

Department: Frank H. Dotterweich College of Engineering
Program: PhD in Engineering

Skill Set	Professional Application	Delivery of Skill Set Courses, extracurricular activities, etc. in which the skill set is introduced (I), reinforced (R), or mastered (M)
Core Skill: Critical Thinking & Problem-Solving Skills	Academic and non-academic careers as professors, mentors, researchers and entrepreneurs	ESEN 6102 (I, R); ESEN 6311 (I); ESEN 6313 (R); PhD Qualifying exam (I)
Core Skills: Understand techniques to conduct independent research while being ethical	Ethical and social responsibility, work on new problems, conduct scientific and engineering research without misrepresentation of results	ESEN 6102 (I, R); ESEN 6306 (M); ESEN 6310 (R); ESEN 6303 (I, R)
Core Skill: Written and Verbal Communication, mentoring, public engagement	Effective communication with personnel with varying backgrounds, techniques for preparing high quality written and verbal communication products (e.g., research papers, presentations, and posters)	ESEN 6303: Project (R), ESEN 6306 (M); Mandatory requirement of submission of research progress report, written proposal and dissertation; proposal presentation and dissertation defense, participation in conferences and making oral and poster presentations; publication of articles in conference proceedings and journals; working as tutors, teaching and research assistants, and instructors; ESEN 6303 (R, M) Step-wise development of dissertation research proposal and practice presentation of same.
Discipline Based Skills: Identify knowledge gaps and propose innovative solutions to contemporary engineering problems	Developing potential to become innovators in a technical field to provide solutions to contemporary and traditional engineering problems	ESEN 6312 (R), ESEN 6306 (M); working in industry and national labs; ESEN 6303 (R, M)
Discipline Based Skills: Data collection and analysis, project management, perseverance	Team work, organization, project and time management, effective data analysis	ESEN 6303 (R), ESEN 6306 (M) ; working in industry and national labs; ESEN 6303 (I, R)