**2016 Teaching and Learning Collaboratory (TLC) Seed Proposal Winners**

**STEM + STS: Expanding and Showcasing Students’ Analytic and Collaboration Capacities**  
Kim Fortun (STS), Mike Fortun (STS), Jim Hendler (IDEA), Lindsay Poirier (STS) and Leo Bachinger (STS)

The initiative will develop course content and a processes for:
1. building and assessing students’ capacity for integrated technical, social, and ethical analysis across multiple courses and years of study.
2. building student capacity for interdisciplinary collaboration.
3. building portfolios of work where students themselves can track and showcase their expanding analytic and collaborative capabilities.

<table>
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<tr>
<th>Large Enrollment Courses</th>
<th>Off-Campus Fieldwork Courses</th>
<th>Data Intensive Courses</th>
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<td>Environment and Politics</td>
<td>Environment &amp; Politics</td>
<td>Critical Data Mapping</td>
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<td>Gender in Culture</td>
<td>Product Design Studio 1</td>
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<td>Health in Emergencies</td>
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**Develop Interactive In-Class Problems for ENGR 1600 in a “Flipped Classroom” Setting**  
Yunfeng Shi, Associate Professor, MSE, SOE

**Goal:**
To develop interactive learning modules in Mathematica CDF environment for ENGR 1600 “Materials Science for Engineers”

**Motivations:**
(1) “Hands-on” control at the atomic-level help student comprehend;  
(2) Capsulation complex math to emphasize materials understanding;  
(3) Capture students’ interest in a “Game-like” environment.

**Teaching the Design Process via Collaborative CAD**  
Dean Nieusma, STS and Jim Malazita, STS

This project will leverage the simulcasting and smartboard technologies of the Beta Classroom to prototype interdisciplinary design thinking education via 3D Modeling and CAD workshops for engineers, designers, game developers, and animators.

**An Interactive Graphical System for Cooperative Logical Reasoning**  
Marc Destefano, Lecturer, Games Simulation Arts and Sciences  
Bram van Heuveln, Lecturer, Cognitive Science

**Immersive Code Review for Effective Problem Solving**  
Barbara Cutler, Ana Milanova, and Sibel Adalı

- Enhance undergraduate programming mentor training  
- Enhance student learning through code review  
- Facilitate focus-group testing of new homework submission server features  
- *Submitty* - RCOS open source homework submission system (workshop @2:15 in CII 4034)  
  - Electronic submission, automated testing & validation,  
  - 50% automated grading, 50% TA grading of code quality  
  - Large courses (500+ students in Computer Science I)  
  - All levels: used in intro, intermediate, and advanced courses