Metacognitive Engineering Problem Solving Strategies A

ENGR 1510.01

Credit Hours:
1.00

Course Levels:
Undergraduate (1000-5000 level)

Course Components:
Lecture

Course Description:
This is a supplemental instruction course in which students, with the support of the 1510.01 instructor and teaching assistants, practice metacognitive problem-solving through curated assignments that align with co-requisite course Math 1151.

Prerequisites and Co-requisites:
Co-requisite Math 1151, enrollment in the College of Engineering, and instructor permission

Course Goals / Objectives:
- Students will understand how to engage in metacognitive engineering problem solving. The successful student will be able to analyze problems by identifying knowns and unknowns, recognizing how the problem statement alludes to solution strategies.
- Students will learn to communicate questions about engineering problems to teaching assistants, academic coaches and instructors. The successful student will be able to navigate being "stuck" with questions that reflect metacognition.
- Students will engage in regular problem-solving practice throughout the semester that best prepares them for quizzes and examinations. The successful student will be able to accurately assess their learning to establish study plans.
- Students will develop skills necessary to generate practice for future engineering courses based on skills acquired in this course. a. The successful student will be able to implement the problem-solving skills across their coursework.

Course Topics:
- Limits
- Limit Laws
- Infinite Limits
- Continuity and IVT
- Definition of the Derivative
- Rules of Differentiation
- Product and Quotient Rules
- Derivatives of Trigonometric Functions
- Higher Order Derivatives and Graphs
- Implicit Differentiation
- Logarithmic Differentiation
- Derivatives of Inverse Functions
- Related Rates

Designation:
Elective