

PMET 130: PRODUCT DESIGN AND DEVELOPMENT

Citrus College Course Outline of Record

Heading	Value
Effective Term:	Fall 2023
Credits:	3
Total Contact Hours:	90
Lecture Hours :	36
Lab Hours:	54
Hours Arranged:	0
Outside of Class Hours:	72
Total Student Learning Hours:	162
Prerequisite:	ENGR 130.
Strongly Recommended:	ENGL 101, BUS 130.
Transferable to CSU:	No
Transferable to UC:	No
Grading Method:	Standard Letter

Catalog Course Description

Innovate, design, and prototype new or improved products or processes to fulfill unmet needs of a company or end user. Prototyping systems will be used to refine new or update products, services, and processes. Students will develop plans to implement new or improved products, services or processes to go to market. Emphasis in project management, marketing, lean production and operations. Explore inspection, testing, and evaluation for quality control and management purposes. 36 lecture hours, 54 lab hours.

Course Objectives

- Students will develop a concept, design, and manage the production of a new and innovative or improve on an existing product

Major Course Content

- Students will learn theoretical concepts related to the human creative process, develop creative ideas, and convert ideas into innovative solutions or products. The process emphasizes sustainability and continual improvement.
- Students will develop and design a new and innovative or improve on a tried and tested known “good” products using computer aided drafting techniques and rapid prototyping equipment for testing and inspection
- Strategies implemented for product inspection, testing (destructive and nondestructive methods), and evaluation for quality control purposes
- Learn practical skills in aligning projects with organizational strategies, and achieve project and outcome objectives by utilizing project management techniques.
- Students will learn skills to work within resource limitations, identify and leverage stakeholders, plan and deliver upon deadlines and manage consumer and stakeholder expectations within the realm of product development.
- Topics also include measuring and prioritizing opportunities, maximizing resource efficiency, developing product extension

strategies, building a project portfolio, and securing buy-in from upper management.

- The goals for product development project management include speed to the market, developing minimal viable products (MVP) and the ability to quickly modify and change features during development.
- Students will learn the skills to pitch a concept, grab the attention of stakeholders, investors, collaborators, and executives

Lab Content

- Rapid prototype introduction and demonstrations using several techniques such as 3D printing and mold making
- Computer aided drafting (CAD) design introduction and demonstrations
- Production management finances introduced and researched for planning

Suggested Reading Other Than Required Textbook

- The Toyota Way: 14 Management Principles from the World’s Greatest Manufacturer by Jeffrey Liker | Jan 7, 2004
- Value Proposition Design: How to Create Products and Services Customers Want (The Strategyzer series) by Alexander Osterwalder , Yves Pigneur , et al. | Oct 20, 2014
- Design for Manufacturability: How to Use Concurrent Engineering to Rapidly Develop Low-Cost, High-Quality Products for Lean Production by David M. Anderson | Feb 4, 2014

Examples of Required Writing Assignments

Students will write an MLA or equivalent style paper on the implementation of Lean Production within their design process.

Examples of Outside Assignments

Students will research raw material data that includes how, where, when, and if raw materials are available for their design. Using their research then then will develop a plan to use the raw material in an assembly line for mass production.

Instruction Type(s)

Lab, Lecture

IGETC Area 1: English Communication

1B. Critical Thinking/English Comp

IGETC Area 2: Mathematical Concepts and Quantitative Reasoning

Yes

IGETC Area 6: Languages other than English

No