Product Design Engineering

Introduction

Product Design Engineering (PDE) provides stakeholders with the spearheaded product design that prioritize the human-centered and the sustainability of the product within realistic constraint. Those priorities are aligned with the Industrial Revolution 4.0 (IR 4.0) within the Indonesia as local wisdom. This IR 4.0 comprises megatrends in physical, digital and biological aspects that eventually aims for ultimate level of global prestige and dynamic. This glocalisation in this PDE is deemed as combination of globalization and local wisdom settings enables the ambidexterity toward disruptive innovation.

Vision

To be the most prestigious and dynamic Product Design Engineering program based upon Indonesia and Global wisdom enables the human-centered and sustainable product design for industries and communities as stakeholders through young talented graduates.

Mission

To enhance the Indonesia and Global wisdom through young talented graduates within industries and communities by:

1. Fostering all young talents, in term of education and enrichment, that contribute to the Indonesia local wisdom; and global prestige and dynamic through Product Design Engineering program.
2. Educate all young talents through an integrated approach of Product Design Engineering program and personal develop through solid manner for perseverance and integrity.
3. Enrich all young talents through effective learning experience within IR 4.0's megatrends of physical, digital and biology as the spearheaded and cutting edge of learning experience.
4. Empowering all young talents to build and serve Indonesia toward industries and communities as stakeholders through prioritizing human-centered and sustainable product design through 5 stages of design thinking approach.
5. Prioritize all young talents to synergize human-centered and sustainable products design through ambidexterity of continuous improvement and breakthrough toward disruptive innovation.

Program Objective

Within a few years of graduation, Product Design Engineering graduates are expected to be able to:

1. Utilize appropriate product design engineering methods and tools to come up with the product design that complies with human-centered design and sustainability approaches to cater stakeholders, known as industries and communities.
2. Optimize the product design that comply Indonesia local wisdom within product design engineering disciplines through assorted range from the material selection, design process, production process and the marketing stage until the ultimate stage arriving at the users' premises.
3. Promote the product design within Indonesia local wisdom as the escalating trigger to global prestige with the pride of Indonesia local wisdom product.
4. Continual learning and application of product design output that comply with megatrends of Industrial Revolution 4.0 within physical, digital and biology.

Student Outcomes

At the end of the program, graduates will have these following competencies:

1. An ability to apply mathematics, science, design and engineering.
2. An ability to design and conduct experiments, as well as to analyze and interpret data.
3. An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environment, social, political, ethical, health and safety, manufacturability, and sustainability.
4. An ability to identify, formulate, and solve engineering problems.
5. An ability to function on multidisciplinary teams.
6. An understanding of professional and ethical responsibility.
7. An ability to communicate effectively.
8. The broad education necessary to understand impact of industrial engineering solutions in a global, economic, environmental, and societal context.
9. A recognition of the need for, and an ability to engage in life-long learning.
10. A knowledge of contemporary issues.
11. An ability to use the technique, skills, and modern engineering tools necessary for industrial engineering practice.

Prospective Career of the Graduates

1. Industrial Design Engineer
2. Automotive and Parts Designer
3. Product Design Engineering Consultant
4. Industrial Engineering in Manufacturing and Service Industries
5. Entrepreneur
6. Simulation Analyst

Curriculum

Courses are designed to enhance your understanding, knowledge, and ability to create and implement product design engineering that enables the human-centered and sustainable product design for industries and communities. The facilities including the computer laboratories and other relevant facilities are synergized to ensure students toward the balanced aspects among the need as academicians during study years and as practitioners within the professionals and entrepreneurships stages afterward.

Core A: Math and Basic Science
Core B: Engineering Topics
Core C: Institutional
Core D: Humanities and Social Science
Core E: Creativity and Aesthetic Experience
Core F: Major

Course Structure

Sem	Code	Course Name	SCU	Total
1	ENGR6011	Mechanical drawing	2/2	20
	PDEN6001	Product Design Outline I	2	
	MATH6098	Calculus I	4	
	SCIE6031	Physics I	4	
	MATH6097	Chemistry	4	
	CHAR6016	Character Building: Pancasila	2	
2	CHAR6017	Character Building: Kewarganegaraan	2	20
	MATH6100	Calculus II	4	
	SCIE6035	Physics II	4/2	
	PDEN6002	Product Design Outline II	2	
	PDEN6005	Material Science	2	
	ACCT6169	Financial Accounting	2	
	ISYE6105	Leadership and Organizational Behaviour	2	
3	PDEN6004	Expression Technique I	0/3	21
	MATH6107	Calculus III	4	
	SCIE6037	Biology	2	
	MATH6108	Linear and Discrete Math	4	
	ISYE6107	Human-Integrated Systems	2/2	
	PDEN6003	Chromatology	4	
4	CHAR6018	Character Building: Agama	2	21
	STAT6113	Applied Statistics	4	
	STAT6108	Probability Theory	2	
	ISYE6108	Deterministic Optimization	4	
	PDEN6022	3D Design Visualization Technique I	2/2	
	PDEN6010	Image Manipulation Technique I	0/2	
	PDEN6008	Expression Technique II	0/3	
5	ISYE6110	Engineering Economy	2	20
	ISYE6106	Quality Engineering	4	
	PDEN6014	Computer Aided Design	0/2	
	PDEN6017	Computer Aided Manufacturing	0/2	
	PDEN6012	3D Design Visualization Technique II	2/2	
	PDEN6013	Image Manipulation Technique II	0/2	
	STAT6114	Stochastic Processes	4	
6	ISYE6111	System Simulation and Modeling	4	20
	PDEN6016	Industrial Design I	0/4	
	COMM6094	Technical Communication	2	
	ENTR6057	Entrepreneurship I	2	
	ISYE6109	Production and Operation Analysis	4/2	
	PDEN6023	3D Design Visualization Technique III	0/2	
7	PDEN6007	Internship	4	16
	ENTR6058	Entrepreneurship II	2	
	PDEN6024	3D Design Visualization Technique IV*	0/4	
	PDEN6020	Industrial Design II*	0/4	
	PDEN6011	Mechanical Engineering	2	
8	PDEN6021	Major Design Project	0/8	8
			TOTAL CREDIT 146 SCU	

*) Summer courses in Fukuoka – Japan