit) will be refunded.

Is there recognition for my participation?

Upon successful completion of your program, you will be awarded a certificate. We recommend that you put it in your high school portfolio. You may wish to refer to it when applying for jobs, colleges, or honors programs.

After I apply, what’s next?

You will receive a personalized Confirmation Packet once we receive your application and deposit. In it, you’ll find important forms that must be completed and returned. Closer to the start of your program, you’ll receive a Welcome Packet with information about registration, campus life, what to bring, and more. Keep this packet for reference as the summer approaches.

How can I contact Summer Youth Programs?

Summer Youth Programs
1400 Townsend Drive
Houghton, MI 49931-1295
www.syp.mtu.edu
Email yp@mtu.edu
Telephone 906-487-2219
Toll-free 1-888-773-2655
Fax 906-487-1136

MAKE SURE YOU CHECK THE SUMMER YOUTH PROGRAMS WEBSITE OFTEN THROUGHOUT THE WINTER AND SPRING. NEW EXPLORATIONS CONTINUE TO BE ADDED FREQUENTLY!
Students are selected for scholarship programs on a competitive basis. To apply for a scholarship program, visit [www.syp.mtu.edu](http://www.syp.mtu.edu) and complete the application form for the program you’re interested in. Submit your application along with a teacher recommendation, high school transcript, and responses to short essay questions. Applications will be reviewed by our selection committee in April; you will be notified of our decision in mid-May. Women in Computer Science applications are due April 14; Engineering Scholars Program and Women in Engineering applications are due April 19; National Summer Transportation Institute and Rail and Intermodal Transportation applications are due May 2. For more information, please see our website.

**Engineering Scholars Program**

**Capacity: 150**

**51982 • Grades 9–11 • July 6–12, 2014**

**Cost:** A non-refundable registration fee of $295 is due within 10 days of acceptance

The Engineering Scholars Program (ESP) is a chance for traditionally underrepresented students to explore ten fields of engineering through hands-on projects and classroom investigations. Explore real engineering labs, meet and interact with leaders and role models, and take exciting trips throughout the beautiful Keweenaw Peninsula—all while learning about career opportunities and meeting other talented students with similar interests.

This program is a weeklong investigation of engineering careers in areas including mechanical, computer, environmental, electrical, chemical, biomedical, civil, geological, materials, and related disciplines.

- Explore engineering by constructing a building that can withstand an earthquake, creating your own message encryptor (share secrets only your friends can read), and more.
- Get the inside scoop from role models working in engineering fields.
- Work in teams to complete engineering projects.
- Learn about the college application process and get tips for succeeding in university engineering programs.
- Experience college life—stay in a residence hall, explore campus, and meet others with similar backgrounds and interests.
- Enjoy team competitions, a variety show, and tons of outdoor activities.

Please note that the program schedule is intense, but it provides a unique chance to discover the unlimited opportunities that careers in engineering and related disciplines can offer. The scholarship is valued at over $1,000 and covers tuition, room and board, and supplies.

**National Summer Transportation Institute (NSTI)**

**Capacity: 30**

**51621 • Grades 9–11 • July 13–26, 2014**

The National Summer Transportation Institute (NSTI) is a two-week exploration of modern transportation, including air, rail, road, and water. Travel to exciting locations like the Mackinac Bridge Authority, which oversees the third-longest suspension bridge in the world, and the Soo Locks shipping canal between Lake Superior and the Lower Great Lakes. Do hands-on group projects, meet other talented students, and take advantage of career opportunities in the transportation industry.

Michigan Tech’s National Summer Transportation Institute is a two-week residential program that allows students to explore today’s top transportation industries.

- Learn about airplanes, trains, ships, and automobiles through cool hands-on activities and group projects.
- Tour the Mackinac Bridge Authority and get behind-the-scenes information about the Mighty Mac, the third-longest suspension bridge in the world.
- Travel to Sault Ste. Marie and learn firsthand about the largest waterway traffic system on Earth: the Soo Locks shipping canal.
- Spend your time with other smart students in a vibrant university setting.
- Enjoy great recreational activities and time spent outdoors in the beautiful Keweenaw Peninsula.
- Michigan Tech is the only residential host site of this program in Michigan.

Note: Live-in only. Watch our website for further details—dates are tentative at this time.

**Rail and Intermodal Transportation**

**Capacity: 20**

**51639 • Grades 9–11 • July 27–August 2, 2014**

**Cost:** A nonrefundable registration fee of $100 is due within 10 days of acceptance

Explore the exciting world of rail and intermodal transportation. Why are trains called the “green transportation alternative”? How fast can high-speed passenger trains travel? How do containers find their way from China to the US? What are the latest developments in alternative fuels and train control systems? Find out the answers to these questions and more! Enjoy technical and hands-on tours of rail and intermodal facilities in Ishpeming/Marquette and Duluth/Superior where you can pose your questions directly to the experts!

Note: Live-in only; this exploration will travel to various locations throughout the week including Duluth, Minnesota, with a night’s stay in Superior, Wisconsin.
Women in Computer Science

52179 • Grades 9–11 • July 6–12, 2014
Cost: A nonrefundable registration fee of $100 is due within 10 days of acceptance

Women in Computer Science (WiCS) is a weeklong discovery of this fascinating field which is now an integral part of all aspects of our lives. Experience different areas of computing including programming, artificial intelligence, robotics, virtual reality, visualization, networks, and security. Learn about the many career opportunities in computing and the excellent job prospects in a wide range of industries. Interact with alumni and role models to get firsthand accounts of the diverse careers in computing.

Women in Engineering

51604 • Grades 9–11 • June 22–28, 2014
Cost: A non-refundable registration fee of $295 is due within 10 days of acceptance

The Women in Engineering (WIE) program is a chance for academically talented young women to explore ten fields of engineering through hands-on projects and classroom investigations. Explore real engineering labs, meet and interact with female leaders and role models, and take exciting trips throughout the beautiful Keweenaw Peninsula—all while investigating career opportunities and meeting other talented students with similar interests.

This program is a weeklong investigation of engineering careers in areas including mechanical, computer, environmental, electrical, chemical, biomedical, civil, geological, materials, and related disciplines.

• Explore engineering by constructing a building that can withstand an earthquake, creating your own message encryptor (share secrets only your friends can read), and more.
• Get the inside scoop from female role models working in engineering fields.
• Work in teams to complete engineering projects.
• Learn about the college application process and get tips for succeeding in university engineering programs.
• Experience college life—stay in a residence hall, explore campus, and meet other young women with similar backgrounds and interests.
• Enjoy team competitions, a variety show, and tons of outdoor activities.

Please note that the program schedule is intense, but it provides a unique chance to discover the unlimited opportunities that careers in engineering and related disciplines can offer. The scholarship is valued at over $1,000 and covers tuition, room and board, and supplies.
ATTENTION MIDDLE SCHOOL STUDENTS: MIDDLE SCHOOL WEEK
JUNE 29–JULY 3 IS JUST FOR YOU!

• EXCLUSIVE RATE
  Save up to $180. Camps are five days versus six—experience the fun without committing to a full week.

• 13 AWESOME PROGRAMS
  Choose from a great variety of cool camps—from backpacking to digital photography to forensic science and CSI.

• IT’S JUST FOR YOU
  It’s a week just for students entering grades 6–8, so you’ll spend time with hundreds of kids your own age.

Choose from these explorations:

Engineering
Bridges, Dams, Skyscrapers—51571, pg. 11
Engineering 101—51575, pg. 11
Engineering for Natural Hazards—52402, pg. 11
Materials Science and Engineering—51579, pg. 12
Mechanical Engineering—Design the Future—52405, pg. 12

Science and Technology
Forensic Science and CSI—51585, pg. 14
Introduction to Microbiology—52406, pg. 14
Rocketry and Space Science—52407, pg. 15
Wide World of Chemistry—51591, pg. 15

Computing
Introductory Video Game Programming—51594, pg. 16

Outdoor and Environmental Studies
Intro to Backpacking—52410, pg. 19
Wolf and Wildlife Ecology—51599, pg. 20

Humanities and Social Sciences
Digital Photography—51602, pg. 22

Additional middle school explorations are also offered July 13–August 2, along with high school programs.
ENGINEERING PROGRAMS

Bridges, Dams, and Skyscrapers
51571 • Grades 6–8 • June 29–July 3, 2014
Cost: Resident $695/Commuter $360
51572 • Grades 6–8 • July 20–26, 2014
Cost: Resident $875/Commuter $450

How do civil engineers design and build skyscrapers? How are bridges strong enough to hold the weight of traffic? Answer these and other big questions by making and breaking concrete, creating models, and visiting local structures designed by civil engineers.

Note: Students should wear long pants and sturdy, closed-toe shoes or boots. Be prepared to get dirty!

Chemical Engineering
51573 • Grades 9–11 • July 13–19, 2014
Cost: Resident $875/Commuter $450

The greatest challenge facing chemical engineers today is producing the products our society demands in a safe and environmentally friendly way. Explore alternative energy, chemical reactions, separation processes, and more through hands-on laboratory activities. Learn about chemical engineering while operating state-of-the-art equipment in our best-in-class laboratory facilities.

Note: Students should wear long pants and sturdy, closed-toe shoes or boots. Be prepared to get dirty!

Civil Engineering
52421 • Grades 9–11 • July 13–19, 2014
Cost: Resident $875/Commuter $450

How do civil engineers design and build skyscrapers? How are bridges strong enough to hold the weight of traffic? Answer these and other questions by making and breaking concrete, creating models, and visiting local structures designed by civil engineers.

Note: Students should wear long pants and sturdy, closed-toe shoes or boots. Be prepared to get dirty!

Computer and Electrical Engineering
51574 • Grades 9–11 • July 13–19, 2014
Cost: Resident $875/Commuter $450

Explore the world of computer and electrical engineering through simple circuits and digital logic. Imagine the future world of “smart” electronics and learn how engineers are creating them. Perform more than ten experiments that demonstrate the basic principles of computer and electrical engineering, including designing and constructing your own printed circuit board.

Engineering 101
51575 • Grades 6–8 • June 29–July 3, 2014
Cost: Resident $710/Commuter $375
51576 • Grades 9–11 • July 13–19, 2014
51577 • Grades 9–11 • July 20–26, 2014
51578 • Grades 9–11 • July 27–August 2, 2014
Cost: Resident $890/Commuter $465

Not sure which engineering area appeals to you? Explore a variety, including mechanical, electrical, chemical, civil, and environmental. Discover whether metal has a memory; learn how to purify water; program a robot; and design and build bridges, gliders, and/or prosthetic legs and test them to see how well they perform. You’ll work in teams and approach engineering challenges from a fresh perspective.

Engineering for Natural Hazards
52402 • Grades 6–8 • June 29–July 3, 2014
Cost: Resident $695/Commuter $360

How do buildings survive earthquakes? Where are slopes most likely to collapse? What happens within the earth right before a volcano erupts? Learn how scientists and engineers work together to keep buildings and communities standing after nature’s hazards strike! Build a tower to resist a shake table earthquake, model landslides in a laboratory, and experience a simulation of a volcanic eruption as you learn about how science and engineering are used to prevent disasters.
**ENGINEERING PROGRAMS**

**Geological Engineering**
- Capacity: 20 (grades 9–11)  
- Capacity: 15 (grades 6–8)

The Keweenaw Peninsula is called the Copper Country because of its rich deposits of copper. Journey through the incredible history of the Keweenaw’s geology: from the formation of an ancient volcanic rift and its enormous lodes of native copper to the glaciers that uncovered them, and the miners who powered the Keweenaw’s copper mining industry through the early 1900s. In the lab, you will discover how rocks and minerals are formed and learn to use specialized tools and the scientific method to identify them in the field. You will spend most of the week outside, examining geological evidence, mapping ancient lava flows and rock beds, exploring underground mines, collecting samples at old mines and on the beaches of Lake Superior, and sharpening your skills as a geologist in order to understand the events that shaped the Keweenaw’s landscape into what it is today.

**Materials Science and Engineering**
- Capacity: 15 (grades 6–8)  
- Capacity: 20 (grades 9–11)

Materials are everywhere, and understanding their basic science allows us to engineer new and improved materials. How do we create materials? How do we measure their behavior so that we can compare them? Explore these questions using a balanced mixture of science and hands-on engineering. Create your own materials, process them by bending and heating, and peer into their structures, which control how they behave.

*Note: Students should wear long pants and closed-toe shoes. Bring old clothes and prepare to get dirty.*

**Mechanical Engineering—Design the Future**
- Capacity: 15 (grades 6–8)  
- Capacity: 20 (grades 9–11)

Explore mechanical design, manufacturing, and energy systems through hands-on experiments and projects/competitions. Visit laboratories and participate in demonstrations of state-of-the-art equipment as you get a close-up look at the wide range of opportunities in mechanical engineering.

**Mechanical Engineering—Engineering the Human Body**
- Capacity: 20

Learn to look at the body from a mechanical engineering perspective. Participate in hands-on modeling and experiments/projects that characterize the mechanical properties of the body and natural tissues. Explore topics like safety, biomimetic design, and human-technology interface.

**Mechanical Engineering—Motorsports**
- Capacity: 20

Discover the world of competitive automotive engineering. See Michigan Tech student competition vehicles and learn the expanded basics of engines and other racing technology. Participate in hands-on activities and demonstrations with actual vehicles such as snowmobiles, the Formula SAE race car and Mini-Baja dune buggy, and hybrid electric vehicles. Learn about basic racing techniques and why they work.
Mining Engineering
52178 • Grades 9–11 • July 27–August 2, 2014
Cost: Resident $875/Commuter $450
The Upper Peninsula of Michigan is known for its iron and copper industry, and has hosted many underground and surface mines. Travel beneath the Earth’s surface to study an underground mining operation and learn about its challenges. You’ll observe the importance of mine ventilation and take measurements to understand the basic air-flow mechanism, as well as witness a blasting demonstration to understand rock breakage and the excavation process. You’ll see large-scale mining machines as well as a working mine layout and infrastructure. Later, you’ll have the chance to design a basic pit layout and a truck-shovel operation that meets production and field requirements.

Mobile Robotics
51640 • Grades 9–11 • July 20–26, 2014
Cost: Resident $900/Commuter $475
52177 • Grades 6–8 • July 27–August 2, 2014
Cost: Resident $720/Commuter $475
Jump headfirst into the world of autonomous mobile robotics. From concept to construction and computation, this exploration involves building and programming your own robot. Students are expected to solder, build, and program their way through several mini competitions. Join the world of robotics!
Aviation and Aerospace
51582 • Grades 9–11 • July 13–19, 2014
Cost: Resident $875/Commuter $450

Capacity: 15

Explore general aviation with an emphasis on what is required to achieve a private pilot license. You'll learn about the aerodynamics of flight, how to read aeronautical charts, and how to plot a course, which will be “flown” using a computer-based flight simulator. You'll also have the chance to ride in a general aviation airplane. Instructors are a mix of certified flight instructors, retired airline pilots, and former military pilots. Explore a variety of career possibilities, including general aviation pilot, military pilot, commercial pilot, FAA radar controller, and unmanned aerial vehicle pilot.

Note: One part of this exploration will be an EAA Young Eagles flight in a general aviation aircraft. Participants are required to provide a parent/guardian consent form before arriving at Michigan Tech.

Forensic Science and CSI
51585 • Grades 6–8 • June 29–July 3, 2014
Cost: Resident $695/Commuter $360
51586 • Grades 9–11 • July 13–19, 2014
51587 • Grades 6–8 • July 20–26, 2014
51584 • Grades 9–11 • July 27–August 2, 2014
Cost: Resident $875/Commuter $450

Capacity: 20

How can you track down a criminal with just one fiber? Learn how forensic scientists solve crimes through DNA analysis, blood-typing and splatter analysis, hair and fiber analysis, and facial reconstruction. Examine bones and tooth impressions and work in a team to investigate and solve a mock crime scene.

Note: Students should wear long pants and closed-toe shoes.

Prerequisite:

Genetic Modification and Biotechnology
51588 • Grades 9–11 • July 20–26, 2014
Cost: Resident $875/Commuter $450

Capacity: 20

Techniques such as genetic transformations are used to improve the production of a product in both number and quality. Learn how to genetically modify bacteria using a heat shock transformation procedure, insert foreign DNA (a pGLO plasmid isolated from jellyfish) into Escherichia coli to make the bacteria glow in the dark, and explore the ethics of genetic engineering, such as designer babies, genetically modified plants and feedstocks, cloning, antibiotic production, and more.

Note: Students should wear long pants and closed-toe shoes.

Prerequisite: One year of high school biology is recommended.

Introduction to Microbiology
52406 • Grades 6–8 • June 29–July 3, 2014
Cost: Resident $745/Commuter $410

Capacity: 15

Explore another world unseen by the naked eye! In this course you will learn basic microbiology techniques including the use of a microscope, staining specimen, streaking pure cultures, and performing cell density and viability counts. You will also be introduced to different classifications of microorganisms and their characteristics. We will discuss different career paths, including lab technicians in medical and industrial fields.
Medical Laboratory Science  
Capacity: 20  
51583 • Grades 9–11 • July 20–26, 2014  
Cost: Resident $875/Commuter $450  
Medical laboratory scientists use their background in biology and chemistry to develop test procedures that improve the healthcare industry. Perform your own laboratory exercises in clinical chemistry, immunology, parasitology, microbiology, hematology, blood banking, and urinalysis. Possible activities include blood glucose and cholesterol testing (clinical chemistry); testing for infectious mononucleosis or strep throat (immunology); looking for malaria, pinworms, or Giardia (parasitology); growing and identifying possible disease-causing bacteria (microbiology); looking at blood cells (hematology); urinalysis; and blood typing (blood banking). Safety protocols are followed closely in all explorations.  
Prerequisite: One year of high school biology is recommended.

Medical Physiology  
Capacity: 20  
51589 • Grades 6–8 • July 13–19, 2014  
51986 • Grades 9–11 • July 27–August 2, 2014  
Cost: Resident $875/Commuter $450  
Discover how a healthy body functions and explore the structure and physiology of muscles, lungs, the heart, blood, and the nervous system. Record and interpret an electrocardiogram, perform vision tests, and measure your reflex time under various conditions.  
Note: Students should be prepared to perform or observe dissections. Wear long pants and closed-toe shoes.

Rocketry and Space Science  
Capacity: 15  
52407 • Grades 6–8 • June 29–July 3, 2014  
Cost: Resident $720/Commuter $385  
52408 • Grades 9–11 • July 27–August 2, 2014  
Cost: Resident $900/Commuter $475  
How high does a rocket travel? What is its trajectory? What should its final speed be? Discover the answers to these and other important questions that engineers precisely answer before a rocket launch. Modify and improve a traditional rocket kit, perform the same calculations that a space-flight control center does, build and launch your own rocket, and assess its performance. You will also learn about aerodynamics, propulsion, space exploration, rocket design, and science careers.

Wide World of Chemistry  
Capacity: 15  
51591 • Grades 6–8 • June 29–July 3, 2014  
Cost: Resident $695/Commuter $360  
51592 • Grades 9–11 • July 13–19, 2014  
Cost: Resident $875/Commuter $450  
Explore several exciting and rapidly developing new fields in chemistry, including “green” chemistry, pharmaceutical, quantum, and biochemistry. Make a chromatography tee shirt, recycle paper, synthesize aspirin and test its purity, create a DNA sample necklace, and work with polymers.  
Note: Students should wear long pants and closed-toe shoes.  
What to bring: A calculator and a lab coat or oversized tee shirt.

Wind, Water, and Sun: Energy of the Future  
Capacity: 15  
52063 • Grades 9–11 • July 20–26, 2014  
Cost: Resident $900/Commuter $475  
Go green and learn about how easy it is to take advantage of renewable energy! Learn the science behind some of the main sources of green energy we use today—including wind, solar, and hydropower. Build a solar phone charger, take part in an energy-efficiency team challenge, and get a closer look at these systems through the local utility company. Gain an understanding of our future energy infrastructure and be prepared to lead an energy-efficiency charge in your own community.
3-D Models and Virtual Reality
51883 • Grades 9–11 • July 27–August 2, 2014
Cost: Resident $875/Commuter $450

3-D computer games and animated movies simulate virtual worlds using 3-D models. Create your own 3-D model using Google SketchUp and view your creation in a head-mounted display system in Michigan Tech’s Virtual Reality Lab. You will also learn about virtual reality technologies, 3-D photographs, and basic computer programming.

Designing for Humans
52070 • Grades 9–11 • July 27–August 2, 2014
Cost: Resident $875/Commuter $450

Learn about the design involved in making and evaluating phone apps and websites. You’ll find out what it takes to create a user-friendly design while learning about programming and feature selection; human perception, comprehension, and capabilities of the mind; text and content selection; and design features like spatial ordering of screen elements, color scheme selection, site navigation, and more. Become both the test user and evaluator of an app/website.

Introductory Video Game Programming
51594 • Grades 6–8 • June 29–July 3, 2014
Cost: Resident $695/Commuter $360

An introduction to programming for aspiring game developers. This course is a slower-paced version of “Video Game Programming,” covering the basics of game design through a series of increasingly complex mini-games. You’ll learn about primitive graphics, animation, and collision, and have time to create and experiment in a hands-on environment, individually and in small groups. This course will make use of the Processing (www.processing.org) environment, which is based on the Java programming language. You’ll leave with several games and the skills to continue learning about programming on your own. (This course assumes no previous experience with computer programming.)
Stop the Hackers!
51593 • Grades 9–11 • July 20–26, 2014
Cost: Resident $875/Commuter $450
Do you wonder how computer hackers infiltrate a system and steal private information? Do you want to learn how to keep your system safe? Come and explore the world of computer security. Learn about the attacks that hackers launch, such as key loggers, viruses, trojan horses, and phishing. Learn how to keep your information safe using cryptography, access control, virus detection, and more.

Video Game Programming
51641 • Grades 9–11 • July 13–19, 2014
Cost: Resident $875/Commuter $450
A crash course in programming for budding game developers! Get the fundamentals of game design through a series of increasingly complex mini-games, learning about collision, animation, basic AI techniques, and state-machines. You’ll also have the chance to create and experiment in a hands-on environment, either individually or in small groups. Introductory material will make use of the Processing (www.processing.org) environment and work up to coding with the Java programming language. You’ll leave with several games and the skills to continue programming on your own.
Aquatic Ecology  
51595 • Grades 6–8 • July 20–26, 2014  
Cost: Resident $875/Commuter $450
Learn about freshwater ecology in Upper Michigan’s beautiful Keweenaw Peninsula! Learn about who’s eating who in the Great Lakes, why some lakes are clear while others are green and murky, and what exactly is lurking in your typical backyard stream. You’ll start with plant life and work your way up the food chain to invertebrates and fish. Build your own model ecosystems with plenty of hands-on experience in both the great outdoors and Michigan Tech’s science labs. You’ll learn the basics of aquatic ecology and be able to investigate some of your own research questions. Be prepared for variable weather, lots of hands-on experience, and beautiful scenery.

What to bring: Rain gear, rubber boots or waders (if you have them), sunblock, bug spray, water bottle, swim suit/towel, clothes that can get dirty, shoes that can get wet and muddy, hiking boots (if you have them), warm clothes (the weather in the UP can be unpredictable), camera, backpack for day trips, and baseball cap/sunglasses. If you need outdoor gear, you’ll have the opportunity to rent it from Michigan Tech’s Outdoor Adventure Program (www.oap.mtu.edu) at half off.

Aquatic Ecology: Field Study at Gratiot Lake  
51596 • Grades 9–11 • July 27–August 2, 2014  
Cost: Resident $875
Spend a week living in a rustic log cabin at Gratiot Lake, in the heart of the Keweenaw Peninsula. Live the life of an ecologist as you collect and analyze aquatic invertebrates, compare water chemistry data, and learn how much fun hands-on ecology can be. You’ll learn tracking and casting techniques, explore the ecology of Lake Superior, discover how to identify invertebrates, and more.

Note: Live-in only. Be prepared to work outdoors in all kinds of weather (and have tons of fun!). Visit the Gratiot Lake Conservancy at www.gratiotlakeconservancy.org for information about where you’ll spend your week. If you are a student from the Keweenaw Peninsula, you may be eligible to apply for the Sandretto Scholarship. See our website (www.syp.mtu.edu) for more details.

What to bring: Sleeping bag, clothes and shoes that can get wet and muddy, swimsuit, rain gear, a pair of comfortable boots, water bottle, old tennis shoes or aqua socks, shorts, long pants, long-sleeved shirt, warm jacket or sweater, wool socks, hat, day pack, insect repellent, and sunscreen. Items encouraged but not required: chest waders and a camera. A more complete packing list will be sent to you with your Welcome Packet. If you need outdoor gear, you’ll have the opportunity to rent it from Michigan Tech’s Outdoor Adventure Program (www.oap.mtu.edu) at half off.

Backpacking the Porcupine Mountains Wilderness Area  
51884 • Grades 9–11 • July 20–26, 2014  
Cost: Resident $945
See the beauty of the Upper Peninsula firsthand on a backpacking expedition at the Porcupine Mountains Wilderness State Park. Hike along rugged trails and camp next to Lake Superior, Little Carp River, and Mirror Lake. Observe and photograph wildlife and breathtaking scenery. You’ll study peregrine falcon restoration and seasonal migration of white-tailed deer, practice safe cooking and leave-no-trace camping techniques, consult with a medical officer, and develop map-reading and compass skills.

Your program fee includes all costs associated with transportation to and from the park, food and group gear (water filters, tents, cooking kit, stoves, fuel, and other supplies), and park camping fee.

Note: Live-in only. Visit www.porcupinemountains.com to learn more about the Porcupine Mountains wilderness area.

Prerequisites: Good physical condition. Backpacking experience recommended.

What to bring: Comfortable, broken-in hiking boots, a compact sleeping bag, and a well-fitted backpack (3,000 cubic inches or more). A detailed list of additional required equipment will be provided in your Welcome Packet. If you need outdoor gear, you’ll have the opportunity to rent it from Michigan Tech’s Outdoor Adventure Program (www.oap.mtu.edu) at half off.
Canoe the Sylvania Wilderness Area

Capacity: 10

51985 • Grades 9–11 • June 29–July 3, 2014
Cost: Resident $820

Join us on a novice paddling adventure through the beautiful Sylvania Wilderness Area. Gain experience in canoeing, leave-no-trace camping practices, fire ecology, flora and fauna, natural history of the area, and more. We'll spend half a day on campus learning about packing and canoeing techniques, medical checks, and water filtration before heading out on trail. Then you'll have the chance to put your navigation and orienteering skills to the test as we navigate lakes to find portages and campsites.

Your program fee includes all costs associated with transportation to and from the park, food and group gear (water filters, tents, cooking kit, stoves, fuel, and other supplies), and park camping fee.

Prerequisites: Very good physical condition. Backpacking experience recommended.

Note: Live-in only. Visit www.fs.usda.gov/recarea/ottawa/recarea/?recid=12331 to learn more about the Sylvania Wilderness Area.

What to bring: Comfortable, broken-in hiking boots that will be submerged in water, a compact sleeping bag, and a 22-25 liter stuff sack (to fit sleeping bag and clothes). A detailed list of additional equipment needs will be provided in your Welcome Packet. If you need outdoor gear, you'll have the opportunity to rent it from Michigan Tech's Outdoor Adventure Program (www.oap.mtu.edu) at half off.

Ecology and the Environment

Capacity: 15

52181 • Grades 6–8 • July 13–19, 2014
Cost: Resident $875/Commuter $450

Come experience the Keweenaw Peninsula from a field scientist's point of view. This program is an opportunity for you to learn about the natural world and the methods scientists use to study it. Use scientific equipment and procedures to help you discover and identify the many wildlife and plant species that live in our beautiful area. You'll experience the diversity of life in the Keweenaw—from birds to beetles and flowers to fungi. You'll also find out how professional managers deal with natural resources issues such as exotic species. You will be outside everyday, so expect to get dirty and have fun as you examine wetlands, forests, meadows, and shorelines!

Intro to Backpacking

Capacity: 10

52110 • Grades 6–8 • June 29–July 3, 2014
Cost: Resident $765

See the beauty of the Upper Peninsula firsthand on an introductory backpacking expedition at the Porcupine Mountains Wilderness State Park. Hike along rugged trails; observe and photograph wildlife and breathtaking scenery; and camp next to Lake Superior, Little Carp River, and Mirror Lake. You'll learn the basics of backpacking, practice safe cooking and leave-no-trace camping techniques, consult with a medical officer, and develop map-reading and compass skills before heading out for an overnight hike in the Porcupine Mountains.

Your program fee includes all costs associated with transportation to and from the park, food and group gear (water filters, tents, cooking kit, stoves, fuel, and other supplies), and park camping fee.

Prerequisites: Very good physical condition. Backpacking experience recommended.

Note: Live-in only. Visit www.porcupinemountains.com to learn more about the Porcupine Mountains wilderness area.

What to bring: Comfortable, broken-in hiking boots, a compact sleeping bag, and a well-fitted backpack (3,000 cubic inches or more). A detailed list of additional required equipment will be provided in your Welcome Packet. If you need outdoor gear, you'll have the opportunity to rent it from Michigan Tech's Outdoor Adventure Program (www.oap.mtu.edu) at half off.

Keweenaw Adventures

Capacity: 15

52111 • Grades 9–11 • July 27–August 2, 2014
Cost: Resident $875/Commuter $450

The Keweenaw Peninsula is known for its natural beauty, remote wilderness location, and rich tradition of copper mining by native populations of people. It is the only recorded site of prehistoric mining in the world. Spend a week exploring the physical wonders of the area as well as the historic, prehistoric, geological, ecological, anthropological, and industrial landscapes. Learn to see the landscapes through History of the Copper Country—a favorite class of Michigan Tech students. You'll spend a great deal of time outdoors at various sites throughout the Keweenaw and along Lake Superior, learning about the use of outdoor spaces, native life and history, the industrial revolution in Michigan, land use and protection, and reading cultural landscapes.

What to bring: Comfortable, broken-in hiking boots and a daypack. A detailed list of additional equipment needs will be provided in your Welcome Packet. If you need outdoor gear, you'll have the opportunity to rent it from Michigan Tech's Outdoor Adventure Program (www.oap.mtu.edu) at half off.

Prerequisites: Good physical condition.
Mountaineering
51597 • Grades 9–11 • July 20–26 2014
51598 • Grades 6–8 • July 27–August 2, 2014
Cost: Resident $900/Commuter $475

Explore the historic and geological wonders of the Keweenaw Peninsula. Navigate through your week as you travel to various locations to climb and rappel. Learn the art of orienteering as you traverse to your locations. You’ll gain a solid general knowledge of the outdoors and how to navigate various terrains.

What to bring: A pair of sturdy hiking boots, hair ties for long hair, bug repellent, sturdy clothing that will be well used and will get dirty, and a water bottle. Be prepared for changing temperatures (45 to 90 degrees) and weather (hot and sunny to cold and rainy). All other equipment will be provided. If you need outdoor gear, you’ll have the opportunity to rent it from Michigan Tech’s Outdoor Adventure Program (www.oap.mtu.edu) at half off.

Wolf and Wildlife Ecology
51599 • Grades 6–8 • June 29–July 3, 2014
Cost: Resident $695/Commuter $360

Study wolves’ biology, behavior, and ecological and biopolitical relationships in the classroom and while hiking in wolf country. You will develop radio-tracking skills while searching for wolf radio-collars. You will also walk to the Isle Royale National Park headquarters and take day trips up the Keweenaw Peninsula, to the North Country Trail leading to a deeryard at the Middle Branch of the Ontonagon River, and to Michigan Tech’s Ford Forestry Center and the nearby Baraga Plains. You’ll develop map-reading and compass skills, talk with a DNR pilot as he shows radio-telemetry equipment on his airplane, make plaster-of-Paris casts of wolf tracks, and discover how technology empowers researchers to make new discoveries out of old moose bones (a building full!) from Isle Royale.

Prerequisites: Good physical condition.

What to bring: Sturdy hiking boots, rain wear, insect repellent, sunscreen, and a day pack to carry your gear.

Wolf/Moose Backpack on Isle Royale
www.nps.gov/isro
52422 • Grades 9–11 • June 22–28, 2014 (females only)
52174 • Grades 9–11 • July 6–12, 2014
52409 • Grades 9–11 • July 13–19, 2014
Cost: Resident $1,000

Head to Isle Royale National Park for a hiking adventure and study the wolf-moose predator-prey research project. The trip begins with an introduction to wolf-moose research; instruction on packing, clothing, gear, and leave-no-trace camping techniques; distribution of food, water filters, tents, cooking kit, stoves, fuel, and other group supplies; and a practice hike in Houghton. You will then take a ferry (approximately a three-hour ride) to Isle Royale National Park for a week of hiking, camping, exploring the summer headquarters of the wolf-moose study, and more.

Itinerary: You will board the Isle Royale Queen IV (www.isleroyale.com) on Monday morning to begin your adventure. The ferry departs at 8:00 AM for a three-hour crossing of Lake Superior to Rock Harbor on Isle Royale. A visit to the summer headquarters of the wolf-moose study, Bangsund Cabin, will be a highlight of the trip. The ferry departs Rock Harbor at 2:45 PM Friday for the return voyage to Copper Harbor. The group will enjoy pizza at a roadside park during the return van ride to Houghton.

Note: Live-in only. This exploration returns to campus around 9:00 PM Saturday evening, after charter bus service has departed. Therefore, please make overnight accommodations and travel arrangements accordingly. Visit www.nps.gov/isro to learn more about Isle Royale National Park.

Prerequisites: Very good physical condition. You will hike about 30 miles on the island with loaded packs on rocky trails. Backpacking experience recommended.

What to bring: Comfortable, broken-in hiking boots, a compact sleeping bag, and a well-fitted backpack (3,000 cubic inches or more). A detailed list of additional equipment needs will be provided in your Welcome Packet. If you need outdoor gear, you’ll have the opportunity to rent it from Michigan Tech’s Outdoor Adventure Program (www.oap.mtu.edu) at half off.
BUSINESS, HUMANITIES, & SOCIAL SCIENCES PROGRAMS

Be Your Own Boss
51642 • Grades 9–11 • July 20–26, 2014
52401 • Grades 6–8 • July 27–August 2, 2014
Cost: Resident $845/Commuter $450

Learn what it takes to start your own business! This course will take you through the steps of how to be a successful entrepreneur. You will learn how to develop a solid business plan and how to market to a target audience. Each day of the week will be dedicated to different activities that will teach you business skills, including marketing, finance, management, and sales. You will also explore advertising avenues and study various marketing approaches such as television, radio, newspaper, and social media outlets like Twitter and Facebook. On Thursday you will have the opportunity to sell your products at a variety show.

Blacksmithing
51601 • Grades 9–11 • July 27–August 2, 2014
Cost: Resident $925/Commuter $500

Explore the art of blacksmithing. Learn how to draw out your metal, punch holes, upset the end of a bar, and split steel with a chisel, as well as get the opportunity to bend, rivet, and twist bars, and to make scrolls and tendons. Build your own forge and anvil to begin smithing on your own.

What to bring: Old jeans, long-sleeve shirt, and leather shoes (no open-toe shoes). Do not wear flammable materials.

Computer Graphics and Design
51885 • Grades 9–11 • July 27–August 2, 2014
Cost: Resident $875/Commuter $450

Translate your creative and visual design ideas into actual computer art. Learn some of the most adaptable design principles and how to apply them to your own text, illustration, and photographic compositions. Create your own calendar or graphic tee to add to your portfolio.

Digital Photography
51602 • Grades 6–8 • June 29–July 3, 2014
Cost: Resident $695/Commuter $360
52183 • Grades 9–11 • July 13–19, 2014
Cost: Resident $875/Commuter $450

Capture images on explorations throughout the Keweenaw Peninsula, which offers beautiful shorelines, waterfalls, and abandoned mine structures. Learn about exposure, composition, and visualization. Explore the possibilities as you refine your images with Adobe Photoshop.

What to bring: A digital camera, memory cards, memory card reader, flash drive or external hard drive, and a battery charger. If you have them, bring an extra battery, your camera manual, a camera case, tripod, and any lenses or accessories. Since you will be spending many hours outdoors, bring comfortable walking or hiking boots, insect repellent, and a water bottle.

Director’s Cut: Intro to Videography
51603 • Grades 9–11 • July 20–26, 2014
Cost: Resident $875/Commuter $450

Use your own original footage, images, sound, and music to create a short fictional film or documentary. Learn how to draw storyboards, write scripts, capture footage, and edit film. Gain experience with programs such as Final Cut Pro and Premiere Pro.

What to bring: Since you will be spending many hours outdoors, bring comfortable walking or hiking boots, insect repellent, and a water bottle.
LEADERSHIP PROGRAMS

Outdoor Leadership
52414 • Grades 9–11 • July 27–August 2, 2014
Cost: Resident $900/Commuter $475

Have a blast in an exciting outdoors-based leadership program while you develop your teamwork, communication, trust, self esteem, problem solving, and decision-making skills. Prepare to climb, swing, balance, jump, rappel, and devise solutions to a variety of situations. Our course includes a raised challenge course as well as a zip line and low-course activities. The week’s capstone is a student-planned adventure that will test the group’s leadership, planning, and group facilitation skills. Most students do much more than they thought they were capable of doing. Get ready to flex your limits and experience training through the body, not of the body.

Pavlis Summer Leadership Institute: Engineering, Science, and Business for the Developing World
51983 • Grades 9–11 • June 22–28, 2014
Cost: Resident $875/Commuter $450

Broaden your sphere of influence, make a difference in the developing world, and enhance your individual potential. This unique exploration will give you the opportunity to apply business, science, and engineering knowledge and expertise to projects designed to make a difference in the lives of people living in the countries of India, Ghana, and Malta. You will work alongside students in Michigan Tech’s Pavlis Leadership Institute (www.pavlisinstitute.mtu.edu) to develop projects and find real-world solutions to some of the problems faced by millions around the globe—all while respecting the cultural differences that make each nation’s people unique. These projects will be implemented in July 2014 by Michigan Tech’s Pavlis students, and you’ll be able to follow their progress and make real-time suggestions through their travel blog sites.

Some of the projects available for development include designing systems to purify water supplies in India, improving health screening and diagnostic testing in Ghana, and teaching school children the importance of proper hygiene and the value of education to improve their lives and futures. Through this exploration, you will learn to critically analyze and solve problems, effectively communicate ideas, boost your confidence through fun, hands-on activities, and work cooperatively with others to significantly increase your potential to succeed both personally and academically.

Whether you are considering a future in business, engineering, science, or public service, this exploration will complement your goals and give you the confidence to pursue your dreams.

Things to bring: Swimsuit, sturdy shoes, a passion to make a difference.
2014 Summer Sports Camps

The best play, coolest coaches, and most fun you’ll have on the ice, field, and court!

- Work one-on-one with Michigan Tech’s GLIAC and WCHA Coaches of the Year
- Play on the same turf as the college athletes at Michigan Tech’s top facilities
- 20+ camps/programs in basketball, football, hockey, mountain biking, skating, soccer, tennis, and volleyball

Registration opens in February.
www.michigantechrecreation.com/camps

Contact Info:
2014 Michigan Tech Sports Camps
Toll free: 888-829-9688 • Office: 906-487-2975 • Fax: 906-487-3607
Email: sportscamps@mtu.edu

Michigan Technological University is an equal opportunity educational institution/equal opportunity employer, which includes providing equal opportunity for protected veterans and individuals with disabilities. 2014139013
SUMMER YOUTH PROGRAMS 2014 CALENDAR

Can’t decide which program to choose? Attend more than one!
SYP summer camps and explorations are so much fun, it’s common for students to stay for two or three weeks—some even spend the whole summer. To help you decide when to attend, we’ve created an at-a-glance calendar listing of all programs. Weekend stayovers between programs are available for a fee—meals, lodging, and trips throughout the local area are provided. So start planning now, and get ready to have a blast.

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<tr>
<td>Aviation and Aerospace</td>
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<tr>
<td>Forensic Science and CSI</td>
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<td>51586</td>
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<td>Medical Physiology</td>
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<td>Wide World of Chemistry</td>
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<td><strong>COMPUTING</strong></td>
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<td>Video Game Programming</td>
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<tr>
<td><strong>OUTDOOR AND ENVIRONMENTAL STUDIES</strong></td>
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<td>Ecology and the Environment</td>
<td>6–8</td>
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<tr>
<td>Wolf/Moose Backpack on Isle Royale</td>
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<tr>
<td><strong>BUSINESS, HUMANITIES, AND SOCIAL SCIENCES</strong></td>
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<td>Digital Photography</td>
<td>9–11</td>
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<tr>
<td>Psychology in the Real World: How the Principles of Psychology Affect People Everyday</td>
<td>9–11</td>
<td>52412</td>
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<tr>
<td>Writing with Sound</td>
<td>9–11</td>
<td>52413</td>
<td>Page 23</td>
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<tr>
<td><strong>July 20–26, 2014</strong></td>
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<tr>
<td><strong>ENGINEERING</strong></td>
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<tr>
<td>Bridges, Dams, and Skyscrapers</td>
<td>6–8</td>
<td>51572</td>
<td>Page 11</td>
</tr>
<tr>
<td>Engineering 101</td>
<td>9–11</td>
<td>51577</td>
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<tr>
<td>Geological Engineering</td>
<td>9–11</td>
<td>51984</td>
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<tr>
<td>Mechanical Engineering: Engineering the Human Body</td>
<td>9–11</td>
<td>51882</td>
<td>Page 12</td>
</tr>
<tr>
<td>National Summer Transportation Institute (NSTI)*</td>
<td>9–11</td>
<td>51621</td>
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</tr>
<tr>
<td>Mobile Robotics</td>
<td>9–11</td>
<td>51640</td>
<td>Page 13</td>
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</tbody>
</table>

*NSTI is a two-week course—July 13–26, 2014

continued on page 27
## July 20–26, 2014 (continued)

### Science and Technology
- Forensic Science and CSI
  - Grade: 6–8
  - CRN: 51587
  - Page: 14
- Genetic Modification and Biotechnology
  - Grade: 9–11
  - CRN: 51588
  - Page: 14
- Medical Laboratory Science
  - Grade: 9–11
  - CRN: 51583
  - Page: 15
- Wind, Water, and Sun: Energy of the Future
  - Grade: 9–11
  - CRN: 52063
  - Page: 15

### Computing
- Stop the Hackers
  - Grade: 9–11
  - CRN: 51593
  - Page: 17

### Outdoor and Environmental Studies
- Aquatic Ecology
  - Grade: 6–8
  - CRN: 51595
  - Page: 18
- Backpacking the Porcupine Mountain Wilderness
  - Grade: 9–11
  - CRN: 51884
  - Page: 18
- Mountaineering
  - Grade: 9–11
  - CRN: 51597
  - Page: 20

### Business, Humanities, and Social Sciences
- Be Your Own Boss
  - Grade: 9–11
  - CRN: 51642
  - Page: 22
- Director’s Cut: Intro to Videography
  - Grade: 9–11
  - CRN: 51603
  - Page: 22

## July 27–August 2, 2014

### Engineering
- Engineering 101
  - Grade: 9–11
  - CRN: 51578
  - Page: 11
- Geological Engineering
  - Grade: 6–8
  - CRN: 51638
  - Page: 12
- Mechanical Engineering—Motorsports
  - Grade: 9–11
  - CRN: 51581
  - Page: 12
- Mining Engineering
  - Grade: 9–11
  - CRN: 52178
  - Page: 13
- Mobile Robotics
  - Grade: 6–8
  - CRN: 52177
  - Page: 13
- Rail and Intermodal Transportation
  - Grade: 9–11
  - CRN: 51639
  - Page: 8

### Science and Technology
- Forensic Science and CSI
  - Grade: 9–11
  - CRN: 51584
  - Page: 14
- Medical Physiology
  - Grade: 9–11
  - CRN: 51986
  - Page: 15
- Rocketry and Space Science
  - Grade: 9–11
  - CRN: 52408
  - Page: 15

### Computing
- 3-D Models and Virtual Reality
  - Grade: 9–11
  - CRN: 51883
  - Page: 16
- Designing for Humans
  - Grade: 9–11
  - CRN: 52070
  - Page: 16

### Outdoor and Environmental Studies
- Aquatic Ecology: Field Study at Gratiot Lake
  - Grade: 9–11
  - CRN: 51596
  - Page: 18
- Keweenaw Adventures
  - Grade: 9–11
  - CRN: 52411
  - Page: 19
- Mountaineering
  - Grade: 6–8
  - CRN: 51598
  - Page: 20

### Business, Humanities, and Social Sciences
- Be Your Own Boss
  - Grade: 6–8
  - CRN: 52401
  - Page: 22
- Blacksmithing
  - Grade: 9–11
  - CRN: 51601
  - Page: 22
- Computer Graphics and Design
  - Grade: 9–11
  - CRN: 51885
  - Page: 22

### Leadership
- Outdoor Leadership
  - Grade: 9–11
  - CRN: 52414
  - Page: 23
Application and Payment Form

Pre-College Explorations
Mind Trekkers Summer Camps
Summer Youth Programs Payment Form

Applicant’s name ____________________________________________________________

All applicants must complete and return this page. Exploration fees do not apply to Competitive Scholarship Programs.

Participant Fees
Fee per Exploration(s):
June 29–July 3: live-in $695*, commuter $360
July 13–August 2: live-in $875*, commuter $450
*Some exploration fees vary—see exploration description for details

Early arrival/late departure: $75 per day (number of days___________) + __________
Stayover fee: $100 per weekend (number of weekends___________) + __________
Charter bus: $250 round-trip; $150 one-way + __________
Cost includes a nonrefundable $25 processing fee—due in full within ten days of purchase.

Subtotal

Discounts/Awards
Michigan Tech alumni and staff award: $50 – __________
Children and grandchildren of Michigan Tech alumni and staff are eligible once per summer.

Name
☐ Staff  ☐ Alumni: Graduation Year __________________________
Multiple week discount—$50 off additional weeks – __________
Applicable to each additional exploration after the first week

Payment enclosed
A minimum nonrefundable deposit of $100 per exploration is due within ten days of application.

Balance Due $ _______________

Payments are due in full by June 1, 2014.

Method of Payment
☐ To pay by check or money order: Please include the student’s name on the memo line, and make your check or money order payable to “Michigan Tech—SYP.”

☐ To pay by credit card: Please complete the information below, or you may give your credit card information over the phone through the toll-free number. Your credit card will NOT be billed until your enrollment is processed.

Cardholder’s name__________________________________________________________
Address ___________________________________________________________________
City, State, ZIP ___________________________________________________________
Day telephone ________________________________________________________________
☐ Discover  ☐ Visa  ☐ MasterCard
Card number ________________________________________________________________
Expiration date ______________________________________________________________
Authorized signature__________________________________________________________ Date__________

You may mail your payment to:
Michigan Tech Summer Youth Programs
1400 Townsend Drive
Houghton, MI 49931-1295
Telephone 906-487-2219
Toll-free 1-888-773-2655
Fax 906-487-1136

For office use only:
Credit card processed ☐  Check received ☐ # __________________________ Name __________________________
Money order/cashier’s check ☐ # __________________________ Name __________________________ Bank __________________________
Notes ____________________________________________________________
Summer Youth Programs Application

ALL APPLICANTS MUST COMPLETE AND RETURN THIS FORM.

Explorations fill quickly! There are two ways to apply:
Online: www.syp.mtu.edu  •  By mail: see below

Please complete both sides of this application and send it with a $100 nonrefundable deposit for each exploration. Applications without applicable deposit will not be processed. Fill out the attached payment form and pay by credit card, check, or money order (made out to Michigan Tech—SYP). Do not send cash, and do not staple your payment to this form.

Legal name _______________________________________________________________________________________________________________________________

First   Middle   Last   Suffix (Jr., Sr., II, etc.)

Preferred name/nickname _______________________________________________________________________________________________

This is how your name will appear on your participant ID.

Contact Information

Participant’s email_________________________________________________________________________________________________________

Address/PO Box__________________________________________________________ City______________________________________________

State/Province__________________________________________________ ZIP or Postal code__________________________________________

County_________________________________________________________ Country___________________________________________________

Phone number______________________________________________ Participant’s cell______________________________________________

Personal Information

Gender__________________________ Birth date____________________________________Current age_________________________________

School Information

What is the name of the school you attended this year?_____________________________________________________________________

What grade will you have completed by June 2014?__________________________________________________________________________

Current class rank: ___________ out of ___________ Cumulative GPA_______________ (4.0 scale)

Transcript Provided  □ Yes  □ No
Students who provide a copy of their transcripts with their application may be eligible for Summer Youth Programs Merit Awards—see website for more details.

Parent/Guardian Information—Each parent/guardian must fill out the following information.

<table>
<thead>
<tr>
<th>Parent first name</th>
<th>Middle name</th>
<th>Last name</th>
<th>Suffix</th>
<th>Relationship to applicant</th>
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</thead>
<tbody>
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<table>
<thead>
<tr>
<th>Parent first name</th>
<th>Middle name</th>
<th>Last name</th>
<th>Suffix</th>
<th>Relationship to applicant</th>
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<thead>
<tr>
<th>Evening phone number</th>
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<table>
<thead>
<tr>
<th>Day phone number</th>
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<table>
<thead>
<tr>
<th>Cell phone number</th>
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<table>
<thead>
<tr>
<th>Email address</th>
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<table>
<thead>
<tr>
<th>Is your address the same as the participant's?</th>
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</tbody>
</table>
How did you hear about our program?

☐ Counselor or teacher  ☐ Previous participant  ☐ Youth Programs website  ☐ Poster  ☐ Friend
☐ Catalog  ☐ Internet search  ☐ Michigan Tech alumni or faculty/staff  ☐ Mind Trekkers Event
☐ Other _______________________________________________________________________________________________________

Enrollment
I am enrolling in the following exploration(s):

<table>
<thead>
<tr>
<th>Exploration number</th>
<th>Exploration name</th>
<th>Dates</th>
<th>Live-in</th>
<th>Commuter</th>
<th>Participant fee:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example: 51767</td>
<td>Chemical Engineering</td>
<td>July 13–19</td>
<td>☑</td>
<td>☐</td>
<td>$875</td>
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<td>Total</td>
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</tbody>
</table>

Please list alternate exploration choices in order of preference.

<table>
<thead>
<tr>
<th>Exploration number</th>
<th>Exploration name</th>
<th>Dates</th>
<th>Live-in</th>
<th>Commuter</th>
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Transportation

More information, including specific charter bus drop-off and pick-up locations, will be sent to you in your Confirmation Packet. Please refer to our website for more details on your transportation options.

When do you plan on arriving at Michigan Tech?
Check-in: Sunday 9:00 AM–4:00 PM EDT
Day ___________ Time ____________________

How do you plan on arriving at Michigan Tech?
☐ Car
☐ United Airlines: Houghton (CMX)
  Flight number ____________________
☐ SYP charter bus
  Please pick me up in: ☐ Lansing  ☐ Detroit
  ☐ Bay City  ☐ Gaylord  ☐ St. Ignace
  ☐ Kalamazoo*  ☐ Chicago*  ☐ Milwaukee*
  ☐ Green Bay*  ☐ Iron Mountain*
  *(July 13–25 only)
  Pickup will be the Saturday evening prior to the program start date.
☐ Other

When do you plan on departing from Michigan Tech?
Checkout: Friday 5:00–11:00 PM and Saturday 8:00 AM–NOON
(except for the week of June 29–July 3: departure must be by 10:00 PM Thursday, July 3)
Day ___________ Time ____________________

How do you plan on departing from Michigan Tech?
☐ Car
☐ United Airlines: Houghton (CMX)
  Flight number ____________________
☐ SYP charter bus
  Please drop me off in: ☐ Lansing  ☐ Detroit
  ☐ Bay City  ☐ Gaylord  ☐ St. Ignace
  ☐ Kalamazoo*  ☐ Chicago*  ☐ Milwaukee*
  ☐ Green Bay*  ☐ Iron Mountain*
  *(July 13–25 only)
  Departure from Michigan Tech will be the Friday evening following the program (except July 3; see above).
☐ Other

Please note: If you will be arriving before the program begins, or departing after its conclusion, there is an additional fee. See website for details (www.syp.mtu.edu).
IGNITE YOUR PASSION