1. **ENGR 13200 – Transforming Ideas to Innovation II**

2. **Credits and contact hours:**
   2 credits
   Lecture – 2 days per week at 50 minutes for 15 weeks.

3. **Instructor's or course coordinator's name:** Matthew W. Ohland, James Park Whitford, Morgan M. Hynes, Jeannette Guadalupe Aguilar, Matilde L. Sanchez-Pena …

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 continues building on the foundation developed in ENGR 13100. Students take a more in depth and holistic approach to integrating multiple disciplines perspectives while constructing innovative engineering solutions to open-ended problems. Extending skills in project management engineering fundamentals, oral and graphical communication, logical thinking, team work, and modern engineering tools (e.g., Excel and MATLAB). Typically offered Fall Spring Summer.
   b. **Prerequisites or co-requisites:** ENGR 13100 Minimum Grade of C- or ENGR 14100 Minimum Grade of C-
   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. Apply engineering fundamentals and basic engineering science concepts to create feasible engineering solutions that are justifiable.
      3. Use a problem identification process to create written engineering criteria to satisfy a problem.
      4. Use an engineering formulation and solving process to translate an engineering scenario into a model.
      5. Explain how an engineering problem solving process relates to a design process.
      6. Design a process to communicate technical information orally and visually and demonstrate skills for cross-cultural communication.
      7. Apply an engineering problem solving and design process to: generate ideas, model, analyze, predict, and build an innovative object of engineering interest taking into consideration its societal and environmental impact.

8. Apply a systems approach in solving engineering problems and in undertaking design projects.
9. Demonstrate appropriate knowledge and behaviors for effective and ethical membership on a technical team (i.e., teaming skills). 10. Exhibit a work ethic appropriate for the engineering profession.

**b. Relationship of course to program outcomes:**

**7. Topics**

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| 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 |