COURSE SYLLABUS

1. COURSE TITLE

Human-Computer Interaction

2. COURSE CODE

AI3153

3. PRE-REQUISITE

Nil

4. CO-REQUISITE

Nil

5. NO. OF UNITS

3

6. CONTACT HOURS

42

7. MEDIUM OF INSTRUCTION (MOI)

English

8. OFFERING UNIT

Artificial Intelligence & Computer Science and Technology Programme, Faculty of Science and Technology

9. SYLLABUS PREPARED & REVIEWED BY

Prepared by Dr. Damien Mazeas

Reviewed by Prof. Weifeng SU

10. AIMS & OBJECTIVES

The primary aim of this course is to provide students with a foundational understanding of Human-Computer Interaction (HCI), focusing on how users interact with technology and how effective design principles can enhance these interactions. Students will gain knowledge of the theoretical, practical, and technical aspects of HCI, including user-centered design, usability, and emerging technologies. The course objectives include developing skills in

prototyping and usability evaluation, understanding the cognitive aspects of interaction design, and analyzing various interaction modes, while emphasizing the importance of user-centered approaches.

11. COURSE CONTENT

- **The Scope and Challenges of HCI and Interaction Design**: Overview of HCI, its scope, challenges, and the role of interaction design.
- **Visual Representation in HCI**: Visual representation, segmentation, and variables of the display plane. Modes of correspondence.
- **Visual and Interactive Interface Elements**: Interactive visual elements, affordances, signifiers, and designing intuitive interfaces
- **Text and Gesture Interaction**: Evolution of interaction hardware, text, and gesture-based interactions.
- **Prototyping Techniques**: Low-fidelity and high-fidelity prototyping, role of rapid prototyping.
- **Interacting with AI**: Interaction with AI systems—voice assistants, chatbots, and recommendation systems. Exploring AI's role in HCI.
- **3D immersive and interactive technologies:** XR applications, immersive technologies, and their potential for enhancing user interaction. Challenges in VR interaction and user interface in VR.
- **Human-robot interaction and practices towards industry 5.0:** Evolution of industrial revolutions, key pillars of Industry 5.0, intersection of HCI and robotics, human-robot collaboration on the factory floor
- **HCI Research Methods**: Overview of data collection methods, user studies and analysis. User-centered design methods, contextual observation, prototyping, think-aloud protocols, and qualitative data collection.

12. COURSE INTENDED LEARNING OUTCOMES (CILOS) WITH MATCHING TO PILOS

For AI students:

Programme Intended Learning Outcomes (PILOs)

Programme Title: Bachelor of Science (Honours) in Artificial Intelligence	
PILO	**Upon successful completion of the Programme, students should be able to:**
PILO 1	Articulate and explain the principles, concepts and theories required across the field of artificial intelligence.
PILO 2	Develop appropriate artificial intelligence algorithms and systems, and enhance performance of them through comparisons and refinements of alternative approaches.
PILO 3	Identify problems solvable by artificial intelligence in real world applications and develop solutions using appropriate technology and systematic tools.
PILO 4	Collaborate and work effectively in teams using different communication formats in the context of AI technology.
PILO 5	Investigate contemporary issues in the field of artificial intelligence, and develop life-long effective learning skills.

CILOs-PILOs Mapping Matrix

Course Code & Title: AI3153 Human-Computer Interaction		
CILO	**Upon successful completion, students should be able to:**	**PILO(s) Addressed**
CILO 1	Describe the scope, challenges, and theoretical concepts of HCI.	2
CILO 2	Apply user-centered design techniques to develop effective prototype.	3
CILO 3	Conduct qualitative and quantitative data gathering and analysis and develop design solutions.	4
CILO 4	Evaluate design solutions.	4

For CST students:

Programme Intended Learning Outcomes (PILOs)

Programme Title: Computer Science and Technology	
PILO	**Upon successful completion of the Programme, students should be able to:**
PILO 1	Analyse the basic principles for computer science and technology.
PILO 2	Translate real world problems into HCI requirements.
PILO 3	Design and develop interfaces.
PILO 4	Apply up-to-date technology to solve general problems in specific areas.
PILO 5	Communicate effectively and collaborate in a team.

CILOs-PILOs Mapping Matrix

Course Code & Title: AI3153 Human-Computer Interaction		
CILO	**Upon successful completion of the course, students should be able to:**	**PILO(s) to be addressed**
CILO 1	Describe the scope, challenges, and theoretical concepts of HCI.	2
CILO 2	Apply user-centered design techniques to develop effective prototype.	2,3
CILO 3	Conduct qualitative and quantitative data gathering and analysis and develop design solutions.	3,5
CILO 4	Evaluate design solutions.	3,5

13. TEACHING & LEARNING ACTIVITIES (TLAS)

CILO No.	**TLAs**
CILO 1	- Engage in independent reading of key HCI concepts, principles, and theories. - Conduct literature reviews on HCI scope, challenges, and emerging fields.
CILO 2	- Participate in hands-on labs to apply user-centered design methods. - Collaborate in group projects to design and prototype interactive solutions

CILO No.	TLAs
	for real-world scenarios.
CILO 3	- Analyze collected data to inform design solutions that incorporate qualitative and quantitative insights.
CILO 4	- Conduct peer reviews and usability evaluations on prototypes developed during the course. - Use evaluation techniques to provide constructive feedback and refine design based on usability principles.

14. ASSESSMENT METHODS (AMS)

Type of Assessment Methods	Weighting	CILOs Addressed	Description of Assessment Tasks
2 Exams	30%	1-4	Quiz with open questions on the lecture content and use case reflection.
Labs submissions	10 %	1-2	1-month individual Software (Figma and/or Unity 3D) learning assignment.
HCI Projects Report I	20%	2-4	Students in group should submit a report on the project outcome.
HCI Projects Report II	20%	2-4	Students in group should submit a report on the project outcome.
HCI Projects Report III	20%	2-4	Students in group should submit a report on the project outcome.

15. TEXTBOOKS / RECOMMENDED READINGS

Textbook:

Nil

Recommended Readings:

- Peter Wegner. 1997. Why interaction is more powerful than algorithms. Commun. ACM 40.
- Lazar, Jonathan, et al. Research Methods in Human-Computer Interaction. 2nd edition., Elsevier Science & Technology, 2017.
- What is Human Computer Interaction? https://www.figma.com/resource-library/human-computer-interaction/
- Naveen Kumar, Seul Chan Lee, Human-machine interface in smart factory: A systematic literature review, Technological Forecasting and Social Change, 2022.
- Tijana Vuletic, Alex Duffy, Laura Hay, Chris McTeague, Gerard Campbell, Madeleine Grealy, Systematic literature review of hand gestures used in human computer interaction interfaces, International Journal of Human-Computer Studies, 2019.
- Azofeifa, J.D.; Noguez, J.; Ruiz, S.; Molina-Espinosa, J.M.; Magana, A.J.; Benes, B. Systematic Review of Multimodal Human–Computer Interaction. Informatics 2022.
- Augstein, Mirjam, Herder, Eelco and Wörndl, Wolfgang. Personalized Human-Computer Interaction, Berlin, Boston: De Gruyter Oldenbourg, 2023.
- Howard, Clive and Baines, Jeremy. UX Lifecycle, Berlin, Boston: Mercury Learning and Information, 2023.
- Yuan Qingshu, Wang Ruonan, Pan Zhigeng, Xu Shuchang, Gao Jiali, Luo Tianren. A Survey on Human-Computer Interaction in Spatial Augmented Reality. Journal of Computer-Aided Design & Computer Graphics, 2021.
- Sutcliffe, A. G., Poullis, C., Gregoriades, A., Katsouri, I., Tzanavari, A., & Herakleous, K. (2018). Reflecting on the Design Process for Virtual Reality Applications. International Journal of Human–Computer Interaction.
- Ben Shneiderman, et al., University of MarylandDesigning the User Interface: Strategies for Effective Human-Computer Interaction, 6th Edition, 2016.
- Katona J. A Review of Human–Computer Interaction and Virtual Reality Research Fields in Cognitive InfoCommunications. Applied Sciences. 2021.

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BEIJING NORMAL UNIVERSITY · HONG KONG BAPTIST UNIVERSITY
UNITED INTERNATIONAL COLLEGE

Report of Course Feedback Questionnaire
Semester 2 of 2024-2025

Course Code: **AI3153**

Course/Section: **Human-Computer Interaction (1001)**

Instructor(s): **Dr. Damien Jean Maxime MAZEAS**

Enrollment	Response	Percentage
63	38	60.32 %

Part One: Quality of Teaching

Question 1: **The lecturer has been well-prepared for the class.**

Options	No. of Students	Percentage
Strongly agree	28	73.68 %
Agree	9	23.68 %
Neutral	1	2.63 %
Disagree	0	0.0 %
Strongly disagree	0	0.0 %

Question 2: **The lecturer has provided clear explanations of important issues/principles in the course.**

Options	No. of Students	Percentage
Strongly agree	28	73.68 %
Agree	9	23.68 %
Neutral	1	2.63 %
Disagree	0	0.0 %
Strongly disagree	0	0.0 %

Question 3: **The lecturer has been responsive to students' views and comments.**

Options	No. of Students	Percentage
Strongly agree	27	71.05 %
Agree	10	26.32 %
Neutral	1	2.63 %
Disagree	0	0.0 %

Options	No. of Students	Percentage
Strongly disagree	0	0.0 %

Question 4: The lecturer has presented the course in a well-organised manner.

Options	No. of Students	Percentage
Strongly agree	26	68.42 %
Agree	10	26.32 %
Neutral	2	5.26 %
Disagree	0	0.0 %
Strongly disagree	0	0.0 %

Question 5: The lecturer has shown thorough/in-depth knowledge of the course.

Options	No. of Students	Percentage
Strongly agree	27	71.05 %
Agree	10	26.32 %
Neutral	1	2.63 %
Disagree	0	0.0 %
Strongly disagree	0	0.0 %

Question 6: The lecturer has made an effort to enhance student learning.

Options	No. of Students	Percentage
Strongly agree	25	65.79 %
Agree	12	31.58 %
Neutral	0	0.0 %
Disagree	1	2.63 %
Strongly disagree	0	0.0 %

Question 7: The lecturer has made an effort to stimulate students' interest in the course.

Options	No. of Students	Percentage
Strongly agree	28	73.68 %
Agree	9	23.68 %
Neutral	1	2.63 %
Disagree	0	0.0 %
Strongly disagree	0	0.0 %

Question 8: I would rate the overall teaching effectiveness of the lecturer(s) as:

Options	No. of Students	Percentage
Very good	27	71.05 %
Good	10	26.32 %
Satisfactory	0	0.0 %
Acceptable	1	2.63 %

Options	No. of Students	Percentage
Poor	0	0.0 %

Part Two: Reflection on Learning

Question 9: I had a clear idea of what I was to learn.

Options	No. of Students	Percentage
Strongly agree	26	68.42 %
Agree	10	26.32 %
Neutral	2	5.26 %
Disagree	0	0.0 %
Strongly disagree	0	0.0 %

Question 10: I found that what I learnt was what I had expected of this course.

Options	No. of Students	Percentage
Strongly agree	28	73.68 %
Agree	9	23.68 %
Neutral	1	2.63 %
Disagree	0	0.0 %
Strongly disagree	0	0.0 %

Question 11: The teaching and learning activities provided me the opportunities to learn through active participation.

Options	No. of Students	Percentage
Strongly agree	26	68.42 %
Agree	10	26.32 %
Neutral	2	5.26 %
Disagree	0	0.0 %
Strongly disagree	0	0.0 %

Question 12: The teaching and learning activities helped me learn what I was supposed to learn.

Options	No. of Students	Percentage
Strongly agree	27	71.05 %
Agree	10	26.32 %
Neutral	1	2.63 %
Disagree	0	0.0 %
Strongly disagree	0	0.0 %

Question 13: Instructions for learning activities were clear and specific.

Options	No. of Students	Percentage
Strongly agree	29	76.32 %

Options	No. of Students	Percentage
Agree	8	21.05 %
Neutral	1	2.63 %
Disagree	0	0.0 %
Strongly disagree	0	0.0 %

Question 14: The assessment standards were clear enough to help me self-assess the quality of my work.

Options	No. of Students	Percentage
Strongly agree	26	68.42 %
Agree	10	26.32 %
Neutral	1	2.63 %
Disagree	1	2.63 %
Strongly disagree	0	0.0 %

Question 15: I was given a clear idea of what I had to be able to do with the topics learnt.

Options	No. of Students	Percentage
Strongly agree	27	71.05 %
Agree	11	28.95 %
Neutral	0	0.0 %
Disagree	0	0.0 %
Strongly disagree	0	0.0 %

Question 16: Topics covered in the course addressed what I understood the course was meant to be.

Options	No. of Students	Percentage
Strongly agree	27	71.05 %
Agree	10	26.32 %
Neutral	1	2.63 %
Disagree	0	0.0 %
Strongly disagree	0	0.0 %

Question 17: I have achieved what I was supposed to learn in this course.

Options	No. of Students	Percentage
Strongly agree	28	73.68 %
Agree	6	15.79 %
Neutral	4	10.53 %
Disagree	0	0.0 %
Strongly disagree	0	0.0 %

Question 18: I received useful information or feedback on how well I was doing in this course.

Options	No. of Students	Percentage
Strongly agree	29	76.32 %

Options	No. of Students	Percentage
Agree	7	18.42 %
Neutral	2	5.26 %
Disagree	0	0.0 %
Strongly disagree	0	0.0 %

Question 19: The teaching and learning activities addressed my learning needs.

Options	No. of Students	Percentage
Strongly agree	27	71.05 %
Agree	10	26.32 %
Neutral	1	2.63 %
Disagree	0	0.0 %
Strongly disagree	0	0.0 %

Question 20: The assessment methods addressed what I was supposed to learn.

Options	No. of Students	Percentage
Strongly agree	28	73.68 %
Agree	8	21.05 %
Neutral	2	5.26 %
Disagree	0	0.0 %
Strongly disagree	0	0.0 %

Part Three: General Information

Question 21: The main medium of instruction used in the lectures is:

Options	No. of Students	Percentage
Cantonese	3	7.89 %
English	35	92.11 %
Putonghua	0	0.0 %
French	0	0.0 %
German	0	0.0 %
Others	0	0.0 %

Question 22: Before taking this course, my interest in it was:

Options	No. of Students	Percentage
Very strong	29	76.32 %
Strong	7	18.42 %
Mild	2	5.26 %
Not interested at all	0	0.0 %

Question 23: Please estimate the percentage of classes you attended for this course:

Options	No. of Students	Percentage
76-100%	37	97.37 %
51-75%	1	2.63 %
26-50%	0	0.0 %
0-25%	0	0.0 %

Comparison

(Point scale used : Strongly agree=5, Agree=4, Neutral=3, Disagree=2, Strongly Disagree=1)

Question No.	AVG of College	AVG of Course	Current Section
1	4.79	4.71	4.71
2	4.76	4.71	4.71
3	4.77	4.68	4.68
4	4.76	4.63	4.63
5	4.77	4.68	4.68
6	4.76	4.61	4.61
7	4.75	4.71	4.71
8	4.73	4.66	4.66
9	4.73	4.63	4.63
10	4.73	4.71	4.71
11	4.75	4.63	4.63
12	4.75	4.68	4.68
13	4.74	4.74	4.74
14	4.74	4.61	4.61
15	4.75	4.71	4.71
16	4.75	4.68	4.68
17	4.73	4.63	4.63
18	4.74	4.71	4.71
19	4.74	4.68	4.68
20	4.74	4.68	4.68
21	0.00	0.00	0.00
22	0.00	0.00	0.00
23	0.00	0.00	0.00

Summary

(The calculation is based on the average of the points gained (excluding Part III) for the Current Section.)

AVG-S of College	AVG-S of Course	AVG-S of Current Section
4.74	4.67	4.67

Students' Comments

24. **Describe some good points about the course.**
    - **Comment 1:** Interesting lectures, facinating 3 projects (really practical).
    - **Comment 2:** operative
    - **Comment 3:** 111
    - **Comment 4:** 1
    - **Comment 5:** All things are good.
    - **Comment 6:** no
    - **Comment 7:** Well-prepared and quite interesting
    - **Comment 8:** Teaching methods.
    - **Comment 9:** everyting is good
25. **Describe some areas of the course that could be improved.**
    - **Comment 1:** Nope, all is fine.
    - **Comment 2:** 概念难理解quiz难
    - **Comment 3:** 111
    - **Comment 4:** 11
    - **Comment 5:** Nothing.
    - **Comment 6:** no
    - **Comment 7:** No, the course is perfect and pretty good. My favorite class and teacher so far.
    - **Comment 8:** No
    - **Comment 9:** no
26. **Other comments on the teaching and learning environment (including Library, IT, e-learning, and other related facilities).**
    - **Comment 1:** Nope.
    - **Comment 2:** 111
    - **Comment 3:** 1
    - **Comment 4:** Nothing.
    - **Comment 5:** no
    - **Comment 6:** Nooooooooooo
    - **Comment 7:** No
    - **Comment 8:** everyting is good

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