國立台灣科技大學 114學年 第2學期　課程大綱

Spring 2026 NTUST Course Outline

授課教師：周碩彥

Instructor:Shuo-Yan Chou

課程名稱：產品設計與開發

Course Title：Products Design and Development

2026/11/3

課程代號： IM6602701 Course Code 學分數： 3 Credits	必選修：選修/半學年 Required/Electve:Elective/Half Yr. 先修課程： Prerequisites
節次教室： F2(MA-101) F3(MA-101) F4(MA-101) Time/Location	
專業核心能力： Core Professional Competencies	
課程網址： Course Website	
課程宗旨： Course Objectives	Addressing fundamental and emerging topics in product design and development with (invited industrial) lectures, case studies, and projects through student presentation and discussion. The course will focus more on the project, though not completely a project-based learning (PBL) course.
課程大綱： Outline of Lectures	Each chapter has core and supplementary contents. Core contents need to be identified and presented by the group responsible for the chapter. Key Issues in Chapters: (T1) Product Specifications: how to generate specifications (T2) Concept Generation: clear and executable methodology for generating concepts (T3) Concept Selection: clear and executable methodology (T4) Concept Testing: clear and executable methodology (T5) Product Architecture: what, how and implication of product architecture (T6) Industrial Design: essence and impact (T7) Design for Manufacturing: DFX (concurrent engineering) and digital manufacturing (T8) Rapid Prototyping: technologies, recent development and impact Case Study (C1) Eli Lilly: The Evista Project (heave-weight product development team) (C2) The New Product Development Map (product planning) (C3) Innovation at 3M Corporation (need identification) (C4) Le Petit Chef (product planning, concept generation) (C5) Product Development at Dell Computer Corporation (risk management) (C6) "mi adidas" Mass Customization Initiative (DFX) (C7) IP Modularity: Profiting from Innovation by Aligning Product Architecture with Intellectual Property (IP) (C8) The Power of Product Integrity (project management)
授課方式： Method of Instruction	講授 Lecture：30% 分組討論 Group discussion：30% 案例研討 Case study：30% 操做練習 Practical exercises：10%

	講授 Lecture：Mainly require team work to bring the class to the focal points of the topics of the text book.%
教科書： Textbooks	K. T. Ulrich and S. D. Eppinger, Product Design and Development, 4th Edition, McGraw-Hill, 2008. (5th Edition available at http://www.ulrich-eppinger.net)
參考書目： References	N/A
修課須知： Notice	No prerequisite. A personal photo needs to be submitted to moodle before the second class, as a part of participation. Presentations need to be done within a specified time frame. Presentation will be stopped if it exceeds the time frame too much, say, 3 minutes. Careful coordination of the contents and presenters for the presentation is required. Video, animation, graphics and any other kinds of multi-media supplementary contents are strongly recommended to make the presentation more lively.
評量方式： Grading	Chapter Presentation (T) 20% Case Presentation (C) 20% Class Participation 10% Project (idea, target specs, concept, final) 50% (10,10,10,20)
備註說明： Notes	All works are done in groups, each consisting of up to 3 students. Every student is responsible for reading all the chapters and cases regardless whether presenting the materials or not. Participation will be evaluated based on the attendance and participation of discussion. Chapter, case, and project project progress presentation will be evaluated by: richness of contents (40%), clarity of presentation (20%), and design of slides or presentation media (40%).