1. **ENGR 13100 – Transforming Ideas to Innovation I**

2. **Credits and contact hours:**
   2 credits
   Lecture – 2 days per week at 110 minutes for 15 weeks.

3. **Instructor's or course coordinator's name:** Senay Purzer, Jill Anne Folkerts, Emily Siverling

4. **Textbook(s):** None
   a. **Other supplemental materials:** None

5. **Specific course information**
   a. **Catalog description:** A partnership between Schools and Programs within the College of Engineering, introduces students to the engineering professions using multidisciplinary, societally relevant content. Developing engineering approaches to systems, generating and exploring creative ideas, and use of quantitative methods to support design decisions. Explicit model-development activities (engineering eliciting activities, EEAs) engage students in innovative thinking across the engineering disciplines at Purdue. Experiencing the process of design and analysis in engineering including how to work effectively in teams. Developing skills in project management, engineering fundamentals, oral and graphical communication, logical thinking, and modern engineering tools (e.g., Excel and MATLAB). Typically offered Fall Spring Summer.
   b. **Prerequisites or co-requisites:** None
   c. **Course status:**

6. **Specific goals for the course**
   a. **Student Learning Outcomes:**
      1. Describe the engineering disciplines at Purdue and the interrelationships among them as well as know what graduates of at least three disciplines of engineering do.
      2. Use a problem formulation and solving process to translate written problem statements into a mathematical model that allows for a logical comparison of approaches and tradeoffs in an engineering design.
      3. Communicate technical information orally and visually and develop basic knowledge and introductory skills for cross-cultural communication.
      4. Explain how an engineering problem solving process in related to a design process.
      5. Apply a design process to: generate ideas, model, analyze, predict, and build an innovative object of engineering interest taking into consideration its societal and environmental impact.

6. Implement simple algorithmic solutions to engineering problems and in design using the most appropriate engineering tool.
7. Demonstrate appropriate knowledge and behaviors for effective and ethical membership on a technical team (i.e., teaming skills).
8. Exhibit a work ethic appropriate for the engineering profession.

b. Relationship of course to program outcomes:

7. Topics

1	Data analytics: Calculations, Descriptive Statistics, Histograms, Probability, Charts, and Regression
2	Academic Integrity and Ethics
3	Design: Need Finding, Problem Scoping, Concept Generation, Concept Modeling, Data Collection, Concept Reduction, Prototyping, Testing, Evaluation, Iterating, and Finalization
4	Communication: Reports, Peer Review, and Information Literacy
5	Teaming: team Dynamics, Team Member Roles, Diversity, and Code of Cooperation
6	Team Projects: modeling and Design