ISDN 1001 – Introduction to Integrative Systems and Design
Spring 2024

[L1] Thursday 3:00 pm to 4:50 pm & [T1] Tuesday 3:00 pm to 4:50 pm
Room 6581, 3 Credits
Course Description

This is a foundation course in which students will learn about the societal, economical, and cultural impact of integrative systems and the importance of integrating design into the creation of integrative systems. Through lectures, discussions, case-study and presentation, hands-on dis-assembly and re-assembly exercises, students will learn about the basic design principles, design terminology, design skill-sets, design thinking and process, and how a good design relates to the design principles. Students will also learn about what is an integrative system and the importance of using technology to build an integrative system and how it is decomposed into different sub-systems that involve multiple technology components, interacting with each other.

Course Objectives

This is the foundation and introductory course for all ISDN students, while it is also an Engineering Introductory Course for all Engineering students. It is the first ISDN course students will take in HKUST. As most of the incoming high school students do not have background on design and also the knowledge of integrative systems, this course serves to let students understand the impact of integrative systems and the importance of design in creating these systems. It provides the necessary foundation to prepare students to move forward in acquiring more in-depth knowledge on design and building integrative systems. Also, it introduces the relevance of the future courses that the students will take in their later study. It gives a first taste of the unique project-based experiential learning pedagogy.

Intended Learning Outcomes (ILO)

ILO No.	Description
1	Identify the impact of design and integrative systems in social, economic and cultural context
2	Appreciate the values of integrative systems and design
3	Connect different disciplines in integrative systems and design
4	Recognize the value of and identify the interaction among different building blocks of systems
5	Develop the ability to work within constraints (e.g. technology boundary) and prioritize the needs
6	Integrate knowledge from integrative systems

Course Instructors

Prof. C.Y. TSUI
Email: eetsui@ust.hk

Dr. Jac LEUNG
Email: egjac@ust.hk

Course Coordinators

Terence CHEUNG
Email: ieterence@ust.hk

Grading

Task Items	Type of Submission	% of final grade	ILO#
In-class Participation and Overall Performance*	---	15%	1-6
Phase 1: Observation trip presentation	Team	10%	1, 2, 4
Phase 2: Disassembly and re-assembly highlights	Team	10%	3, 4, 6
Phase 3: Mini-project deliverables	Team	30%	1-6
Learning portfolio (Design diary, Technical independent study, Mini-Project personal portfolio, ISDN1001 learning journey)*	Individual	30%	1-6
Peer evaluation	Individual	5%	2, 3, 6

Important Note:

* At the end of each phase, drafts for submitting portions of the **learning portfolio** (e.g., design diary, technical independent study) will be set during the semester. Provisional assessment will be provided by instructors together with **in-class performance**. Final grade of learning portfolio (30%) will be determined according to the final submission.

Assignment Submissions

Students are required to individually submit all course assignments onto Canvas to the designated assignment folders. Assignments that are meant to be completed independently will be graded individually while team assignments will receive a team grade. However, students will not receive a grade for any assignment they do not submit.

Late Submissions
20% of the total marks will be deducted from an assignment for each day that it is late (weekends are also counted). Assignments submitted more than 5 days after the due date will receive a zero grade.

Attendance

Students need to contact Course Instructors or Course Coordinators in advance to make alternative arrangements if they cannot complete/attend any assessments.

Team Assessments
Individuals who have not received permission to be excused and are not present will receive a zero grade (except in cases of emergencies and documented illnesses). The whole team will lose out on any grades associated with a missing students' participation or contributions.

Recommended Reading

Kelley, T., & Kelley, D. (2013). *Creative confidence: Unleashing the creative potential within us all*. Currency.
Good Design Award Results. https://www.g-mark.org/en/learn/past-awards/gda-2022/results
The James Dyson Award. Website: https://www.jamesdysonaward.org/en-hk/
Red Dot Design Award: https://www.red-dot.org/
Core 77 Design Award: https://designawards.core77.com/
The World of Kenji Ekuan and GK Design Group: Soaring High in the Sky. Website: https://www.gk-design.co.jp/en/works/1182/
Arnheim, R. (1997). *Visual thinking*. Univ of California Press.

Class Schedule

Wk	Date	Day	Time	Topic	Remark
1	1/2	Thu	15:00 – 16:50	Course outline: Why learning integrative systems and design	Assignment: Bug list
2	6/2	Tue	15:00 – 16:50	Good & Bad designs	By Prof. CY Tsui
	8/2	Thu	15:00 – 16:50	Creativity	1st Team Formation Announcement: Field trip, Design Diary
3	13/2	Tue		Lunar New Year	
	15/2	Thu	15:00 – 16:50	Design Thinking and process	By Dr. Jac Leung Former ISD student sharing
4	20/2	Tue	15:00 – 16:50	Design and social innovation	City tour techniques
	22/2	Thu	15:00 – 16:50	Phase 1: Understand design through observations Design Styles & Terminologies Planning for field trip	Invited Speaker: Prof. Changying Xiang Field trip: 24 Feb (Sat). Time: TBC
5	27/2	Tue	15:00 – 16:50	Storytelling	Invited Speaker: Mr. Brian Lau
	29/2	Thu	15:00 – 16:50	Storyboarding & Visual Communication	
6	5/3	Tue	15:00 – 16:50	Individual group consultation	
	7/3	Thu	15:00 – 16:50	Findings from field trip	Team presentation Design diary draft
7	12/3	Tue	15:00 – 16:50	Business & Entrepreneurship	Invited Speaker: Prof. Jack Lau
	14/3	Thu	15:00 – 16:50	Interaction design	Invited Speaker: Prof. Tristan Braud
8	19/3	Tue	15:00 – 16:50	Phase 2: Understand systems through dissembling and reconstructing Systems & Functions	2nd Team Formation Invited Speaker: Prof. Winnie Leung
	21/3	Thu	15:00 – 16:50	Dis-assembly and re-assembly	(Part 1: Black box)
9	26/3	Tue	15:00 – 16:50	Dis-assembly and re-assembly	(Part 2: Dis-assemble)
	28/3	Thu		Mid-Term Break	
	2/4	Tue			
	4/4	Thu			
10	9/4	Tue	15:00 – 16:50	Evolution of Technologies	By Prof. CY Tsui
	11/4	Thu	15:00 – 16:50	Phase 3: Synthesize through self-defined project Project Brief	Generating top 10 problem statements
11	16/4	Tue	15:00 – 16:50	Tutorial - Project management tools (e.g., Notion, Miro)	
	18/4	Thu	15:00 – 16:50	Identifying a problem	Writing a HMW statement
12	23/4	Tue	15:00 – 16:50	Ideating and prototyping System breakdown for independent study	
	25/4	Thu	15:00 – 16:50		ISD Ninja's time
13	30/4	Tue	15:00 – 16:50	Prototyping and testing	
	2/5	Thu	15:00 – 16:50		
14	7/5	Tue	15:00 – 16:50	Final project presentation Reflection + Focus group	
	9/5	Thu	15:00 – 16:50		