CORE COURSES: **INTEGRATIVE STEM EDUCATION**

**EDCI 5804: STEM EDUCATION FOUNDATIONS (FALL/ERNST)**
**DESCRIPTION:** STEM Education Foundations approaches Science, Technology, Engineering, and Mathematics education content and process from a distinct discipline-based historical and theoretical angle. Students will form and/or re-form viewpoints and approaches concerning Integrative STEM education and its organizational structure in K-16 education. Students will develop and propose an integrative STEM education strategy that further develops, expands upon, and/or challenges existing STEM education implementation and integration models based on existing evidence and outcomes from the work of scholars in STEM education and other related disciplines.

**EDCI 5814: STEM EDUCATION PEDAGOGY (FALL/WELLS)**
**DESCRIPTION:** Through careful analysis, both individual and collaborative, of readings and case studies students in this course will explore the signature pedagogies unique to the fields of science, technology, engineering, and mathematics (STEM) education. In this exploration we will reveal both strengths and limitations associated with signature pedagogies, and gain insights into pedagogical strategies that can serve to enhance practices within our chosen STEM fields. The overarching goal is to better understand the distinct pedagogical approaches to teaching and learning that cross both professional and liberal education lines.

**EDCI 5824: STEM EDUCATION TRENDS AND ISSUES (SPRING/ERNST)**
**DESCRIPTION:** The STEM Education Trends and Issues course presents an introduction to contemporary K-16 STEM education developments, opportunities, and challenges from both discipline-based and integrative approaches. Students will examine current STEM education initiatives and modern Integrative STEM educational considerations pertaining to policy, structure, process, and student learning.

**EDCI 5834: STEM EDUCATION RESEARCH (SPRING/WELLS)**
**DESCRIPTION:** Designed to survey the educational research practices of STEM disciplines, this course investigates the approaches used in studying the teaching/learning processes within the context of each discipline. Individually and collaboratively students will discover similarities, distinctions and overlaps among questions posed, research designs, and investigations into best practices with respect to improving teaching and learning among STEM disciplines.

**EDCI 5844: STEM EDUCATION SEMINAR (FALL/WELLS – SPRING/ERNST)**
**DESCRIPTION:** This course is designed as a general exploration into the issues surrounding the development of a STEM literate populace through education. This exploration will be facilitated by a blend of readings, discussions, and personal reflections. Course instruction will follow a seminar format appropriate for such a graduate level course.
EDCI 5854: BIOTECHNOLOGY LITERACY BY DESIGN (SPRING/WELLS)
DESCRIPTION: Addresses the field of biotechnology through technological design based pedagogy as a core curricular requirement reflective of the national Standards for Technological Literacy (STL) (ITEA, 2000). Using Biotechnology Design Based Learning™ (DBBL™) approaches, graduate students develop a level of general STEM education literacy necessary to teach about biotechnology from a technological/engineering design approach.

EDCI 5964: FIELD STUDIES IN [STEM] EDUCATION (FALL-SPRING-SUMMER: WELLS/ERNST)
DESCRIPTION: Applied study in one or more educational institutions. Research, evaluation, curricular, and instructional projects are examples of appropriate areas of study. (Variable Credit; P/F only)

EDCI 5774: READINGS IN TECHNOLOGY EDUCATION (FALL/ERNST – SPRING/WELLS)
DESCRIPTION: Historical & philosophical foundations, contemporary trends & issues, research, etc.

FOR MORE INFORMATION
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