



BAKER COLLEGE
STUDENT LEARNING OUTCOMES

EGR 4950 Engineering Research
3 Semester Hours

Student Learning Outcomes & Enabling Objectives

1. Compare Basic and Applied Research in academic and industrial research organizations.
 - a. Visualize the elements of the scientific method as applied to engineering research.
 - b. Visualize the elements of research portfolio planning in industrial engineering research.
 - c. Demonstrate the implementation of Technology Readiness Level (TRL) in Research projects
 - d. Interpret how Manufacturing and Commercial Readiness Level (MRL and CRL) contribute to technology maturity for application implementation.

2. Demonstrate the approach for conducting and compiling a comprehensive “State of the Art” analysis on engineering applications
 - a. Utilize multiple database online sources for literature search inclusive of technical and trade journals.
 - b. Perform critical analysis of technical articles and summarize the technical learning.

3. Execute a detailed engineering research project.
 - a. Articulate an engineering technical problem, propose a viable technical solution including a hypothesis and the approach for validation.
 - b. Develop a project Gantt chart, execute and track project progress in relation to Gantt chart.
 - c. Demonstrate the use of numerical and/or experimental methods to validate technical hypothesis and draw conclusions based on numerical and experimental data.

4. Compose a technical paper for submission to an engineering technical or trade journal
 - a. Explore candidate journals for the submission of technical paper.
 - b. Adopt the journal format to the student’s technical paper.
 - c. Compose technical paper in compliance to format and guidelines of selected journal.
 - d. Electronically submit technical paper and document communications with the Journal Editor.

5. Develop a technical presentation, in PowerPoint format, on the content of the technical paper.
 - a. Construct a technical presentation, in PowerPoint format, on the content of the technical paper.
 - b. Deliver a technical presentation, in PowerPoint format, on the content of the technical paper.

These SLOs are/are not approved for experiential credit.

Effective: Summer 2018