

# Summer Youth Program in Rail and Intermodal Transportation

David Nelson, Michael Larson and Pasi Lautala, Michigan Technological University

For the past five years, Michigan Technological University has offered a Summer Youth Program (SYP) in Rail and Intermodal Transportation. The program, which hosts a diverse group of students in grades 9-11, has seen continuous growth. The structure of the program consists of classwork, tours, and hands-on activities. One student commented, "From what I have learned in the program, I am now interested in a future career with the industry."

### History of the Program

The mission statement of the program is "a collaboration to attract a new generation." The Summer Youth Program at Michigan Tech has been a joint venture with the University of Wisconsin–Superior since 2010, and the program has seen continual growth (Figure 1). The growth has been especially strong in years 2013 and 2014 after the arrival of NURail funding. This funding increased the scholarship levels from the original 50% (graciously provided by industry partners) to 100% of the program fee.

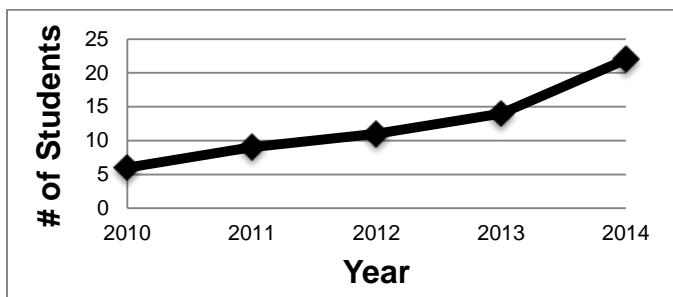


Figure 1. Continued increase in growth for Michigan Tech's SYP in Rail and Intermodal Transportation.

The 70 students that participated in the program came from 17 states (Figure 2). Over 20% of the participants were from minority populations, and nearly 10% were female students. In 2014, two minority students from Springfield, IL had their travel sponsored by Hanson

Professional Services, in addition to the standard full scholarships.

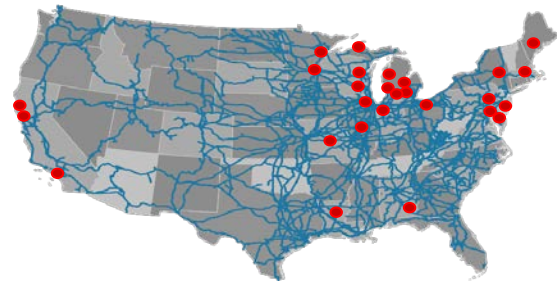


Figure 2. Participant hometowns throughout the U.S.

### Program Topics and Activities

Over five program days, students learn in a variety of formats, but most of the program time is devoted to industry field trips and hands-on activities. Some of the core topics covered during the program include:

- Introduction to Rail Transportation
- Track Structure
- High Speed Rail
- Track Safety
- Rail Operations
- Supply Chain and Logistics Management
- Urban Transit
- Maglev systems

Hands-on activities include designing and constructing a scale model track section (Figure 3), operating a locomotive and train consist in a train simulator, and designing and racing maglev cars on a track layout.

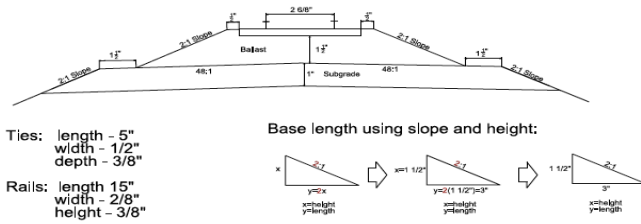


Figure 3. Track calculations and finished construction.

Thanks to industry support, students are provided with excellent opportunities to go on multiple field trips and see the industry in action. Industry professionals and their companies take time out of their workday to showcase their facilities to the students. Many students rank the field trips as the highlight of their week. With the diversity of the trips and the knowledge and passion communicated to the students by industry professionals, it is easy to understand why. Table 1 shows the 2014 program field trips.

Table 1. Field Trip Activities

|           |  |
|-----------|--|
| Monday    | Lake Superior and Ishpeming (LS&I) Railroad – car shop, terminal/yard, and visit to ore mine/docks                                     |
| Tuesday   | Travel to Superior, WI field visits  |
| Wednesday | BNSF railyard – dispatch center, yard activities, car shop<br>Halvor Lines – trucking dispatch and control, truck simulator, truck cab |
| Thursday  | CN taconite dock, rail interface with Great Lakes shipping, North Shore Railroad Museum and train ride                                 |
| Friday    | Lake Linden and Torch Lake Railroad Museum   |

The LS&I trip to Ishpeming, MI on Monday afternoon included a quick tour of the mine facilities supported by the railroad. A program session on signals and rail safety was taught on the four-hour bus trip to Superior, WI. The tour of BNSF facilities in Superior gave the students another look at rail and yard operations on a much larger scale. The visit with Halvor Lines is a perennial favorite. Driving a truck through a tornado in the simulator (Figure 4) is always fun!



Figure 4. An SYP participant operates the Halvor Lines' truck simulator.

The CN taconite dock in Duluth demonstrated the connection and transloading process required to move iron ore from the mine to a ship by rail. The North Shore Museum stop (Figure 5) gave the students a chance to relax, unwind, and explore the history of the rail industry, including a ride in the tourist train.



Figure 5. SYP students at the North Shore Railroad Museum.

Upon completion of the program, students received a certificate to commemorate the week of fun-filled learning, hands-on activities, and industry tours. As usual, we expect some of them to return to Michigan Tech as undergraduate students.