THE HONG KONG UNIVERSITY OF SCIENCE AND TECHNOLOGY
Approval of Undergraduate Course

Section 1: Academic Administration [1]

1.1 Catalog

a) Course to be effective from: Academic Year 2021-22 Term Fall

b) Department Code[3]: ISD Subject Area[3]: ISDN Course Number [4]: ISDN 4330

Previous Course Code[5]:

c) Full Title[6] *(max. 100 characters)*: Ergonomics in Design

d) Abbreviated Title[7] *(max. 30 characters)*:

e) Course Credits[8]: ☑ Fixed: 2 ○ Range: From To

f) Catalog Description[9] *(word limit = 150)*:

Many of the products marketed today have the word "ergonomic" attached to them. How ergonomic are they? The course is designed to provide a basic understanding of ergonomics in design through the introduction of human anatomy, anthropometry, and modeling techniques with the aim of improving safety, productivity, comfort and health of people

g) Grading Type[10]: ☑ Letter Grades ○ Distinction/Credit/Pass/Fail ○ Pass/ Fail ○ Distinction/Pass/Fail ☐ Others *(please specify)*:

h) ☐ Prerequisites[11]:

Course Code / Public Exam	Course Title / Exam Subject and Level / Grade attained

i) ☐ Corequisites[12]:

Course Code	Course Title

j) ☐ Exclusions[13]:

Course Code / Public Exam	Course Title / Exam Subject and Level / Grade attained

k) ☐ Co-listing[14]: ☐ Multi-coding[14]:

Course Code	Course Title

l) Other Enrollment Restrictions[15] ☑ No ○ Yes

☐ Instructor's approval required

☐ Restricted to specified student group(s)
(please specify, e.g. year and program of study): _____

☐ Others *(please specify):* _____

m) Medium of Instruction/Materials[16]: ☑ English ○ Others, (Pls specify and provide a justification in Section 1.3):

_____

n) Allow course repetition for credit[17]: ☑ No ○ Yes

1.2 *Contribution of course to Programs of Study* [Check all appropriate boxes below]

☑ Major

Program of Study	As		
Integrative Systems & Design	☐ Required Course	☑ Elective	☐ Prerequisite

☐ Minor

Program of Study	As		
	☐ Required Course	☐ Elective	☐ Prerequisite

☐ Common Core

☐ Others (pls specify):

Program of Study	As		
	☐ Required Course	☐ Elective	☐ Prerequisite

1.3 *Rationale for Introducing this course and other relevant information* [18]

Many of the products marketed today have the word "ergonomic" attached to them. How ergonomic are they? Students in design ought to understand the capabilities and limitation of people so that they can be accommodated as and when necessary as it is critical for good usability and user experience.

Section 2A: Learning Outcomes and Alignment *(for courses not proposed to be Common Core Courses)*

2.1 *Key Course Intended Learning Outcomes (Should not normally exceed six or eight outcomes)*

Upon completion of this course, students are expected to be able to do the following:

	Course ILOs	**Nature of the learning outcomes** *(A - Knowledge/Content Related; B - Academic Skills/Competencies; C - Others)*
1	Apply ergonomic principles for the creation of safer, healthier and more efficient and effective products and activities	A
2	Apply anthropometric tables for evaluation and design criteria for products	A
3	Design a workplace according to ergonomic principles	B
4	Identify engineering solutions to improve human performance and reduce the risk of discomfort and injury when interacting with products	B
5		
6		
7		
8		

2.2 *Contribution of Learning Outcomes to Programs of Study identified in Section 1.2*

(Please also complete Section 4.1)

	Program of study 1: BSc Integrative Systems & Design **Program ILOs**	**To be achieved through these course ILOs** *(Write CILO-1, CILO-2, etc.)*
1	Be capable to identify and formulate problems in a multidisciplinary environment with an understanding of science, engineering, technology, business and design issues and constraints	
2	Develop innovative problem-solving skills through hands-on learning and application of knowledge of science, engineering and design in integrative systems	CILO-3, CILO-4
3	Integrate knowledge and skills using a team-based, project-based pedagogy to be experts in tackling challenging problems considering ethics and societal needs	
4	Be able to communicate and perform as a design expert in individual and team-based environments	CILO-1, CILO_2
5	Be life-long learners	
6		
7		
8		

	Program of study 2: _____ **Program ILOs**	**To be achieved through these course ILOs** *(Write CILO-1, CILO-2, etc.)*
1		
2		
3		
4		
5		
6		
7		
8		

Section 2B: Additional Information[2] *(for courses not proposed to be Common Core Courses)*

2.3 *Planned Teaching Arrangement*

	Teaching & Learning Arrangement	Weekly Scheduled Hours/ Estimated Weekly Learning Hours	Indicate which course ILOs this activity serves to achieve *(Write CILO-1, CILO-2, etc.)*	Additional Information *(optional)*
Face-to face activities	☒ Lecture*	**1**	**CILO-1, CILO-2, CILO-3, CILO-4**	
	☐ Tutorial*			
	☐ Seminar/Small-class*			
	☒ Laboratory*	**3**	**CILO-2, CILO-3, CILO-4**	
	*Does the above scheduled component(s) involve structured active learning activities? [19] ⊗ No ○ Yes *If yes, please specify for each scheduled component, the percentage and the type of active learning involved in the "Additional Information" column.*			
	☐ Others (e.g. fieldtrip, visit, etc.), *pls specify:* ___			
Online activities	☐ Online lecture videos			
	☐ Other online learning tasks, *pls specify:* _____			
	The total learning hours of the course# is equivalent to 52 hours (instruction) + 28 hours (preparation) = 80 hours [8] *# including both scheduled instructional hours and hours for self-study activities & assessment*			

- *For course adopting a pedagogic approach other than lecture, tutorial and laboratory, please indicate the pedagogy used:*

○	Blended learning [20]	○	Pure online delivery [21]
○	Experiential learning [22]	○	Others, *pls specify:*_____

2.4 *Planned Assessment Weightings*

Assessment Task	Proportion of Final Grade (%)	Indicate which course ILOs this task is to assess *(Write CILO-1, CILO-2, etc.)*	Additional Information *(optional)*
☑ In-class test: 5 tests	**60**	CILO-1, CILO-2, CILO-3, CILO-4	
☐ Mid-term test			
☐ Final exam			
☑ Written assignment: 4 reports	**40**	CILO-1, CILO-2, CILO-3, CILO-4	
☐ Project report			
☐ Presentation			
☐ Learning portfolio			
☐ Course participation			
☐ Peer evaluation			
☐ Others, *pls specify:* _____			

2.5 *Course Duration*

(✓) 1 term ( ) 2 terms ( ) Others, *pls specify:* _____

2.6 *Planned Frequency of Offerings* *[Check all appropriate boxes]:*

[ ] Every Fall
[ ] Every Winter
[ ] Every Spring
[ ] Every Summer
[x] No fixed pattern
[ ] Other *(pls specify):* _____

2.7 *Course outline attached* ( ) No (✓) Yes

2.8 *Resources*

Request extra resources for teaching this course? (✓) No ( ) Yes

ISDN 4330 Ergonomics in Design Course Syllabus

1. Overview and Introduction

   Introduction to Ergonomics
   Application of Ergonomics with real life examples.
   Definition and History of Ergonomics
   Ergonomics Awareness through one's own-self
   Human-centered design
   Case study
   Design objectives
   Learning activity (Short report): identify and report 5 misfits between equipment and people

2. Musculoskeletal system (3 hours + 3 hours supplementary materials)

   Musculoskeletal system basics
   Structures
   Muscles and their working principles.
   Human Spine, Vertebrae and Discs, Pelvis and pelvic tilt
   Spine range of motion
   Joint Range of Motion
   Reach and implications
   Vision and lines of sight
   Learning activity (Short report): find range of motion for hand, arm and shoulders and design a hand tool.

3. Hand held tool and equipment design

   Strength
   Blix curve (demos of bioefeedback device)
   Hand tool design basics
   Strength in varying postures (demos with hand dynamometer)
   Sports equipment design
   Postures during tool use
   Consequences of poor design
   Learning activity (Short report): Design a prototype handle for a hand tool.

4. Design for sitting

   Spine and sitting
   Critical dimensions for sitting/standing
   Seat design principles
   Seated work
   Workstation design hierarchy

5. Anthropometry for design

   Principles of measurement
   Measurement techniques
   Data reporting
   Statistical Analysis
   Use of Tables and percentiles for design
   Forecasting and Estimation
   Golden ratio
   Design Criteria using anthropometric data
   Human Foot and related dimensions
   Fitting feet to footwear
   Footwear design
   Learning activity (Short report): Measure the anthropometric dimensions of one person and design a workstation.

Section 4: Development, Concurrence and Approval

4.1 *Contribution to the Program Learning Outcomes*

(To be completed by EACH of the program(s) of study noted under Section 1.2)

☑ The course contributes to this Major/~~Minor~~* Program: *BSc Integrative Systems and Design*

(Delete as appropriate)*

☑ The relevant **program learning outcomes are attached**.

☑ On behalf of this program of study, I confirm that the course will contribute appropriately to overall program learning outcomes.

	Position / Name:	Signature	Date
Head of Division:	Head of ISD / Prof. Chi Ying TSUI		30 Nov 2020

☐ The course contributes to this Major/Minor* Program: _____

(Delete as appropriate)*

☐ The relevant **program learning outcomes are attached**.

☐ On behalf of this program of study, I confirm that the course will contribute appropriately to overall program learning outcomes.

	Position / Name:	Signature	Date
Program Director / Head of Department:			

4.2 *Approvals*

Department/Program unit level Recommendation

	Position / Name:	Signature	Date
☑ Offering Department/Program Unit: *(Please specify unit):* _____	Head of ISD / Prof. Chi Ying TSUI		30 Nov 2020
☒ Recommending School/IPO: *(Please specify):* SENG	Prof. Philip K. T. MOK Assoc. Dean of Engineering		14 Dec 2020

School-level Concurrence

	Name of School/Unit	Position / Name	Signature	Date
☐				
☐				
☐				
☐				
☐				