

Lingnan University
Course Syllabus

Course Title	:	Human-Computer Interaction
Course Code	:	CDS3105
Recommended Study Year	:	Year 3
No. of Credits	:	3
Mode of Tuition	:	Sectional Approach
Class Contact Hours	:	3 hours per week
Category	:	Major Required
Discipline	:	Nil
Prerequisite(s)	:	CDS2101 C++ Programming
Co-requisite(s)	:	Nil
Exclusion(s)	:	Nil
Exemption Requirement(s)	:	Nil

Brief Course Description:

Designing intuitive and user-friendly interfaces is critical for enhancing user experience and productivity. This course introduces the principles, methods, and tools of Human Computer Interaction (HCI), focusing on how people interact with computers and how systems can be designed to support these interactions effectively. Students will learn the fundamentals of user-centred design, usability principles, and cognitive models that influence interface design. The course covers topics such as interaction styles, input/output devices, visual design, accessibility, and evaluation techniques. Students will explore prototyping methods, usability testing, and design frameworks for web, mobile, and emerging platforms such as AR/VR. Emphasis is placed on understanding user needs and applying design thinking to create interfaces that are efficient, engaging, and inclusive. Hands-on projects will involve designing and evaluating interactive systems using industry-standard tools and methodologies.

Aims:

This course aims to:

1. Develop students' understanding of fundamental theories and principles in human-computer interaction.
2. Equip students with practical skills in user-centred design, prototyping, and usability evaluation.
3. Cultivate critical thinking in analysing interaction design decisions, usability issues, and user experience quality.
4. Enable students to design interactive systems that are effective, inclusive, and ethically

responsible.

Learning Outcomes (LOs)

Upon successful completion of this course, students will be able to:

1. Understand and explain core concepts of HCI, including human perception, cognition, interaction models, and usability principles. (PILO1, PILO3)
2. Apply user-centred design processes to identify user needs, define design requirements, and generate appropriate interaction solutions. (PILO3, PILO6)
3. Design and implement low- and medium-fidelity prototypes and conduct usability evaluations using appropriate methods. (PILO2, PILO5)
4. Critically evaluate interactive systems with respect to usability, accessibility, ethics, and user experience. (PILO7, PILO8)

Indicative Contents:

Introduction to HCI

This topic introduces the fundamental concepts of Human–Computer Interaction (HCI), including the relationships among users, systems, and contexts of use. Students will learn key notions such as usability and user experience, and analyse real-world examples of interactive systems to understand how design decisions affect user performance, accessibility, and overall user experience. This topic establishes the foundation for applying user-centred design principles in subsequent topics.

Human Factors and Cognition

This section examines how human perception, attention, memory, and mental models influence interaction with interfaces. Students will analyse interface designs to identify cognitive constraints and usability issues, and apply these insights to inform more effective and user-friendly design decisions.

Interaction Design Principles

Students learn fundamental interaction design principles, usability heuristics, and common interaction styles. They will evaluate existing interfaces using these principles and propose improvements, with particular attention to accessibility and inclusive design for diverse user groups.

User-Centred Design Process

This topic covers practical user-centred design methods, including user research, persona development, scenarios, and task analysis. Students will apply these methods to identify user needs, define design requirements, and generate appropriate interaction solutions for given

design problems.

Prototyping Techniques

Students explore low- and medium-fidelity prototyping approaches, such as sketches, wireframes, and interactive mock-ups, using standard design tools. They will iteratively develop prototypes and refine them based on feedback, demonstrating the role of prototyping in the design process.

Usability Evaluation

This section introduces usability evaluation methods, including heuristic evaluation, cognitive walkthrough, and usability testing. Students will conduct basic evaluations, analyse findings, and propose design improvements based on evidence.

Project Presentation and Critique

Students present their final projects, demonstrating their design process, prototypes, and evaluation results. Through structured peer critique and reflection, students will critically assess design decisions and learn to justify their approaches in terms of usability, accessibility, and user experience.

Teaching Methods:

The course combines lectures, in-class activities, discussions, and projects to support both theoretical understanding and practical skills. Lectures introduce core HCI theories, design principles, and real-world case studies, while in-class activities provide hands-on experience with design, prototyping, and evaluation. Discussions encourage critical thinking about usability, accessibility, and ethical issues, and individual or group-based projects emphasize applying HCI methods to real-world problems.

Measurement of Learning Outcomes:

Assessment LOs	In-class Participation and Activities	Individual Design Assignments	Mid-term Test	Final HCI Project (Report + Presentation)
	(15%)	(25%)	(20%)	(40%)
LO1	✓		✓	
LO2		✓		✓
LO3		✓		✓
LO4	✓			✓

1. n-class Participation and Activities assess students' engagement through attendance, contributions to class discussions, and participation in structured in-class exercises such as design critiques, short analysis tasks, and group activities. Students are expected to actively contribute ideas, respond to questions, and demonstrate their understanding of fundamental HCI concepts (e.g., human perception, cognition, interaction models, and usability principles) during these activities. Performance will be evaluated based on the quality of participation, level of engagement, and ability to reflect on usability and user experience issues (LO1, LO4).
2. Individual Design Assignments are designed to progressively assess students' ability to apply user-centred design processes, including identifying user needs, defining design requirements, and proposing appropriate interaction solutions based on design rationale and evidence (LO2). These assignments also support the development of prototyping and evaluation skills at an introductory level (LO3).
3. The Mid-term Test evaluates students' understanding of core HCI theories, concepts, and design principles covered in the first half of the course, with a particular focus on human factors, usability principles, and interaction models (LO1).
4. The Final HCI group Project (Report + Presentation) assesses students' capability to design, prototype, and evaluate an interactive system by integrating user-centred design methods, low- to medium-fidelity prototyping, and usability evaluation techniques (LO2, LO3). The final report and presentation also require students to critically evaluate their design with respect to usability, accessibility, ethics, and overall user experience (LO4).

Assessment:

In-class Participation and Activities	15%
Individual Design Assignments	25%
Mid-term Test	20%
Final HCI Project (Report + Presentation)	40%
Total	100%

Required/Essential Readings:

1. Preece, J., Rogers, Y., & Sharp, H. (2019). *Interaction design: Beyond human-computer interaction* (5th ed.). Wiley.
2. Norman, D. A. (2013). *The design of everyday things: Revised and expanded edition*. Basic Books.
3. Lazar, J., Feng, J. H., & Hochheiser, H. (2017). *Research methods in human-computer interaction* (2nd ed.). Morgan Kaufmann.

Recommended/Supplementary Readings:

- 1 Shneiderman, B., Plaisant, C., Cohen, M., Jacobs, S., Elmqvist, N., & Diakopoulos, N. (2016). *Designing the user interface: Strategies for effective human-computer interaction* (6th ed.). Pearson.
- 2 Rogers, Y., Sharp, H., & Preece, J. (2011). *Interaction design: Beyond the basics* (3rd ed.). Wiley.
- 3 Krug, S. (2014). *Don't make me think: A common sense approach to web usability* (3rd ed.). New Riders.

Important Notes:

- (1) Students are expected to spend a total of 9 hours (i.e. 3 hours of class contact and 6 hours of personal study) per week to achieve the course learning outcomes.
- (2) Students shall be aware of the University regulations about dishonest practice in course work, tests and examinations, and the possible consequences as stipulated in the Regulations Governing University Examinations and Course Work. In particular, plagiarism, being a kind of dishonest practice, is “the presentation of another person’s work without proper acknowledgement of the source, including exact phrases, or summarised ideas, or even footnotes/citations, whether protected by copyright or not, as the student’s own work”. Students are required to strictly follow university regulations governing academic integrity and honesty.
- (3) Students are required to submit writing assignment(s) using Turnitin.
- (4) To enhance students’ understanding of plagiarism, a mini-course “Online Tutorial on Plagiarism Awareness” is available on <http://pla.ln.edu.hk/>.
- (5) Students must adhere to the University’s guidelines and practices when using Generative Artificial Intelligence (GAI) tools. The official documents “Guidelines for Using GAI Tools at Lingnan University” and “Best Practices for Ethical and Responsible Use of GAI Tools in Course Assessments” can be found here: <https://www.ln.edu.hk/tlc/generative-artificial-intelligence/gai-guidelines-best-practices>.

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Course Rubrics

Rubric for In-class Participation and Activities (15%)

Criteria	Excellent (90–100)	Good (70–89)	Fair (60–69)	Pass (50–59)	Fail (0–49)
Attendance and Participation (6%)	Attends over 90% of classes and actively engages in activities and discussions.	Attends at least 80% of classes with regular participation.	Attends around 75–79% of classes with moderate participation.	Attends at least 70% of classes with limited participation.	Attends less than 70% of classes.
Engagement in Activities (5%)	Actively contributes to design exercises with a strong understanding of HCI concepts.	Participates in most activities with minor conceptual gaps.	Participates in some activities with noticeable gaps in understanding.	Completes activities at a basic level with limited understanding.	Rarely participates or shows minimal effort.
Classroom Interaction (4%)	Frequently raises insightful questions and provides constructive feedback.	Occasionally contributes relevant questions or comments.	Contributes occasionally with limited depth or relevance.	Limited interaction with mostly superficial contributions.	No meaningful interaction.

Rubric for Individual Design Assignments (25%)

Criteria	Excellent (90–100)	Good (70–89)	Fair (60–69)	Pass (50–59)	Fail (0–49)
Application of HCI Principles (10%)	Correctly applies $\geq 90\%$ of relevant HCI principles and heuristics with strong justification.	Applies 80–89% of principles with minor errors and reasonable justification.	Applies 60–79% of principles with noticeable gaps or weak justification.	Applies basic principles with significant gaps or limited justification.	Applies $< 60\%$ of principles or demonstrates major misconceptions.
User-Centred Design Process (10%)	Demonstrates a complete, well-structured, and well-justified user-centred design process.	Demonstrates an appropriate and mostly complete design process with minor issues.	Demonstrates a partially complete design process with noticeable gaps.	Demonstrates a basic but incomplete or weak design process.	Design process is inappropriate, unclear, or missing.
Clarity and Documentation (5%)	Clear, well-organized, and professional documentation with effective communication of ideas.	Mostly clear and organized documentation with minor issues.	Generally understandable but with some lack of clarity or organization.	Documentation lacks clarity, structure, or completeness.	Poor, incomplete, or unclear documentation.

Rubric for Mid-term Test (20%)

Criteria	Excellent (90–100)	Good (70–89)	Fair (60–69)	Pass (50–59)	Fail (0–49)
Conceptual Understanding (10%)	Demonstrates comprehensive and accurate understanding of HCI theories and concepts.	Demonstrates solid understanding with minor inaccuracies.	Demonstrates moderate understanding with some gaps or misunderstandings.	Demonstrates basic understanding with several gaps.	Demonstrates little or no understanding of core concepts.
Critical Analysis (10%)	Provides well-reasoned, insightful, and critical analysis of interaction design problems.	Provides reasonable analysis with adequate reasoning.	Provides some analysis but with limited depth or justification.	Analysis is mostly descriptive with minimal reasoning.	Unable to analyse HCI-related problems.

Rubric for Final HCI Project (40%)

Criteria	Excellent (90–100)	Good (70–89)	Fair (60–69)	Pass (50–59)	Fail (0–49)
Design Quality and Usability (15%)	Produces a highly usable, well-designed, and polished interactive system.	Produces a generally usable design with minor usability issues.	Produces a functional design with noticeable usability limitations.	Produces a basic design with significant usability problems.	Design is unusable, incomplete, or poorly developed.
Prototyping and Evaluation (20%)	Develops effective prototypes and conducts thorough, well-justified usability evaluation.	Develops appropriate prototypes with adequate evaluation.	Develops prototypes with partial evaluation or limited depth.	Develops basic prototypes with minimal or weak evaluation.	Prototypes or evaluation are missing or inappropriate.
Presentation and Organization (5%)	Clear, logical, and professional presentation with strong communication of ideas.	Mostly clear presentation with minor issues.	Adequate presentation but with some lack of clarity or organization.	Presentation lacks clarity, structure, or coherence.	Poorly organized and difficult to understand.