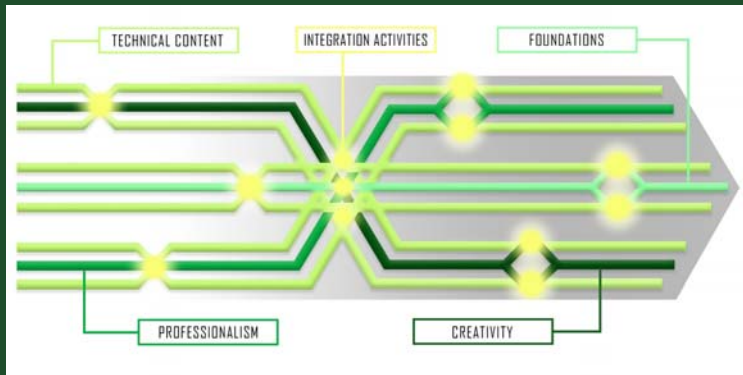


# Throwing Away the Course-Centric Learning Model to Revolutionize Engineering Education



Anthony A. Maciejewski, PI, ECE Department Head; Tom W. Chen, Co-PI, ECE faculty lead; Zinta S. Byrne, Co-PI, social scientist; Laura Sample-McMeeking, Co-PI, engineering education expert; Thomas J. Siller, professional formation lead; Branislav M. Notaros, decorated ECE educator; Melissa D. Reese, project manager; and Andrea M. Leland, communications specialist

## Holistic Approach Moves Away from Course-Centric Teaching and Learning Model



### Weaving Threads to Create Well-Rounded Engineers

#### CREATIVITY

research, design, and optimization

#### FOUNDATIONS

why math matters in the world of engineering

#### PROFESSIONALISM

building professional skills beyond technical know-how

### Collaboration is Key to Success in New Pedagogical Structure

#### Reimagined Faculty Roles

Instead of a set of disparate courses taught by autonomous professors, faculty are teaming up to approach the degree as an integrated system

#### Synthesizing Technical Content

Faculty work collaboratively to synchronize content and identify touch points for integration activities



Student Impact

Societal Impact



### Knowledge Integration to Understand *Why*



To help students understand *why* they are learning material and how it will help them engineer a better world, every four weeks all technical core professors and students participate in hands-on knowledge integration (KI) activities

### Unique Partnerships Enhance Professional Formation

**Engineer in Residence Program** – Students are honing professional skills by working alongside practicing engineers in a makerspace laboratory

**Virtual Internship Program** – Partnership with University of Wisconsin-Madison simulates engineering workplace through group design projects



Through the KI activities, faculty are illustrating fundamental ECE concepts using tangible examples such as the smartphone



By changing the processes and value systems through which people become engineers, we are preparing our graduates for the grand challenges of the profession