



## 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.	<b>课程名称 Course Title</b>	工业设计基础 Fundamentals of Industrial Design
2.	<b>授课院系 Originating Department</b>	系统设计与智能制造学院 School of System Design and Intelligent Manufacturing (SDIM)
3.	<b>课程编号 Course Code</b>	SDM214
4.	<b>课程学分 Credit Value</b>	3
5.	<b>课程类别 Course Type</b>	专业基础课 Major Foundational Course
6.	<b>授课学期 Semester</b>	春季 Spring
7.	<b>授课语言 Teaching Language</b>	中英双语 English & Chinese
8.	<b>授课教师、所属学系、联系方式 Instructor(s), Affiliation &amp; Contact</b> (For team teaching, please list all instructors)	张建民 系统设计与智能制造学院 (SDIM) School of System Design and Intelligent Manufacturing
9.	<b>实验员/助教、所属学系、联系方式 Tutor/TA(s), Contact</b>	tbc
10.	<b>选课人数限额(可不填) Maximum Enrolment (Optional)</b>	tbc



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	无 NIL				
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

本课程概述了工程师在工业设计和产品开发过程中使用的基本方法和技能。课程内容由以下三个模块组成：1. 创造性地解决问题；2. 情景（以用户为中心）设计研究；3. 设计和生产。每个模块均从相关特定理论和方法的讲授入手，通过行业专家、“最佳实践”案例和简短的团队任务来检验其在实践中的应用。每次作业的结果将被应用于一个设计项目，在该项目中，学生将以团队的形式工作，来设计终期项目报告的解决方案。

学生将学习：

- 建立相应理论知识，将所学知识应用于实践并将结果转化为设计解决方案；
- 培养批判性思维技巧，以识别设计需求，使用一致的过程并设计较优的解决方案；
- 理解“以用户为中心”的设计的重要性，以及仅基于美学/风格或工程的解决方案；
- 清晰、客观、简洁地表达自己的想法；
- 在团队中协同有效地工作。

This course provides an overview of the basic methods and skills used in the field of industrial design and product development process for engineers. It consists of *three* modules based on the fundamentals of *1. creative problem solving, 2. contextual (user-centric) design research, 3. design and production*. Each module begins with a lecture on specific theory and methods then examines how they are applied in practice through real-world experts, 'best practice' examples and a brief team assignment. The results of each assignment will be applied to a design project in which the students will work in teams to develop a design solution for final presentation.

Students will learn to:

- build their knowledge of theories, apply their learning to practice and translate the outcome into design solutions
- develop critical thinking skills to identify a design need, apply a consistent process and design good solutions
- understand the importance of user-centric design vs aesthetic/style-only or engineering-only based solutions
- present their ideas clearly, objectively and succinctly
- work collaboratively and effectively in teams

#### 第 1-2 周：创造性的解决问题

工业设计发展史

功能性深泽直人“无意识设计”和实例分析

学生将会学习：

1. 学生初步了解工业设计
2. 学习无意识设计理念
3. 切身感受设计为生活带来的便利

#### Week 1-2: Creative Problem Solving



## History of Industrial Design

Affordance Naoto Fukasawa "Unconscious design" and case analysis

### Students will learn:

1. Students have a preliminary understanding of industrial design
2. Learn unconscious design concepts
3. Personally feel the convenience that design brings to life

### 第 3-10 周：设计与生产

视觉传达设计、批判性思维、情感化设计、人机工学、CMF 设计、设计与文化、可持续发展设计等设计理念、实例解析及相关设计练习。

1. 学习布局设计基本理念
2. 用批判思维分析设计方案
3. 发现并分析日常生活中无处不在的设计，培养设计思维
4. 从人机工程技术方面理解“以人为本”的设计
5. 将材料、色彩、工艺与设计结合
6. 培养用设计解决问题的能力

### Week 3-10: Design and Production

The theory and certain excises of visual communication design, critical thinking, emotional design, ergonomics, CMF design, design and culture, sustainable development design, etc.

### Students will learn:

1. Learn the basic concept of Layout design
2. Analyze the design plan with critical thinking
3. Discover and analyze the ubiquitous design in daily life, and cultivate design thinking
4. Understand "people-oriented" design from the perspective of human-machine engineering technology
5. Combine materials, colors, techniques and designs
6. Develop the ability to solve problems with design

### 第 11-15 周：团队项目设计和迭代

终期项目设计、制作和迭代完善

学生将会学习：

1. 解决需要改进或缺失的问题；
2. 确定为用户购买者增加更多价值的机会；
3. 提出设计思路——创建原型；
4. 改进团队演讲报告。

### Week 14-15: Team project design and iterating

Final project design and iterating

### Students will learn:

1. Solve the problem of what needs to be improved or is missing
2. Identify opportunities to add more value for the user-buyer
3. Develop design ideas – create prototypes
4. Develop team presentation

### 第 16 周：团队介绍和评估

决赛团队演讲报告

评估和选择“最佳工业设计解决方案”

### Week 16: Team presentations and evaluation

Final team presentations



Evaluation and selection of 'best industrial design solution'

16. 预达学习成果 Learning Outcomes

通过本门课程的学习，学生将会掌握：

1.了解设计过程和研究方法

- 创造性的解决问题
- 人性化设计、以用户为中心/面向的设计
- 理论在实践中的应用

2.培养批判性思维能力

- 确定未满足的用户需求和潜在机会
- 以用户为中心的研究对于推动解决方案的重要性
- 整合研究、设计和工程实践
- 快速原型到清晰、有效的沟通方案

3.能够清晰客观的阐明新的或增强型产品想法

- 清晰的新想法/解决方案的框架
- 演讲表达能力——清晰、客观、简明

Upon completing the course, students will:

1. Gain understanding of the design process and research methodologies

- Creative problem solving
- Humanistic design, user-centered/orientated design
- Application of theory to practice

2. Build critical thinking skills

- Identification of unmet user needs and potential opportunities
- Importance of user-centric research to drive solutions
- Integration of research, design and engineering practices
- Rapid prototyping to articulate and effectively communicate solutions

3. Ability to articulate a clear, objective case for new or enhanced product ideas

- Framework for articulating new ideas/solutions
- Presentation skills – clear, objective, succinct

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.)

课程安排 Course Schedule					
教学周 Week	学时 Hour	理论 Lecture		实践 Practice	学时 Hours
		课程主题 Lecture Title	语言 Language		
1	2	工业设计发展史	• English & Chinese	实例解析： 1.学生初步了解工业设计	2



		<p>History of Industrial Design</p> <p>功能性深泽直人“无意识设计”和实例分析</p> <p>Affordance Naoto Fukasawa "Unconscious design" and case analysis</p>	中英	<p>2.学习无意识设计理念</p> <p>3.切身感受设计为生活带来的便利</p> <p><b>Case study:</b></p> <p>1. Students have a preliminary understanding of industrial design</p> <p>2. Learn unconscious design concepts</p> <p>3. Personally feel the convenience that design brings to life</p>	
2	2	<p>视觉传达设计</p> <p>Visual Communication Design</p>	<p>• English &amp; Chinese</p> <p>中英</p>	<p><b>实例解析:</b></p> <p>1.了解视觉传达设计发展及类型</p> <p>2.学习布局设计基本理念</p> <p>3.结合实例进一步学习布局设计创新思维, 具备基本设计审美</p> <p><b>练习1: 布局设计</b></p> <p>1. Understand the development and types of visual communication design</p> <p>2. Learn the basic concept of Layout design</p> <p>3. Further study innovative thinking of Layout design with examples, and have basic design aesthetics</p> <p><b>Exercise1: Layout design</b></p>	2
3	2	<p>批判性思维</p> <p>Critical thinking</p> <p>布局设计作业小组评析</p> <p>To assess team work in Layout</p>	<p>• English &amp; Chinese</p> <p>中英</p>	<p><b>实例解析:</b></p> <p>1. 从设计实践中理解设计</p> <p>2. 用批判思维分析设计方案</p> <p>3. 学习设计心理学, 理解设计中心理学</p> <p>1. Understand design from design practice</p> <p>2. Analyze the design plan with critical thinking</p> <p>3. Learn design psychology and understand the psychology in design</p>	2



4	2	<p>情感化设计（日常产品设计）</p> <p>Emotional design in design of everyday things</p> <p>实例分析、小组讨论</p> <p>Example analysis and group discussion</p>	<ul style="list-style-type: none"> <li>English &amp; Chinese</li> <li>中英</li> </ul>	<p>实例解析：</p> <ol style="list-style-type: none"> <li>从设计心理学的角度理解情感化设计</li> <li>发现并分析日常生活中无处不在的设计，培养设计思维</li> <li>理解设计中“以人为本”的理念</li> </ol> <p><b>Exercise 2: 创新设计</b></p> <ol style="list-style-type: none"> <li>Understand emotional design from the perspective of design psychology</li> <li>Discover and analyze the ubiquitous design in daily life, and cultivate design thinking</li> <li>Understand the concept of "people-oriented" in design</li> </ol> <p><b>Exercise2: Innovative Candle Design</b></p>	2
5	2	<p>人机工学基础</p> <p>Ergonomics and example analysis</p> <p>创新设计练习小组评析、实例对比分析</p> <p>Innovative Design exercise team evaluation and example comparison analysis</p>	<ul style="list-style-type: none"> <li>English &amp; Chinese</li> <li>中英</li> </ul>	<p>实例解析：</p> <ol style="list-style-type: none"> <li>培养设计中发现问题并合理解决问题的思维能力</li> <li>学习设计中的人机工学</li> <li>从人机工程技术方面理解“以人为本”的设计</li> </ol> <ol style="list-style-type: none"> <li>Cultivate the thinking ability to find and solve problems in design</li> <li>Learn ergonomics in design</li> <li>Understand "people-oriented" design from the perspective of human-machine engineering technology</li> </ol>	2



6	2	色彩、材料、表面处理 (CMF) 设计  (Color, Material, Finishing) CMF design  实例分析  Example analysis	• English & Chinese 中英	实例解析： 1. 学习 CMF 设计理念 2. 将材料、色彩、工艺与设计结合 3. 结合实例理解 CMF 为设计带来的改变  <b>Exercise3: 城市导示设计</b>  1. Learn CMF design concept 2. Combine materials, colors, techniques and designs 3. Understand the changes brought by CMF to design with examples  <b>Exercise3: Guide Design in City</b>	2
7	2	讲解 CMF 在生产中的应用、产品模具制作流程、生产制造工艺如注塑成型等  Introduce the application of CMF in production, product mold making process, production and manufacturing technology such as injection molding, etc.	• English & Chinese 中英	课外实践：参观工厂  实地切身感受设计与生产的融合，以及如何解决生产与设计之间的矛盾  Extracurricular practice: Visiting factories  Feel the integration of design and production, and how to solve the contradiction between production and design	2



8	2	设计与文化、国潮、实例分析  Design and culture, National cultural trend, case analysis  城市导示练习小组评析、实例分析  Evaluation and analysis of Shenzhen guide team exercise and example analysis	• English & Chinese 中英	1.结合实际生产分析设计方案的可实现性 2.通过练习评析理解设计如何为生活带来便利性 3.学习设计与文化的融合  4.合理运用并传承传统文化 1. Analyze the realizability of the design scheme based on the actual production 2. How can design bring convenience to life through exercise evaluation 3. Learn the integration of design and culture 4. Rational use and inheritance of traditional culture	2
9	2	可持续发展设计、绿色设计  Sustainable Development Design and Green Design  品牌驱动创新设计、实例分析  Brand-driven innovative design, example analysis	• English & Chinese 中英	1. 学习可持续发展设计理念 2. 学习品牌驱动创新理念, 结合实例进一步提高对设计的理解 3. 了解设计师的未来发展方向  1. Learn sustainable development design concepts 2. Learn the concept of brand-driven innovation and further improve the understanding of design by combining examples 3. Understand the future direction of the designer	2
10	2	设计思维及设计流程  Design thinking and Design Process	• English & Chinese 中英	1. 通过实际设计实践学习设计流程 2. 通过头脑风暴激发学生创新思维  1. Learn the design process through practical design practice videos 2. Stimulate students' innovative thinking through brainstorming	2
11-15	10	实例分析、小组讨论（确定期终项目）  Exercise Analysis and Team Discussion	• English & Chinese 中英	1. 培养用设计解决问题的能力 2. 学习设计实践操作 3. 通过实际操作发现自身不足, 以导师指导为辅  <b>团队项目</b> 1. Develop the ability to solve	10





		项目产品迭代更新 Project product iteration		problems with design 2. Learn design practices 3. Discover my own shortcomings through practical operation, supplemented by the guidance of my tutor  <b>Team work</b>	
16	2	项目指导 Project guide	• English & Chinese 中英	终期演讲汇报 任课教师评析 Final Presentation Evaluation	2

中英文授课，课程材料、学生作业均为英文。终期报告可为中文或报告者倾向的语言。

All teaching is conducted in Bilingual (Chinese and English), including teaching materials and oral communications. Students assignment submission should be in English as well. Final Presentation for open audiences can be presented in Chinese or preferred language.

Southern University  
of Science and  
Technology

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

**Supplementary readings:**

*Karl Ulrich* (2015). Product Design and Development. McGraw-Hill Education. ISBN-13: 978-0078029066  
*Charlotte Fiell*(2016). The Story of Design: From the Paleolithic to the Present. The Monacelli Press. ISBN-13: 978-1580934701  
*Lorraine Justice* (2012). China's Design Revolution (Design Thinking, Design Theory). The MIT Press. ISBN-13: 978-0262017428  
*Alexander Osterwalder* (2014). Value Proposition Design. Wiley. ISBN-13: 978-1118968055

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	第 7-5 周 Weeks 7-15	50	NIL	考查学生应用课堂知识建立以用户为中心的设计解决方案。 To assess students' ability to apply classroom learning to create user-centric design solutions	
平时作业 Assignments	练习 1 练习 2 练习 3 Exercise 1 Exercise 2 Exercise 3	30	NIL	考查学生批判性的思维，通过行业专家、最佳的实践案例学习理解如何将理论应用于实践。 To assess students' critical thinking, their ability to understand how to apply theory to practice through real life industry speakers and best practice case studies	
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)	团队合作 Teamwork	第 1-15 周 Week 1-15	10	NIL	评估学生课堂讨论的参与度。 To assess students' participation in classroom discussions
	Work Ethi	第 1-15 周 Week 1-15	10	NIL	评估学生的个人参与度和贡献。 To assess a student's individual participation and contribution

课程审批 REVIEW AND APPROVAL

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