PURDUE UNIVERSITY | College of Engineering

Engineering Faculty Document No.:
61-26
October 23, 2025

TO: The Engineering Faculty

FROM: The Faculty of the Edwardson School of Industrial Engineering

RE: New Engineering Concentration

The Faculty of the Edwardson School of Industrial Engineering has approved to add the following new Concentration option from the College of Engineering and OIGP to MS and PhD degrees within IE. This action is submitted to the Engineering Faculty with a recommendation for approval.

TITLE:

Transformational Innovation and Design Concentration

DESCRIPTION:

Add the concentration as an option for the following programs within IE

Relevant Programs: MSIE, MSIE-OL, MSIE-PMP, PHD-IE

RATIONALE:

The Interdisciplinary Graduate Concentration in Transformational Innovation and Design has been established for several years, and is presently available for ME and CE. Specifically, the concentration "draws on insights from Innovation Science to provide graduate students with the opportunity to gain an end-to-end perspective on innovation, rooted in the design process, and founded on rigorous theory, methods, and experiences from a diverse array of disciplines that span problem framing and contextualization (FRAME), solution conceptualization, exploration and development (SHAPE), as well as trial, adoption, and impact realization (PURSUE). The Concentration is an ideal complement to any graduate degree, and is particularly suited for graduate students seeking to proactively drive impact in complex socio-technical settings that likely require the design, development, and adoption of physical or conceptual innovations, and/or those who seek to advance our fundamental understanding of innovation and design through their research. There is clear overlap with the interests of IE graduate students, and the intent of the concentration.

This concentration allows for MSIE students to earn a more specialized credential to complement their degree. Based on the curriculum of the concentration, many IE students have been completing the concentration without the ability to add it formally. As such, this concentration reflects a common pathway for IE students to pursue with their plans of study.

DocuSigned by:
Young-Jun Son
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Young-Jun Son, Head/Director of the Edwardson School of Industrial Engineering

Link to Curriculog entry:

https://purdue.curriculog.com/proposal:32197

Interdisciplinary Graduate Concentration in Transformational Innovation and Design – Course Matrix

	ENVISION - Problem Framing and Contextualization	SHAPE - Conceptualization, Exploration and Development	PURSUE - Trial, Adoption, and Impact Realization
Theory	ZONE 1	ZONE 2	ZONE 3
	ANTH 50500 - Culture and Society ANTH/COM 50700 - Theory in Sociocultural Anthropology ANTH 51900 - Introduction to Semiotics ANTH E4570 - Ethnic Identity CE59801 - Breakthrough Thinking for Complex Challenges COM 56500/LING 56500 – Sociolinguistics ENE 55400 - Introduction to Globalization and Engineering ENE 62000 - Design, Cognition, and Learning IE / PSY 57700 - Human Factors in Engineering LC 57000 - Introduction to Semiotics SYS 50000 - Perspectives on Systems	AAE 56000 - Systems-of-Systems Modelling and Analysis AD 53200 – Cognition in Design CGT 56200 - Cognition and Human-Computer Interaction EDCI 52800 - Human Performance Technology EDCI 53100 - Learning Theories and Instructional Design ENE 62000 - Design, Cognition, and Learning SYS 50000 - Perspectives on Systems TECH 53300 - Design Theory and Technology TLI 62500 - Research in Open Innovation I	AAE 55000 - Multidisciplinary Design Optimization COM 51800 - Theories of Persuasion COM 57400 - Organizational Communication ECON 51000 - Game Theory IE 64600 - Advanced Decision Theory MGMT 65000 - Strategic Management MGMT 65500 - Competitive Strategy PSY 64200 - Social Influence

Methods	ZONE 4	ZONE 5	ZONE 6
	ANTH 64000 - Foundations and Frameworks: Applying Anthropology ANTH 64100 - Discovery and Design: Making Projects Work CNIT 58100 - Natural Language Technologies COM 60411 – Seminar in Communication Methods CS 57300 - Data Mining ECON 58500 - Behavioral Economics IE 59000 - Nature Inspired Computing (this title only) MGMT 57100 - Data Mining SOC 68000 - Advanced Social Research Methods	AAE 55000 - Multidisciplinary Design Optimization AAE 56000 - Systems-of-Systems Modelling and Analysis AD 51200 - Interaction Design Studies AD 52200 - Interaction Design Evaluation CGT 51600 - Collaborative Virtual and Augmented Environments IDE 48400 - Multidisciplinary Engineering Design Methodology* IE 48600 - Work Analysis & Design II IE 58100 - Simulation Design and Analysis IE 59000 - Nature Inspired Computing (this title only) ME 44400 - Computer-Aided Design and Prototyping ME 55700 - Design for Manufacturability MGMT 52200 - New Product Development MGMT 65700 – Manufacturing Strategy and Process Innovation MGMT 67000 - Business Analytics STAT 52900 - Applied Decision Theory and Bayesian Statistics SYS 51000 - Tools and Methodologies for Designing Systems	AAE 55000 - Multidisciplinary Design Optimization ABE 62600 - Life of A Faculty Entrepreneur; Discovery, Delivery, Translation CE59601 - Entrepreneurship and Business Strategy in Engineering CS / ECE 66200 - Pattern Recognition and Decision-Making Processes CSR 68200 - Analytical Tools for Consumer Economists ECON 58500 - Behavioral Economics IE 54600 - Economic Decisions in Engineering MGMT 62000 – Marketing Management MGMT 62200 - Marketing Strategy MGMT 63800 - Pricing Strategies and Analysis MGMT 65700 - Manufacturing Strategy and Process Innovation MGMT 67000 - Business Analytics STAT 52900 - Applied Decision Theory and Bayesian Statistics

Experience	ZONE 7	ZONE 8	ZONE 9
	IE 58000 - Systems Simulation POL 60500 - Research Design and Methods	AD 54200 - Information Visualization Design AD 60500 - Problems in Industrial Design ENGR 50000 - Global Design Team V ME 44400 - Computer-Aided Design and Prototyping ME 55300 - Product and Process Design MGMT 65200 – Entrepreneurship MGMT 68700 - - Design for Instincts - Social Networks and Engagements SYS 53000 - Practical Systems Thinking	CE59601 - Entrepreneurship and Business Strategy in Engineering CE59801 - Breakthrough Thinking for Complex Challenges ECON 62100 - Applied Industrial Organization MGMT 69000 - ELI Corporate Consulting (this title only)

*5 week accelerated course