TO: The Engineering Faculty

FROM: The Faculty of the Interdisciplinary Engineering Program

RE: New Engineering Concentration within an Existing Graduate Program

The Faculty of the Interdisciplinary Engineering team has approved the following new graduate Concentration from the College of Engineering. This action is now submitted to the Engineering Faculty with a recommendation for approval.

TITLE:

Internet of Things (IoT)

DESCRIPTION:

The Internet-of-Things (IoT) concentration within the Interdisciplinary Engineering master's program (IDE) focuses on the area of analysis and design of internet-of-things such as a system of interrelated computer devices, mechanical and digital machines, sensors and so on that connect and exchange data over the internet or other communication networks. This area spans a variety of application domains and is interdisciplinary in nature. The courses offered in this concentration will establish fundamental theories and tools in computing, sensors, embedded systems, chip design, and wireless communications.

RATIONALE:

IoT are playing a significant role in modern society including smart cities/homes, healthcare systems, social networks, etc. Current and future engineers will be faced with significant challenges in employment and implementation of IoT in extensive engineering applications. As such, there is a significant demand for students to further enhance their core skills and knowledge in analysis and design of IoT, especially in embedded systems, VLSI, and wireless communications. Students can greatly benefit from this accessible online option within the IDE program, as this area of interest is naturally interdisciplinary.

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Academic Leads from the Institute for Control, Optimization and Networks (ICON)

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Target Audience

Practicing professional engineers wishing to return to school for specialized IoT experience. Those looking to improve their career pathways and increase their employability in the promising emerging autonomous and connected systems industry.

Recently graduated Purdue B.S. students, and other domestic, and international students who intend to learn specialized skills in IoT along with core training in autonomous and connected systems to increase their employability.

Concentration Curriculum

Core Courses: 9 credits
Other Required Courses: 9 credits
12 credits electives – mix of engineering and some non-engineering courses available here

Details

Core Courses (9 credits)	ECE 50863 Computer Network Systems ECE 55900 MOS VLSI Design ECE 69500 Advanced Internet of Things Design and Applications
Other Required Courses (select 3)	ECE 50024 Machine Learning ME 57800 Digital Control CE 59700 Data Science for Smart Cities CE 59700 Network models for Connected and Autonomous Vehicles *The following two courses will be developed for online soon and be added to this list of options:* ME 59700 Autonomous Systems CE 59700 Vehicular cyber-physical systems
Electives (12 credits)	Mix of engineering and some non-engineering courses available here

Curriculog link to come shortly.