DEPARTMENT OF MECHANICAL AND INDUSTRIAL ENGINEERING
INDUSTRIAL ENGINEERING PROGRAM, BSC.

Course Syllabus

1. **Course number and name**

   IE 574 Product Development and Entrepreneurship

2. **Credits and contact hours**
   (3+0) 3 credit hours, 3 contact hours

3. **Course type**
   Blended Learning Course (2+1)

4. **Instructor's or course coordinator's name**
   Dr. Fadwa Dababneh

5. **Textbook information**
   Ulrich, Karl, and Steven Eppinger. Product Design and Development. 3rd ed. New York, NY: McGraw-Hill, 2003. ISBN: 9780072471465.

   a. **Other supplemental materials**
      Instructor's notes

6. **Specific course information**
   a. **Catalog description**

What is entrepreneurship and innovation, Benchmarking QFD, concurrent engineering, reverse engineering, and value engineering. Material selection, engineering drawing, optimization, safety engineering, human factors, Business pitch, cost analysis, market analysis, presentation skills.

   b. **Prerequisites or co-requisites**
      Prerequisite:
      IE 565 Industrial Facility Planning

   c. **The course is:**
      Required in the Industrial Engineering program.

7. **Specific goals for the course**
   a. **Course outcomes:**

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After completion of the course, students are expected to be able to:

1. Present innovative ideas and conduct a business pitch
2. Perform cost and market analysis for business idea
3. Understand Product development process and exercise the systematic approach to product design based on customer requirements
4. Conduct Quality Function Deployment
5. Know what entrepreneurship and innovation is

b. The following student outcomes are addressed by the course:

SO-(d) an ability to function on multidisciplinary teams.

SO-(h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context

SO-(j) a knowledge of contemporary issues

SO-(pc-3) ability to design, develop, implement, and improve integrated systems that include people, materials, information, equipment and energy using appropriate analytical, computational, and experimental practices

8. Learning Outcomes and their Alignment with Program Educational Objective (PEO's), Methods of Delivery, and Assessment Methods:

Learning Outcomes	Program PEOs	Method of Delivery	Assessment Method
Course Outcomes			
CO-(1): Know what entrepreneurship and innovation is	-	Lectures (Example and Problems)	Exam
CO-(2): Present ideas to investors and conduct a business pitch	-	Videos	Term Project
CO-(3): Perform cost and market analysis for business idea	-	Lectures (Example and Problems)	Assignment & Exam
CO-(4): Understand Product development process and exercise the systematic approach to product design based on customer requirements	-	Lectures (Example and Problems)	Term Project

CO-(5): Conduct Quality Function Deployment	-	Lectures (Example and Problems)	Exam
CO-(6): Concept generation and selection	-	Lectures (Example and Problems)	Exam
CO-(7): Illustrate tools and trends in Product Development	-	Lectures (Example and Problems)	Term Project
Student Outcomes			
SO-(d) an ability to function on multidisciplinary teams.		Term Project	Term Project
SO-(h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context		Lectures (Example and Problems)	Assignment & Exam
SO-(j) a knowledge of contemporary issues		Videos	Assignment & Exam
SO-(pc-3) ability to design, develop, implement, and improve integrated systems that include people, materials, information, equipment and energy using appropriate analytical, computational, and experimental practice		Term Project	Term Project

9. Weekly Teaching Plan

Week	Lecture	Topic	Method of Delivery
1	Lec_1	Couse Introduction and Syllabus overview	Lecture
1	Lec_2	Introduction to Product Development	Lecture
1	Lec_3	Introduction to Product Development	Lecture
2	Lec_4	Product Development Cycle	Lecture
2	Lec_5	Product Development Cycle	Lecture
2	Lec_6	Product Development Cycle	Lecture
3	Lec_7	Product Development Cycle Detailed Phases	Lecture

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3	Lec_8	Product Development Cycle Detailed Phases	Lecture
3	Lec_9	Product Development Cycle Detailed Phases	Lecture
4	Lec_10	Quality Function Deployment	Lecture
4	Lec_11	Quality Function Deployment	Lecture
4	Lec_12	Quality Function Deployment VIDEO	Lecture
5	Lec_13	Failure Modes and Effects Analysis	Lecture
5	Lec_14	Failure Modes and Effects Analysis	Lecture
5	Lec_15	Failure Modes and Effects Analysis VIDEO	Lecture
6	Lec_16	Cost Analysis (profit, revenue, cost, breakeven) and Bill of materials	Lecture
6	Lec_17	Cost Analysis and Bill of materials	Lecture
6	Lec_18	Cost Analysis and Bill of materials	Lecture
7	Lec_19	Criteria based Concept and design selection tools (AHP, PUGH CHARTS, etc)	Lecture
7	Lec_20	Criteria based Concept and design selection tools (AHP, PUGH CHARTS, etc)	Lecture
7	Lec_21	Criteria based Concept and design selection tools (AHP, PUGH CHARTS, etc)	Lecture
8	Lec_22	Market Definition and Customer Jobs VIDEOS	Lecture
8	Lec_23	Market Definition and Customer Jobs VIDEOS	Lecture
8	Lec_24	Market Definition and Customer Jobs VIDEOS + EXCERSIZE	Lecture
9	Lec_25	Innovation and Entrepreneurship	Lecture
9	Lec_26	Innovation and Entrepreneurship	Lecture
9	Lec_27	Innovation and Entrepreneurship	Lecture
10	Lec_28	Project Overview	Lecture
10	Lec_29	Investors Pitch Successful Practices VIDEO	Lecture
10	Lec_30	Investors Pitch Successful Practices	Lecture
11	Lec_31	Presentation Best Practices and Guidelines	Lecture
11	Lec_32	Presentation Best Practices and Guidelines	Lecture
11	Lec_33	Presentation Best Practices and Guidelines	Lecture
12	Lec_34	Project Scheduling using CPM and PERT	Lecture
12	Lec_35	Project Scheduling using CPM and PERT	Lecture
12	Lec_36	Project Scheduling using CPM and PERT	Lecture
13	Lec_37	Shark Tank VIDEO	Lecture

13	Lec_38	Prototyping	Lecture
13	Lec_39	Prototyping	Lecture
14	Lec_40	In class Project workday	Lecture
14	Lec_41	In class Project workday	Lecture
14	Lec_42	In class Project workday	Lecture
15	Lec_43	Project Presentations	Lecture
15	Lec_44	Project Presentations	Lecture
15	Lec_45	Project Presentations	Lecture

1. Grade Distribution:

Assessment	Grade	Week No.
- Midterm Exam	30%	7th Week
-Assignments (Reports /Quizzes/ Seminar / Tutorials/ Home works ….)	20%	1-16th Week
- Final Examination	50%	16th Week

Note: Make-up exams will be offered for valid reasons. It may be different from regular exams in content and format.