



WHAT IS THE ENGINEERING SMArT MICHIGAN COMPETITION?

The Engineering SMArT Michigan program is a rigorous, hands-on science, math, architecture and technology (SMArT) project focused on the over-arching theme of “energy” and how it ties to engineering in everyday events. The program allows high school students to apply concepts to real-life solutions by working in teams with their teacher and engineer-mentors as they design energy-efficient homes.

The program provides students with a high-quality learning experience intended to engage their interest in studying science, technology, engineering, and math - subjects collectively known as STEM. The SMArT program seeks to help solve a serious problem in Michigan and across the county - a critical shortage of engineers and related technical professionals. Few American students pursue careers in STEM fields and experts predict that 80 percent of the jobs that will be created over the next 10 years will require some form of post-secondary STEM education.





WHO CAN PARTICIPATE? All public, private and parochial high schools in Michigan can sign up for the program. The program will be embedded into the high school classroom at the discretion of the high school leadership team.

HOW DOES THE COMPETITION WORK?

Engineering SMArT Michigan is a supplement to the current curriculum and includes development in literacy, numeracy and science reasoning.

Working with their teachers and volunteer engineer-mentors, the program will engage students to envision and shape their own communities through a new understanding on energy, and will cultivate their desire to be active contributors to the sustainability and vitality of their environment.

Through a series of learning modules, students will be introduced to the basics of energy, alternative sources of energies, and the energy grid, culminating in a team design project and competition. Working in teams of three to five students, they will use the engineering design processes as they research and design an energy efficient house. Students will create hand-drafted drawings, write an essay, and present their work in an oral presentation to a panel of judges comprised of engineering and technical professionals.

PROGRAM RESOURCES: Some of the components that this easy-to-administer program includes are as follows:

- A fully planned curriculum, supported by Engineering Society of Detroit staff
- All materials required for the project
- A teacher handbook
- A student journal
- Teacher Training
- Engineer Mentor subject-matter experts working with your school weekly throughout the curriculum
- A facilitated tour of an energy efficient facility, designed by DTE Energy will be given: bridging the working laboratory and experiential world for the student learner.
- A capstone project will be completed by the student teams which will culminate in a formal written and oral presentation with a multi-school competition judged by professional engineers on an academic campus.
- Students will also have the opportunity to hear about opportunities beyond high school as they prepare for careers in STEM fields whether it be in skilled trades or in engineering technologies.
- A fun and educational field trip related to the project, coordinated by ESD staff
- Students may be granted financial academic scholarships, or the opportunity for summer internships.

OUTCOMES: The curriculum is aligned with ACT College-Ready Standards, Next Generation Science Standards and Common Core State Standards.

Students will design an architectural rendering of an efficient home, write an essay about the engineering design process, and make an oral presentation to a team of judges during a day-long competition. A pre and post test that evaluates students' perceptions of STEM careers and their proficiency in literacy, numeracy, and science reasoning will be administered. The results will be shared with schools and partners.

Time Schedule: Engineering SMArT Michigan™ is scheduled during second semester, from January to May. Topics are spread across two week increments to allow for the engineer mentor to teach the topic and students to complete the homework.

More Information: For further information about how you can support the Engineering SMArT Michigan™ program, contact Elana Shelef at 248-353-0735, ext. 119, or e-mail eshelef@esd.org.