We recommend renaming our specialization “Intelligent Infrastructure Engineering” (IIE) to “**Transdisciplinary Infrastructure Engineering**” (TIE). TIE would offer the specialization flexibility, similar to what we currently have under IIE. The difference is that TIE will cover four broad research areas to help show the possibilities. These research areas can easily be renamed in the future to adjust strategic research focuses in CCEE. The only portion that would go to the College of Engineering, Graduate School, and Provost would be the name change (i.e., from IIE to TIE), not the four sub specialization research areas.

In addition to our traditional focus areas, the descriptions of research areas under “Transdisciplinary Infrastructure Engineering” provide new marketing and recruitment opportunities for the department. A positive vote will enable the development of additional description within the CCEE Graduate Handbook. These descriptions will then be presented for a vote, along with other revisions to the Graduate Handbook, in Fall 2024.

Faculty met twice this semester to discuss and refine the name of the research areas; they are listed below.

***1. Self-Aware Systems***

* + Feedback systems (e.g., actuation and sensing)
  + Decision support (e.g., condition-based maintenance)
  + Interdependent infrastructures
  + Adaptive mechanisms
  + Smart building systems
  + Autonomous mobility
  + IoT, cyber-security, and CPS
  + AI-assisted design

***2. Advanced Materials and Automation*** (for Infrastructure)

* + Robotics and automation (e.g., drones)
  + Accelerated construction (e.g., ABC)
  + Additive manufacturing (e.g., 3D printing)
  + Multifunctional materials (e.g., bioinspired components)

***3. Sustainable and Resilient Systems***

* + Multi-sectoral dynamics
  + Climate change, deep uncertainties
  + Smart water systems
  + Hazard characterization and management
  + Resilient transportation systems
  + Logistics and preparedness
  + Disaster response and recovery
  + Geospatial analysis
  + Risk and vulnerability assessment

***4. Human-Centric Smart Communities***

* + Community involvement
  + Smart rural communities
  + Workforce development
  + Equity
  + Innovations in education
  + Training and outreach
  + International relationships

**Vote:**

1. To rename our specialization “Intelligent Infrastructure Engineering” to “Transdisciplinary Infrastructure Engineering”. “Transdisciplinary Infrastructure Engineering” will appear on the students’ transcripts.
2. Adopt the listed sub specializations research areas. The lists are to provide examples and are not exhaustive. The sub specializations will appear on our CCEE website and in our Graduate Handbook. They will not appear on students’ transcripts. They help prospective students understand the types of transdisciplinary research opportunities the CCEE Department offers.