THE OHIO STATE UNIVERSITY
COLLEGE OF ENGINEERING

Metacognitive Engineering Problem Solving Strategies D I

ENGR 1510.03

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 1510.03 instructor and teaching assistants, practice metacognitive problem-solving through curated assignments that align with co-requisite course Math 1140.

Prerequisites and Co-requisites:
Co-requisite Math 1140, 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 and 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. a. The successful student will be able to accurately assess their learning and establish appropriate study plans.
- Students will develop skills necessary to generate practice for future engineering courses based on skills acquired in this course. The successful student will be able to implement the problem-solving practice routine in other engineering courses.

Course Topics:
- Equations, Inequalities, Functions
- What is a Limit?
- Polynomial Functions
- Rational Functions
- Continuity
- Limit Laws
- Indeterminate Forms
- Vertical Asymptotes
- Horizontal Asymptotes
- Intermediate Value Theorem
- Application of Limits
- Definition of Derivative
- Derivatives as Functions

Designation:
Elective