



## **Semester I Examinations 2012/2013**

**Exam Code(s)** 3BCT121; 3BA1; 4BA1; 1MF1; 1SD1  
**Exam(s)** B.Sc. in Computer Science and Information Technology  
B.A.  
MSc in Software Design and Development  
Higher Diploma in Software Design and Development

**Module Code(s)** CT318  
CT865  
**Module(s)** Human Computer Interaction

Paper No. 1  
Repeat Paper

External Examiner(s) Prof. Michael O'Boyle  
Internal Examiner(s) Prof. Gerard Lyons  
Dr. Michael Madden  
Ms. Karen Young

**Instructions:** Candidates should answer **Question 1** and **two other** questions.  
All questions carry equal marks.

**Duration** 2 hours

**No. of Pages** 3

**Requirements:**

MCQ

Handout

Statistical/ Log Tables

Cambridge Tables

Graph Paper

Log Graph Paper

Other Materials

Release to Library: Yes

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**Q.1** You have been asked to design an application for recording and analysing match scores suitable for many different sporting environments. The initial brief requires the application to be developed to record scores (from play and frees), frees, substitutions, yellow and red cards in GAA matches. The mobile phone is the likely device of choice for this application given the use context. The system must be easy to use, and enable quick data entry, as well as ease of data transfer or comparative analysis of statistics across matches, teams etc.

This system will be competing against a variety of other applications in appstores and so must be very well designed to appeal to its audience.

The company has indicated that they want an initial design submission from you to include the following:

(a) A PACT analysis for this application.

[6]

(b) A paper prototype of three of the interface screens, representing the system's functional organisation and overall "look and feel". Clearly outline your rationale for each of the design choices you make (e.g. interaction styles).

[9]

(c) An evaluation plan, clearly outlining what activities, when, how and by whom the evaluation activities will be undertaken, for the system which will support comprehensive testing of your design.

[5]

**Q. 2. (a)** You have been tasked with developing a prototype UI (User Interface) for your company's new online booking system (travel, hotel, carhire etc.). The brief highlights the need to minimise users' negative emotions (frustration, fear, anger, etc.) when using this system. Discuss the design issues that this new UI raises, the role of human emotion in affective design and outline a conceptual model for the design.

[10]

**(b)** Design principles are intended to cover all interactive systems. Their generalisability is both their strength and weakness. Discuss the role of design principles in developing good interactive systems, illustrating your response with examples as appropriate. In your answer consider the use of these principles in all designs: how important is context in the application of these principles?

[10]

**Q. 3. (a)** Since the advent of the Graphical User Interface (GUI), User Interface design has been overly reliant on vision as a means of communicating with users. Discuss the advantages and disadvantages of augmenting the User Interface with (a) sound and (b) haptics. In your view, which has the most potential and why? Support your answer with specific examples. [8]

**(b)** Your company has commissioned a number of evaluation studies which have shown that your users find your software products consistently “difficult to use”. Write a one-page memo to your colleagues in your company on the importance of *prototyping* to the success of the interactive systems designed by your company and identify suitable *prototyping tools*. [ 6]

**(c)** Choose an appropriate *evaluation strategy* for each of the following situations. In each case identify: the participants, the technique to be used, and the representative tasks to be examined.

(i) You are designing a new on-line shopping and home delivery system for a new supermarket chain.

(ii) You have been asked to design a high-tech interactive refrigerator which will alert users when they need to purchase stock, when stock is out of date and analyse overall efficiency of energy usage.

(iii) You want to design a new game application for the iPhone. [ 6]

**Q. 4. (a)** Effective interaction design is ultimately about the correct assignment of responsibilities to the parties participating in the interaction, i.e. the human and the computer.

(i) From your study of the various theories, models, processes, and techniques of interaction design, comment on the validity of the above statement. [ 6]

(ii) Discuss issues of the allocation of functions between people and software specifically in the context of electronic calendars. [ 4]

**(b)** Write a one-page memo to your colleagues in your software design company, proposing the adoption of *co-operative evaluation* techniques during design to improve the success of the interactive systems designed by your company. [ 6]

**(c)** Comment on the efficacy of *software tools* in supporting interactive system design. [ 4]