

## Department of Engineering Technology ET-305

**Course Number and Name:** ET 305, Design for Manufacturability

### **Credits & Contact Hours**

Credits	Lectures	Lab	Semester Contact Hours
3.0	(2) 50 min lectures per week	(1) 2.5 hrs	50

**Instructors Name:** Manuel Gomez

**Textbook title,** Product Design and Development, 4<sup>th</sup> Ed

**author and year:** Ulrich, Karl, T., & Eppinger, Steven D, 2008

### **Specific Course Information:**

- a. **Course Catalog Description** – The process of product design and development from concept to manufacturing to insure manufacturability, quality, cost effectiveness, and customer satisfaction.
- b. **Prerequisites:** Junior standing in ET
- c. This course is a tech elective for MET degrees

**Course Goals & Objectives:** Students will gain an appropriate mastery of the knowledge, techniques, skills and modern tools of their disciplines; including:

- the perspectives of interdisciplinary functions such as marketing, design, and manufacturing into a single approach to product development,
- the various phases of the product development process with the ultimate goal of satisfying the customer needs and reducing cost through design for manufacturability,
- students will learn and put into practice a set of product development methods/tools as they work in teams to develop a product.

**Related ABET Objectives & Outcomes:** An ability to select and apply the knowledge, techniques, skills, and modern tools of the discipline, to include the following:

Student Outcomes of Instruction from MET (x.)	Student Outcomes/ Criteria 3
(3.) <b>Basic knowledge of manufacturing processes, engineering materials and their selection, measuring tools, machine tools, quality systems and processes, process improvement methods, economic principles, cost analysis techniques, and project management relevant to mechanical technology areas</b>	3.a, 3.d, 3.e, 3.k
(4.) <b>Current software corresponding to good practice in the application of mechanical engineering technologies.</b> Software application functions to include: word processing, <b>spreadsheet calculations, graphing, presentation media, computer assisted drafting and manufacturing, manufacturing processes, statistics, data acquisition, project management, and the analysis and applied design of systems involving mechanisms, machines, or fluid thermal processes.</b>	3.a,3.d,3.g

Week of	Chapter Topic	Class Hours
Jan 10	<i>Class's begin Jan 13th</i>	Class does not meet
17	Course Introduction & overview,	1
24	Development Processes and Organizations	2
31	Product Planning	2
	Lab: Is the opportunity REAL, can we WIN, is it WORTHIT	2.5
Feb 07	Identifying Customer Needs	2
	Lab: Customer Id/Selection Matrix, Interviews, Surveys	2.5
14	Product Specifications	2
	Lab: KJ/Affinity Diagram to extract customer needs, QFD	2.5
21	Review, Exam_1	2
28	Concept Generation, Concept Selection	2
	Lab: Concept Generation/Selection, TRIZ, Pugh Matrix	2.5
March 07	Concept Testing, Product Architecture	2
	Lab: Validate Concept(s) with Customers	2.5
14	Product Architecture, Industrial Design,	2
	Lab: Develop Product Schematics, Ergonomics, Aesthetics	2.5
21	Spring Break (March 21-25)	
28	Design for Manufacturing	2
	Lab: Production & Assembly to reduce Manufacturing costs	2.5
April 04	Review, Exam_2	2
11	Prototyping, Robust Design,	2
	Lab: Develop alpha and beta builds, Testing	2.5
18	Patents, Product Development Economics	2
25	Managing Projects	2
	Lab: Gantt Charts, PERT Charts, Team Management	2.5
May 02	Review, Exam_3	2
	APQP, DFMEA, CPM, (optional material)	
	Review, Final Exam (optional makeup)	