

2014-2015 College of Engineering SIIP Projects

First-year recipients

COMPUTERIZED TESTING: *Craig Zilles, Lawrence Angrave, Brian Bailey, Wade Fagen, Cinda Heeren, and Karrie Karahalios*

This project will conduct a pilot study on the use of a computerized testing facility to improve the quality of assessment in large computer science courses.

IMPROVING STUDENTS' LEARNING AND EXPERIENCE IN ECE 110: *Geoffrey Herman, Chris Schmitz, David Varodayan, Serge Minin, Lynford Goddard, Michael Loui, Erhan Kudeki, Patricia Franke*

This project focuses on re-designing methods and materials for a large, introductory ECE class. The team will execute research-based instructional strategies to develop a community of instructors who agree on the metrics and goals of the course. Through this course revision, the project aims to excite students about the breadth and scope of ECE.

COMPUTATIONAL MODULES FOR THE MATSE UNDERGRADUATE CURRICULUM: *Dallas R. Trinkle, Andrew Ferguson, Cecilia Leal, Andre Schleife*

This project aims to reform the Material Science and Engineering (MatSE) undergraduate curriculum by integrating computational materials modeling in sophomore and junior-level core courses, by developing a capstone senior materials modeling elective, and by recording and disseminating course content online.

PURPOSE INSPIRED LEARNING: A FLIPPED APPRENTICESHIP MODEL FOR EDUCATION: *Rohit Bhargava, P. Scott Carney, Andrew Smith, Dipanjan Pan, Marcia Pool*

This project will create a scholars program within the Bioengineering Department. The undergraduate student scholars will complete activities centered on cancer research to stimulate purpose-inspired learning. The scholars' activities include taking classes, meeting with a faculty mentor, conducting research, and participating in clinical immersion.

(Pending) CREATING A GLOBAL TECHNOLOGIES MINOR: *Jennifer Amos, Rashid Bashir, John Abelson, Al Hansen, Richard Cooke, Deanna McDonagh*

This project aims to create a minor and certificate program with the goal of providing experiential learning in global technology development in order to create global citizens with strong technical skills.

Second-year recipients

ADAPTIVE LEARNING: *Matt West, Geir Dullerud, Sewoong Oh, Craig Zilles*

This project is creating a computer-mediated learning environment that adapts to student performance, giving weaker students the support they need while challenging stronger students with engaging material at an appropriate level.

CEE 398: PROJECT-BASED LEARNING IN CEE: *Jeffery Roesler, Arthur Schmidt, Lance Schideman, Morgan Johnston*

This project continues the development of CEE 398, a project-based learning course that develops critical thinking and engineering problem solving skills by identifying and proposing solutions to current civil and/or environmental engineering problems facing the University of Illinois campus community.

EXTENDING THE CURRICULUM CONTENT OF AN EXISTING SKETCH RECOGNITION TUTORING SYSTEM WITH IMMEDIATE FEEDBACK TO ENGAGE CROSS-DISCIPLINARILY: *Joshua Peschel, Cassandra Rutherford, Megan Konar*

This project will expand the curriculum content of an existing sketch recognition tutoring system to engage cross-disciplinary instructors in the areas of fluid and soil mechanics. The work includes building a corpus of sketch-based content and developing a set of effective-use and best practices recommendations for instructors.

ME 370-371 RE-DESIGN: *Stephen Downing, Elizabeth Hsiao-Wecksler, Armand Beaudoin, Sameh Tawfick*

This project brings hands-on design experience to undergraduate mechanical design classes. It aims to make the hands-on student experience a sustainable course change by creating a separate website of resources for instructors.

Third-year recipients

PHYSICS 211-212: IMPROVING TEST PERFORMANCE FOR STRUGGLING STUDENTS: *Gary Gladding, Jose Mestre, Mats Selen, Tim Stelzer*

This project studies the best methods for providing students with an accurate assessment of their understanding, as well as appropriate materials to improve their understanding. This project includes data analysis from previous years' work, the development of mastery exercises for Physics 100, and the development of an assessment question database for Physics 211 and 212.

TAM 210/21/212/251: *Matt West, Geir Dullerud, Elif Ertekin, Randy Ewoldt, Blake Johnson, Mariana Silva Sohn, Dan Tortorelli*

This project focuses on the gateway TAM mechanics classes, which serve approximately 2500 student-enrollments per year. This project has applied state-of-the-art pedagogical and technology solutions to improve student engagement and enthusiasm. The current work is focused on ensuring the sustainability of the implemented changes.