Research Experiences for Teachers (RET) Site at WPI: Engineering for People and the Planet as Inspiration to Teach Integrated STEM
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Goal:
To deepen the relationship of WPI and local public middle and high school STEM teachers/schools and develop a robust STEM Ecosystem in the Central Massachusetts (MA) region with high-quality, purpose-driven STEM that engages students to develop real-world problem-solving skills.

Engineering for People and the Planet

Sustainable Development GOALS

Summer (6 weeks):
- RESEARCH → Poster symposium
- Prof Development (weekly):
  - Research coffee sessions
  - STEM Education PD and lesson planning
  - Quarterly Cohort meetings
  - Research mentors visit classes
  - Teacher cohort building, special activities

Teacher cohort building, special activities

Teacher cohort1: 2022-23
Teacher cohort2: 2023-24

Outcomes: RET participants gain confidence and experience in research skills and teaching Integrated STEM, Engineering Design Process, and UN SDGs

When you frame STEM in the context of global change and social good, something interesting happens – more students want in.

Teachers translate their research experiences into lesson plans that are piloted in classrooms and then finalized for online repository through weekly professional development (PD) sessions

Week | Topic and Skills
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1 | Integrated STEM (UN SDGs – Engineering for People & Planet)
2 | The Engineering Design Process
3 | NGSS & State Standards
4 | Real World Problems
5 | Performance Assessment
6 | STEM Equity and Inclusion
7 | Energy: Engineering Feedstocks for a Circular Economy (Goal 12)
8 | Based Technology for Plastic Recycling
9 | Aquatic Bioinspired Harvesting Calcium from Water for Cement and Concrete (Goal 11)
10 | Photocatalysts for Clean Energy & Environment (Goal 7)
11 | Assessing Battery-Free Computing Systems (Goal 7)
12 | Developing Miniaturized Noninvasive Blood Gas Monitors (Goal 3)
13 | Engineering Bench-Top Testing of Devices for Cardiovascular Diseases (Goal 3)
14 | Real-time Brain Sensing for Personalized Learning Environments (Goal 4)
15 | Bioinspired Harvesting Calcium from Water for Cement and Concrete (Goal 11)
16 | Waste-to-Energy: Engineering Feedstocks for a Circular Economy (Goal 12)
17 | New Water-Based Technology for Plastic Recycling (Goal 12)

Teachers present their research & lessons the following spring to a broad audience that includes the next RET cohort.