课程详述

COURSE SPECIFICATION

以下课程信息可能根据实际授课需要或在课程检讨之后产生变动。如对课程有任何疑问，请联系授课教师。

The course information as follows may be subject to change, either during the session because of unforeseen circumstances, or following review of the course at the end of the session. Queries about the course should be directed to the course instructor.

1.	课程名称 Course Title	产品创新设计专题 Product Innovation Design
2.	授课院系 **Originating Department**	系统设计与智能制造学院 School of System Design and Intelligent Manufacturing
3.	课程编号 **Course Code**	SDM396
4.	课程学分 Credit Value	3
5.	课程类别 **Course Type**	专业选修课 Major Elective Courses
6.	授课学期 **Semester**	秋季 Fall
7.	授课语言 **Teaching Language**	英文 English
8.	授课教师、所属学系、联系方式（如属团队授课，请列明其他授课教师） **Instructor(s), Affiliation&Contact**（**For team teaching, please list all instructors**）	Fred HAN，副教授 系统设计与智能制造学院 (设计智造学院) Fred HAN, Associate Professor School of System Design and Intelligent Manufacturing (SDIM) Email: fred@sustech.edu.cn
9.	实验员/助教、所属学系、联系方式 **Tutor/TA(s), Contact**	待公布 To be announced
10.	选课人数限额(可不填) **Maximum Enrolment**（**Optional**）	待公布 To be announced

11.	授课方式 Delivery Method	讲授 Lectures	习题/辅导/讨论 Tutorials	实验/实习 Lab/Practical	其它(请具体注明) Other（Please specify）	总学时 Total
	学时数 Credit Hours	32		32		64

12.	先修课程、其它学习要求 Pre-requisites or Other Academic Requirements	SDM114 产品设计视觉表达技巧
13.	后续课程、其它学习规划 Courses for which this course is a pre-requisite	无 NIL
14.	其它要求修读本课程的学系 Cross-listing Dept.	无 NIL

教学大纲及教学日历 SYLLABUS

15. 教学目标 Course Objectives

本课程旨在引导学生通过探索将技术与不断变化的社会环境有机结合，设计并开发新一代的高级产品。创新需要确定可行的机会（或重要的问题），并系统地通过这些机会（问题）设计开发新的产品。为了适应"创新"的特点，学生将针对特定的目标客户群概述设计项目，并参与新产品开发的过程，例如：分析收集知识、概念化、面向合成的原型生产和迭代。设计项目的结果应印证： 1）产品的任务性质符合项目目标； 2）产品的重要性作为关键利益或问题解决方案引起了目标消费者（不限于用户）的共鸣； 3）"新产品"或产品机会是可行且可持续的。

本课程将为学生提供发掘设计新产品的思维能力的训练，以及制造技术知识实用设计技能。

*项目和目标客户群将由任课教师定义。

This course aims to explore the organic integration of technologies with changing social contexts for a new generation of advanced product designs. Innovation requires identifying the viable opportunities (or problems that matters) and moving through them systemically to deliver new offerings. In order to accommodate the characteristics of 'innovation', it will outline the design project considering a specific target customer group and students shall engage in the new product development process, i.e., analytical knowledge- gathering, conceptualizing, synthesis-oriented prototype production and iteration. The outcome of the design project should demonstrate; 1) the product's nature of task fits to project objectives; 2) the significance of the product resonates to the target consumer (not limited to users) as critical benefit or problem solution; 3) the 'new offering' or product opportunity is viable and sustainable.

This course should provide students the training of thinking ability to form a new product opportunity and practical design skills including manufacturing technology knowledge.

*Project and target customer group will be defined by instructor.

16. 预达学习成果 Learning Outcomes

通过本课程，学生将具备以下能力：

1. 思考能力，从问题解决者到机会创造者

- 识别设计需求（包括客户和市场概况）的批判性思维技巧
- 为实际应用创建可行的产品概念
- 产品功能（自然的任务或职责）和功能（独特的属性）的发展表明了产品对于目标客户的利益的重要性

2. 新产品开发过程的实践

- 从定量市场研究和定性用户研究到产品概念，再到具有制造要求的产品概念的实现。
- 竞争产品分析和新产品主张
- 产品美学创造和强调销售点

3. 基于项目的研究和团队合作能力

- 视觉和语言交流能力
- 用不同的材料表达想法
- 团队合作能力

Upon completing the subject, students will gain the competency of:

1. **Thinking capability, beyond a Problem Solver to an Opportunity Creator**

- Critical thinking skills to identify a design needs including customer and market profiling
- Creating a viable product concept for real-world application
- Development of product function (natural task or duty) and features (distinctive attributes) signifying the importance of the product for aimed customers' benefits

2. **Practice of New Product Development Process**

- From quantitative market research and qualitative user research, to product concept, to realization of product concept with manufacturing requirements.
- Analysis of Competitive products and proposition of new product
- Creating and emphasizing the Point of Sale with product aesthetics

3. **Project-based research and teamwork skills**

- Visual and verbal communication skill
- Expressing ideas with different materials
- Team cooperation skill

17. 课程内容及教学日历 （如授课语言以英文为主，则课程内容介绍可以用英文；如团队教学或模块教学，教学日历须注明主讲人）
Course Contents (in Parts/Chapters/Sections/Weeks. Please notify name of instructor for course section(s), if this is a team teaching or module course.)

		Course Schedule			
Week	**Hour**	**Lecture**		**Practice**	**Hours**
		Lecture Title	Language	Practice in Makerspace	
1	2	创造新产品机会的商业模式 Business Model to Create the New Product Opportunity	• Chinese /English	业务模型画布的实践和产品价值主张的映射 Practice of Business Model Canvases and Mapping of Product Value Proposition	4
2- 4	4	定义和分析目标消费者 Defining and Profiling the Target Consumer	• Chinese /English	-定量研究-市场研究 -定性研究-用户研究 - Quantitative Research - Market Research - Qualitative Research - User research	4
5	2	研究报告 Research Presentation	• Chinese /English	最终确定消费者细分和竞争产品分析 Finalization of consumer segment and competitive products analysis	2
6-7	4	建立新的产品机会和创新 Building a new product opportunity and innovation	• Chinese /English	在意义下证明新产品概念的发展 Development of New Product Concept under the justification of its significances	4
8	2	概念介绍 Concept presentation	• Chinese /English	演示产品功能和特性及其集成 Demonstration of product function and feature and their integration	4
9	4	制造业：成型技术 Manufacturing: Molding techniques	• Chinese /English	当前在传统制造业中使用的成型品类型（注塑、旋转、吹塑和挤出） Types of moldings currently used in traditional manufacturing industry (Injection, Rotation, Blow and Extrusion)	
10	2	用户体验设计 Design of User Experience	• Chinese /English	研究用户体验和用户界面 Study of user experience and user interface	2
11- 15	8	-产品概念的迭代 - Iteration of product concept	• Chinese /English	产品概念的实现 -组件布局和组装 -原型测试和评估 Realization of product concepts - Components layout and assembly - Prototype Testing and Evaluation	8
16	4	最终演讲 Final Presentation	• Chinese /English	最终演讲 Final Presentation	4

18. 教材及其它参考资料 **Textbook and Supplementary Readings**

Supplementary readings:

Kelly, Tom. Creative Confidence. 2013

Larry Keeley. Ten Types of Innovation (The Discipline of Building Breakthroughs). 2013

Dreyfuss, Henry. Designing for People. Allworth, 2003

课程评估 ASSESSMENT

19. 评估形式 Type of Assessment	评估时间 Time		占考试总成绩百分比 % of final score	违纪处罚 Penalty	备注 Notes
出勤 Attendance					
课堂表现 Class Performance					
小测验 Quiz					
课程项目 Projects					
平时作业 Assignments					
期中考试 Mid-Term Test					
期末考试 Final Exam					
期末报告 Final Presentation					
其它（可根据需要改写以上评估方式） **Others (The above may be modified as necessary)**	项目演讲 1 Project Presentation 1	第 5 周 End of the 5th week	20	NA	调研演讲 Research Presentation
	项目演讲 2 Project Presentation 2	第 8 周 End of the 8th week	20	NA	概念演讲 Concept Presentation
	项目演讲 3 Project Presentation 3	End of the 16th week 第 16 周	30	NA	最终演讲 Final Presentation
	出勤及参与度 Attendance and Participation	1-16 周 1-16 weeks	30	NA	个人表现（同学评估：15%） Individual Performance (Peer Assessment: 15%)

20. 记分方式 GRADING SYSTEM

☑ A. 十三级等级制 Letter Grading
☐ B. 二级记分制（通过/不通过） Pass/Fail Grading

21. 本课程设置已经过以下责任人/委员会审议通过
This Course has been approved by the following person or committee of authority