Group 1 Sectors: Manufacturing, Construction, Transportation, Art

SHSM Experiential Learning Day at Ontario Tech University

The SHSM Experiential Learning Day will provide students with an immersive introduction to engineering, technology, and sector-related career pathways at Ontario Tech University. Students will participate in a hands-on engineering design competition connected directly to their SHSM sector, hear from an industry professional, and explore university laboratories and facilities.

The experience is designed around a common theme: How can engineering and emerging technology be used to solve real-world challenges across different industries?

Students will work in teams to apply the Engineering Design Process by identifying a problem, developing a solution, building or prototyping their concept, testing and refining their design, and presenting their final solution to judges.

Also, please note that this invitation has been sent to all schools across all school boards, as the program is sector-based rather than school board-based.

Schedule

- 9:30 am 10:00 am Drop in everyone at SIRC Building. Please let us know when you plan to arrive.
    - 📍40 Conlin Rd, Oshawa, ON L1G 0C5, Canada
- 10:00 am -12:30 pm **Team Design Challenge Work Period**
- 12:30 pm - 1:00 pm **Lunch(Pizza Included) and Keynote speaker**
- 1:00 pm - 1:30 pm **Sector Based Tours**
- 1:30 pm: Students depart.

Team Design Challenge Details

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- Tuesday February 16, 2027 OR
- Thursday February 18, 2027

In this hands-on **SHSM CAD Design Challenge**, students work in teams to design a useful product using Onshape while applying the engineering design process and demonstrating core CAD skills. Teams identify a user need, sketch their idea, and create a design within a 120 mm × 120 mm × 120 mm space that includes dimensions, an extrude, extrude cut, fillet, and pattern. Each design must also reflect the priorities of a selected SHSM sector, such as material efficiency in Manufacturing, strength and durability in Construction, lightweighting and efficiency in Transportation, or aesthetics and user experience in Arts. Students finish by delivering a one-minute pitch explaining the problem they solved, the CAD features they used, and how their design connects to their sector, with designs judged on functionality, CAD skills, sector integration, and presentation quality.

Takeaways:

- Each student will receive a certificate
- Winners of the challenge will receive 3D printed medallions and certificates.

Team Design Challenge Activity Breakdown:

Activity (G1)
Welcome, Land Acknowledgement & Icebreaker
Introduction to CAD & Onshape
Guided CAD Tutorial
SHSM Design Challenge
Upload Screenshot & Prepare Pitch
Presentations & Judging

Sector-based tours

Please note that tours are offered based on sector relevance and lab availability. Please select your top three preferred labs.

- Manufacturing Processes, Control and Production Lab
  This laboratory is equipped with CNC Mill, T-6 CNC Lathe, 3D printers, abrasive waterjet cutter, laser cutters, drill press and a thermoforming centre. Students get an all hands-on interaction with machines and tools. Experiments involving Metrology, CNC

Plasma Cutting System, Surface Grinding, Manual Lathe Machining and CNC Machining and G-Code Programming are conducted and students acquire knowledge of engineering processes and tools through direct exposure to these machines and processes in the lab.

- Mechatronic and Robotic Systems Laboratory (MARS Lab)
  The MARS Lab is part of the Faculty of Engineering and Applied Science, Ontario Tech, located in Oshawa, Ontario, Canada. The MARS Lab conducts research and contract work for industry in the areas of mechatronics, robotics and automation, and optimal design. Please follow the links below to find out more about the activities of the MARS Lab.

- Automotive Centre of Excellence (ACE) Facility
  A multi-purpose testing facility featuring climatic wind tunnels and heavy-duty shaker tables used for evaluating structural and material durability under extreme weather conditions.

- Jeffrey S. Boyce Engineering Innovation and Design Studio
  The studio's current hardware and software capabilities include but not limited to: 3D printing, State-of-the-art 3D scanner with reverse engineering software package and Electronics workbenches with oscilloscopes, function generators, power supplies as well as other instruments and tools. These resources are extensively used for student projects where students have the opportunity to apply engineering principles to develop working prototypes.