



ACCRA INSTITUTE OF TECHNOLOGY

The University of the Future

END OF TRIMESTER EXAMINATIONS

MAY 2022 TRIMESTER

DATE: SEPTEMBER 2022

COURSE CODE: IT403/CS408

COURSE TITLE: HUMAN COMPUTER INTERACTION

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COURSE OUTLINE (MAIN TOPICS)

MajorTopic-1	Introduction to Human Computer Interaction
MajorTopic-2	Human Factor: Physical
MajorTopic-3	Human Factor: Mental
MajorTopic-4	Social Aspect of HCI
MajorTopic-5	Input Technology
MajorTopic-6	Output Technology
MajorTopic-7	Conceptual Models
MajorTopic-8	User-Centered Design

PART A

FOUR QUESTIONS ANSWER THREE

Question 1

a) The graphical-user interface concept introduced as an alternative to the text-based interface used in older computer systems. However, visual representation is not necessarily always better than text representation. Elaborate on the four challenges that may arise when developing a graphical user interface.

Major Topic – Conceptual Models	AN	7
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b) In the human memory, knowledge is arranged in a very systematic and structured manner. Discuss the three forms of knowledge representation.

Major Topic – Mental Aspect of HCI	AP	7
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c) **Explain** the three main principles of the user-centered design or UCD

Major Topic- User Centered Design	AP	6
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TOTAL SCORE: 20

Question 2

- a) The quality of a visual output largely depends on the output device that is in use. Differentiate between the two techniques that may be used to radiate electrons onto the Cathode Ray Tube.

Major Topic- Output Technology	AP	7
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- b) In any interface, the response to mark or certify the success or completion of a particular task is very important. Differentiate between the primacy, recency and closure effects of how information may be memorized.

Major Topic- Mental Factor	AN	7
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- c) Discuss the two types of mental models that users employ when interacting with devices

Major Topic- Mental factor	EV	6
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TOTAL SCORE: 20

Question 3

a) An effective conceptual model may be utilized by users to understand the characteristics and abilities of the system, and ensure appropriate user interaction with the system. Explain the two categories of conceptual model

Major Topic- Conceptual Models	AN	7
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b) The utilization of voice or conversational sound has long been of interest to system designers. Discuss the two methods that are used to produce conversational sounds.

Major Topic – Output Technology	AP	7
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c) Briefly explain the four factors that affect keyboard usability.

Major Topic- Input Technology	AN	6
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TOTAL SCORE: 20

Question 4

- a) Based on the User-Centered Life Cycle Model, **differentiate with practical examples**, the difference between The Simple Model and the Usability-Engineering Model.

Major Topic – User Centered Design	AP	7
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- b) The main goal of the Human-Computer Interaction is to produce a system that is easy and safe to use, apart from being able to function well. This computer system should not just be easily usable, but also easily assembled, studied and maintained. Discuss stating at least, one example each of the usability goals.

Major Topic- Introduction to HCI	AN	7
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- c) Examples of sounds are voices in conversation and music. Too much sound would only serve as a disturbance to users. Explain briefly **five (5)** applications that are suited to use sounds as a form of reactive response

Major Topic: physical Aspect of HCI	AP	6
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TOTAL SCORE: 20

PART B

TWO QUESTIONS ANSWER ALL

Question 1

- a) A conceptual model provides users with a brief and simple explanation about a proposed system, in the form of ideas and concepts related to the abilities and characteristics of the system, and how users interact with the system. Explain how Object-Oriented Model and the Interface Model are implemented under conceptual model

Major Topic-	EV	7
Conceptual Model		

- b) The success of the system depends on the depth of difficulty that is experienced by users to study and use the system. It is assumed, that users are able to learn everything from documentations and guidance books. However, in reality, not many users refer to these guidebooks or documents. Briefly explain the problems faced by users in the process of learning a new system

Major Topic-Human	CR	7
Factor, Social		

- c) When designing a system to support group communication in an organisation, there are issues that need to be taken into consideration. Explain five of these considerations.

Major Topic- Social	CR	6
Aspect of HCI		

TOTAL SCORE: 20

Question 2

- a) The rationale of the Participatory design approach is that the system users are usually considered the experts in the context of the job, and any design is most effective in the context of work if these experts are allowed to contribute towards the designing of the prospective system. **Explain** the three specific characteristics of this approach.

Major Topic-User	EV	7
Centered Design		

- b) Long-term memory is the memory area that stores information for a longer period. It does not have any limitations in storage load. This means that we will be able to remember a lot of information for a long period. However, forgetfulness does occur. With your knowledge in HCI. Explain to your younger brother how the forgetfulness phenomenon occurs.

Major Topic-Human	CR	7
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Factor, Mental		
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c) When designing an interface, graphical representation are used to represent real objects on the computer display. These representations help users in developing expectations and understanding the functions of the representation. Briefly explain the characteristics of a good interface design

Major Topic- human	EV	6
Factor, Physical		

TOTAL SCORE: 20