COURSE SYLLABUS
NEW YORK CITY COLLEGE OF TECHNOLOGY
DEPARTMENT OF MECHANICAL ENGINEERING TECHNOLOGY

MECH 4850 SENIOR DESIGN PROJECT

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Office Hours: As published on blackboard

1. **Catalog Description and Credit Hours of Course:**
   This is a follow-up course of the two product design courses (MECH 3610, Product Design I, and MECH4710, Product Design II). It provides graduating students a hand-on opportunity to practice concurrent engineering design. It requires students to pull all the knowledge and skills they acquired in early courses and apply them towards the design and implementation of a product thus giving the students an opportunity to experience team-based design under conditions that closely resemble current industry practice. Students will also develop and sharpen skills in team organization, time management, self-discipline, and technical writing, in order to be successful in this course.
   3 course credits, 2.0-classroom hours, and 2.0 Lab hours

2. **Prerequisites:**
   MECH 4710

3. **Textbook**
   Karl Ulrich, Steven Eppinger, **Product Design and Development, 5th Edition, ,** McGraw Hill

4. **Instructional Objectives and Assessment**
   In this class, students are expected to:
   a. Apply engineering and industrial design principles to formulate problem statement, analyze requirements and produce a system-level solution.
      Evaluation:
      Students will demonstrate skills in using various tools to formulate problem statement, analyze design requirement, and implement a solution to satisfy customer needs.
   b. Prototype a digital and a physical system to meet given specifications.
      Evaluation:
      Students will display competency in constructing virtual digital as well as physical models that meet design specifications.
   c. Integrate knowledge from across the core MECH and IND curriculums.
      Evaluation:
      Students will illustrate skills in applying concurrent engineering concepts to draw knowledge from various technical fields to accomplish the various design requirements.
   d. Take a systems approach to problem solving.
      Evaluation:
      Students will demonstrate skills in adopting systematic concurrent engineering approach in solving multidisciplinary design problems.
   e. Work productively in a team environment.
      Evaluation:
      Students will illustrate skills in effectively working as a member of a team.
   f. Effectively communicate technical ideas and concepts.
      Evaluation:
      Student will develop effective communication skills in oral as well as in writing.

5. **General Course Outline (tentative):**

Week	Lectures and Labs
1 – 2	Preliminary Design Phase. Lecture: Product design process, need identification, design specification and planning, creative thinking. Lab: Identify design problem and preliminary design.
4 - 7	Intermediate Design Phase Lecture: Concept generation, CAD and prototyping. Lab: Design concept, specifications, and CAD model and prototype.
8	Midterm Exam
9 - 11	Comprehensive Design Phase Lecture: Detail design, failure mold analysis, benchmarking. Lab: Detailed design and prototypes.
12 -15	Final Design Phase. Lecture: Testing and fine tuning of physical prototype, design reports and presentations. Lab: Final Design, product, report and presentation.

6. **Course Deliverables**
    *   Preliminary Design Report.
    *   Intermediate Design Report. **Prototype** needed to demonstrate that the chosen design path is likely to lead to a completed project at the end of the semester.
    *   Comprehensive Design Report and presentation.
    *   Final Project Report and presentation. **Final product** should be delivered after the presentation.
    *   Team Project CD: a project CD containing all documents, presentations, CAD models, final product, and other supporting materials.

7. **Student Evaluation**
    Class and group participation starts day one and continues throughout the semester. This course is more meaningful if you ASK QUESTIONS. Grading will consist of the following criteria.

Team work	15%
Midterm	15%
Design Notebook	5%
Proposal	5%
Preliminary Report	15%
Intermediate Report and Prototype	15%
Comprehensive Report	15%
Final Report and presentation	15%

8. **Student behavior/Classroom decorum**
    *   You must access the class webpage on blackboard for new materials every day during the semester.
    *   Team work (15% of final overall grade) is evaluated based on attendance. A student will lose 1 point for one late and 2 points for one absence.
    *   Coming in 5 minutes or later after the beginning of the class is counted as late.
    *   A student will automatically fail this class if absent more than 3 classes.
    *   No late assignment will be accepted and no makeup quiz/test will be offered without a justified and documented excuse (such as doctor's note).
    *   When emailing the instructor, please identify yourself by name and the class number.
    *   Free discussion, inquiry, and expression are encouraged in this class. Classroom behavior that interferes with either (a) the instructor's ability to conduct the class or (b) the ability of students to benefit from the instruction is not acceptable. Examples may include
        o   routinely entering class late or departing early;

- o use of cell phone or other electronic devices except otherwise approved by the instructor;
- o repeatedly talking in class without being recognized;
- o talking while others are speaking;
- o arguing in a way that is crossing the civility line;
- o surfing websites that are irrelevant to this class, these include instant message, online chart room, facebook, youtube, etc.

9. **Disabilities Statement**

   If you have special needs addressed by the Americans with Disabilities Act (ADA) and need course materials in an alternative format, please notify me immediately. Reasonable efforts will be made to accommodate your special needs.

10. **Academic Dishonesty**

   Students are expected **to do their own work** on all graded course assignments including quizzes, tests, etc., except when otherwise assigned by the instructor. **<u>Cheaters will fail this class.</u>**