Research opportunities for undergraduates and high school students

- The research program at MSU not only drives graduate education here, but adds great value to our undergraduate programs and even reaches down to Michigan's high schools.

- Undergraduate students are encouraged to participate in the many research projects open to them.
  - Those can be found in any field of study at MSU, whether it's in the liberal arts, sciences, engineering, social sciences or the humanities.
  - Additionally, there are many programs offered off campus, particularly in the summer.
  - PA program: Each year, approximately 200 first-year Honors College students are appointed as Professorial Assistants.
    - PAs work with teaching faculty on tasks directly related either to scholarly research or to innovative teaching.

- We even make research experiences available to high school students through colleges including Education, Engineering, Osteopathic Medicine … through our honors, math and nursing programs … even through our National Superconducting Cyclotron Laboratory.

- VEX and VEXIQ Robotic Teams – this weekend at Jenison
  - The biggest high school event that the College of Engineering hosts each year is the VEX Robotics State Championship games.
  - This Sunday (Feb. 24, 2019), 500 young robotic minds from 72 high schools will come to Jenison Field House to compete.
  - Top winners advance to the 2019 VEX Robotics World Championship in Louisville, Kentucky, in April

- Additionally, Spartan Engineer volunteers work hands-on with 15 high school teams in underrepresented populations around the state to prepare the students for various VEX competitions during the year.

- Our Spartan Youth Programs' High School Engineering Institute offers four residential sessions over summer for students considering engineering careers or majors.
  - Staffed by faculty & grad students
  - The College of Engineering also hosts a number of summer camps for high school and middle school students to gain experience and enthusiasm for STEM.

MSU St. Andrews in Midland

- Internship program for Great Lakes Bay area high school juniors in paid 8-week internships
- college/honors level research working with PhD scientists
- Last year, 17 area schools participated
- We anticipate 80 students this year, with approximately 40 in computer programming learning in-demand Python
  - Other students become involved in potentially publishable research projects in chemical and material sciences, or become part of a professional writing program with exposure to technical and science writing.
- Engagement with area teachers
  - MSU St. Andrews teacher workshops: These include incorporating 3D printing into STEM curriculum as visual aids, and several new courses on DNA analysis.
  - MSU St. Andrews is a hub for the CarbonTIME curriculum offered through Andy Anderson's group in the MSU College of Education.
    - Anderson and his colleagues served on the committee for the new National Science Standards and developed the NSF funded curriculum.

        - This curriculum is now being used by teachers in the Midland and surrounding area in their classrooms.
    - Trainers from College of Ed come to Midland through a "train the teachers" series.
    - MSU St. Andrews annually hosts 4th and 5th year teacher candidates from MSU College of Education in a recruiting event where they meet leadership from all the surrounding schools.

Other high school outreach (not necessarily research)

- Aspirations in Computing for Michigan's high school female computer science students
    - Around 70 high school women -- who represent the state's upcoming technical talent among female computer science students in high schools around Michigan -- attend the annual Aspirations in Computing ceremony each March.
    - The event is hosted at MSU and co-hosted by Michigan Tech and Oakland universities and the National Center for Women and Information Technology (NCWIT).

- **Dart Innovative and Creativity Celebration at Design Day**
    - The College of Engineering hosts up to 150 high school students explore STEM opportunities twice a year during the Dart Innovative and Creativity Celebration of Design Day for students and teachers in grades 9-12.