Michigan Technological University
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Founded in 1972, Michigan Technological University's [Summer Youth Programs](#) (SYP) offers middle and high school students opportunities for hands-on learning and career exploration in a wide-variety of fields and to experience college life in a fun, engaging, and safe setting. We aspire to spark curiosity, discovery, and critical soft skill development in exceptional young people from around the world.

The SYP Visiting Instructor Program is currently accepting proposals from educators to design and deliver a week-long course during our 2023 Summer Youth Programs. Proposals for middle school level programming are especially encouraged!

Visiting Instructor Program 2023
Application Deadline: Tuesday, November 1, 2022

Course Criteria

Proposals for courses should meet the following criteria:
- Consist of 31.5 contact hours with students
  - Daily schedule is approximately 9:00 am - 12:00 pm, 1:15 pm - 4:30 pm, Monday-Friday
- Courses should prioritize hands-on activities and showcase related careers
  - A budget of $400 will be allocated for course supplies and and related activities
  - Day trips to local places of relevancy, campus facilities, etc. are highly encouraged
- Accommodate 15 middle school students (grades 6-8) or 20 high school students (grades 9-11) with varying levels of background knowledge of course content
  - A teaching assistant may be available (with your assistance in selection) for courses whose enrollment reaches or exceeds 12 participants
  - We will do our best to meet your classroom or lab space & equipment needs. If specific software, equipment, or physical space is necessary for your proposed activities, please reach out to us during your proposal development to discuss available options.

Compensation & Benefits

Selected Visiting Instructors will receive:
- Salary of $725.00 for the week
- Up to $350 in reimbursement for travel costs to and from Michigan Tech's campus*
- On-campus lodging and daily lunch**
- A scholarship for a student from their school to attend an SYP course of their choice**

*Travel reimbursement and lodging will be provided for educators located 30+ miles from Michigan Tech's campus. Receipts for travel should be submitted to the Center for Educational Outreach for reimbursement.
**If off-campus lodging is preferred, a stipend of $375 will be provided. Unfortunately, we cannot assist with securing off-campus housing.

Selection Expectations

Selected Visiting Instructors are expected to:
- Submit all required course materials according to program deadlines
- Consent to and pass a background check
- Satisfy all required Summer Youth Programs Instructor and minors-related program trainings (approximately 3 hours) and code of conduct requirements
- Develop a course itinerary fulfilling all 31.5 contact hours according to the daily schedule
- Participate in Monday morning and Friday morning instructor meetings during the week in which the course is taught
- Submit necessary follow-up on course

Application

To apply, please send a proposal which includes the following to syplogic@mtu.edu:
- Cover letter describing your interest in being selected for this opportunity
- Professional Resume
- Letter of Recommendation from another educator or school administrator
- Course title and a 250-word description of proposed content including a general outline of proposed itinerary, target age level (grades 6-8 or 9-11), and 3-4 student learning outcomes
- Your scheduling preference for 2023 course dates:
  - Week 1: June 18 - 24
  - Week 2: June 25 - July 1
  - Week 3: July 9 - 15
  - Week 4: July 16 - 22
  - Week 5: July 23 - 29

Up to two courses may be proposed per educator. If proposing more than one course, please combine both proposals into one deliverable.

Visiting Instructor Program Timeline

- Proposals are due to no later than 5:00 pm EST on Tuesday, November 1, 2022
- Proposal selections will be announced after November 18, 2022
- Instructor Trainings will take place online late May/early June 2023
- Detailed itinerary, course budget, and supplies list will be due one month prior to the course
- Course will take place during SYP 2023 program dates
  - Upon selection into the Visiting Instructor Program, your hiring is contingent upon student enrollments and passing a background check. Summer Youth Program courses will only run if at least 10 students are enrolled in the program one month prior to the start of the course.

If you have any questions about the Visiting Instructor Program, please contact syplogic@mtu.edu.
We look forward to reviewing your proposal!

Sample Proposal #1

What Is Machine Learning? Course Proposal

Course Description:

This course introduces students to the rapidly emerging worlds of data science and a subset of artificial intelligence (AI) known as machine learning. Data is constantly being collected and analyzed in all corners of the world. Students will be introduced to the Data Science Process and will be given the chance to explore real data sets to find patterns and interpret results. With this understanding of how data is analyzed and how prevalent data has become, students will be introduced to machine learning as a valuable tool for use in data analysis.

Students will be introduced to the first attempts at machine learning by studying the perceptron model. The course will give an overview of this model and the broader area of neural networks. Students will have a chance to see how some of the basic mathematics they have learned, or will learn, ties into data science and machine learning. The course will give students the opportunity to code their own programs using Python, one of the most popular programming languages for data scientists.

The course will also expose students to the use of machine learning in the real-world, the broader subject of artificial intelligence and the impact on industry and our everyday lives.

There are many opportunities throughout the week for inquiry, collaboration and discussion. A capstone project gives the students an opportunity to choose a data set and code a machine learning program to analyze a real-world problem of their very own!

Target Age Level:

High School (Ninth Grade to Twelfth Grade)

Course Itinerary:

Monday

Introductory discussion on AI and machine learning

Perceptron Model lesson based on Teachengineering.org lesson

Extensions can include some of the other functions not mentioned in the lesson

Perceptron Model activity based on the associated activity from Teachengineering.org lesson

Tuesday

Data Talk

Introduction to Data Science as a subject

Differences between data science, mathematics and statistics

Hands-on activity using Codap
    Students will use Codap to manipulate data, ask questions of the data and make observations.
Direct instruction and hands-on coding activities using Python

Direct instruction and discussion on mathematics involved in data science and machine learning

Direct instruction and discussion on the Data Science Process

Direct instruction and discussion on machine learning process

Introduce capstone project (student choice) from the list of [Machine Learning projects](#)

Time to work on capstone project and ask questions

Wednesday

Data Talk

Time to work on capstone project

Direct instruction and discussion on different types of machine learning
    Supervised vs. Unsupervised learning vs. Reinforcement learning

Time to work on capstone project

Thursday

Data Talk

Direct instruction and discussion on AI and ethics

Time to work on capstone project

Direct instruction lessons and coding activities using Python

Work on capstone project

Friday

Summary, discussion and presentations of projects and findings
Topics that will be covered multiple times throughout the week:

1-2 Data Talks per day: Students will look over a representation of data and discuss what they notice and what they wonder.

Each session will offer career highlights within data science and/or real-world examples of machine learning.
Students will learn how machine learning is applied to improve health care outcomes, prevent fraud in the financial sector and prevent crime. An overview of various careers within data science will be included as well. Some careers to be explored: Data Scientist, AI Ethicist, Computer Scientist

Learning Outcomes:

Students will be able to:

- Describe the difference between machine learning and traditional computer programming

- Code a simple program using Python

- Use data science techniques to analyze and interpret data

- Describe how machine learning is used in real-world scenarios

Scheduling Preference

We are open to coming any time, but we have a few considerations.

Our preference is to avoid week 2 if possible.

As this is a joint proposal for two weeks of programming and the travel involved, it might be best to run these programs in consecutive weeks or we are willing to space these out; For example we could come during weeks 1 and 6.

Sample Proposal #2

October 28, 2021

Summer Youth Program
Michigan Technological University
Center for Education Outreach

Dear CEO staff:

I lead an innovative education non-profit in the ▮▮▮▮▮▮▮▮ area. We offer a variety of self-directed, non-traditional learning programs and activities which can be reviewed on our website. ▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮

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One aspect of student development we have discovered that needs to be amplified is in the area of leadership. High school students need an opportunity to reimagine what leadership means for their generation at this moment. To meet the needs of tomorrow, we need to begin building the skills of the type of leaders we need today. Our proposed program meets those criteria.

A key partner for our proposed leadership program is the superintendent of the ▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮ school district, ▮▮▮▮▮▮▮. He will be presenting in this week-long leadership course, and is actively seeking ways to integrate more leadership opportunities for students in his local school district.

Our proposed program will be built around the following concepts:
- A review of traditional model of leadership; checking our assumptions
- Imagining a new model of leadership that is more inclusive and relevant
- Self assessment of personalities and strengths
- Icebreakers, interactive activities and leadership simulations
- Low ropes course at MTU Outdoor Adventures
- Reflection exercises, small groups conversations

We would like to present to high school students during Week 5, July 24 to 30.

In addition to this letter, please find attached a letter of recommendation, and a course overview on pages 2 and 3. (including the details requested in the RFP). We are excited to present at SYP to a diverse group of students.

Sincerely,

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Course Overview

Course title: Leading for Tomorrow

Course description: The issues our world and US society faces today are complex and require a new style of leadership. Students will begin with an examination of the traditional notion of leadership and work toward developing a new model of leadership that reflects the diverse perspectives, life experiences, and skills of this generation. Through self assessment, interactive activities, facilitated conversations and hands-on simulations, students will examine their own potential for leadership and begin identifying the issues they wish to work on as they continue on their journey of development and growth.

This course will utilize videos and Ted Talks, small group discussions, and reflection techniques to give space for students to think deeply about leadership and the issues they will need to address as adults in the workforce. Leadership simulations where students role play in different scenarios will provide opportunities to practice and observe leadership in action and where their own leadership approach is effective and where they need improvement.

Physical, hands-on activities such as the low ropes course at MTU Outdoor Adventures will give students an excellent chance to stretch their bodies and their skills in teamwork, collaboration, problem solving and leadership. Integrating other hands-on challenges will keep students engaged and moving.

Our goal is that every student sees in themselves the potential for leadership as they see a new type of 21st century leadership emerge through this program. Additional goals for students during the week are to learn skills in building community, how to open their minds to other's perspectives, and develop effective communication skills.

Course objectives:

- Students will build a new definition of leadership for their generation
- Students will define their strengths through assessment
- Students will think deeply about themselves, leadership and their lives through reflection
- Students will build skills in communication, collaboration and leadership through hands-on activities and simulations
- Students will learn the value of embracing diverse perspectives and building community

General Outline of Program

Time	Monday	Tuesday	Wednesday	Thursday	Friday
9am to Noon	Introductions Community Building Learning objectives Icebreakers Letter to self	Self assessment; Strengthsfinder instrument Interactive Activities	Guest Speaker Leadership Interactive Activities	MBTI self assessment Activities to practice communication and leadership	Review the week; apply to community leadership project in student life
Lunch	Lunch	Lunch	Lunch	Lunch	Lunch
1 to 4:30	Examine traditional model of leadership; what/who is a leader Video; Everyday leadership Reimagine what leadership could be; how do you fit into that idea? Art or Music activity to build community Reflection Practice	Guest Speaker On diversity Real leaders; real heroes Hands on activities for communication skills, collaboration, identifying strengths Reflection Practice	Low Ropes At MTU Reflection Practice	Guest Speaker Community Building activity Dance or music or design activity at makerspace Reflection Practice	Letter to self Presentation of learning By students Graduation Ceremony Networking and next steps