CO2001 User Interfaces and HCI

Credits: *10*   **Convenor:** *Dr. S.Kerrigan*   **Semester:** *1ˢᵗ*

Prerequisites:	*Essential: CO1003,CO1005,CO1012*
Assessment:	*Coursework: 100%*

Lectures:	*15*	*hours*		**Class Tests:**	*2*	*hours*
Surgeries:	*8*	*hours*		**Private Study:**	*32*	*hours*
Laboratories:	*18*	*hours*				

Subject Knowledge

Aims   To introduce students to the subject of Human Computer Interaction through the medium of object-oriented programming using relevant programming concepts.

Learning Outcomes   Students should be able to demonstrate an understanding of advanced object-oriented techniques such as Graphical User Interface (GUI) concepts; and the event-driven model of programming, and threading. They should be able to construct GUI based applications and applets in Java. Students should be able to demonstrate a knowledge of and be able to apply basic HCI concepts.

Methods   Class sessions together with course notes, recommended textbook, worksheets, and some additional hand-outs and web support.

Assessment   Four pieces of marked coursework consisting of 1 assessed worksheet, two class tests and an individual mini-project.

Skills

Aims   Students should be able to produce written work in a number of different formats; analyse problems, formulate strategies to solve them, design a plan, carry out the required research, implement and evaluate the solution; recognise the need for information, and then locate and access that information.

Learning Outcomes   On successful completion of the module students should be able to:

- analyse user interface requirements, understand the development and implementation of suitable solution strategies for user friendly graphical interfaces.

- develop graphical user interfaces in Java to satisfy problems of moderate complexity using threads, applets, applications and Files.

Methods   Class sessions, worksheets with feedback from markers, Linux, Java 1.6, Java swing, JRE plugin for web browser, JDE.

Assessment   Four pieces of marked coursework consisting of 1 assessed worksheet, two class tests and an individual mini-project.

Explanation of Prerequisites   The purpose of the module is to enable students to design and implement interactive graphical user interfaces using advanced object oriented techniques and data structures in Java. The module therefore assumes that CO1003 - Program design, CO1005 - Data structures and Development environment and CO1012 - Discrete Structures have been taken.

Course Description   Graphical user interfaces are a vast class of software systems that are designed for interacting with the users. Programs with GUIs are *event* driven, i.e., the program reacts to actions of the users which are called events. GUI based applications are also often "multithreaded". Multithreaded execution is an essential feature of the Java platform and enables concurrency.

The objectives of the module are to lead the students on to advanced event driven programming techniques for building multithreaded graphical user interfaces (GUIs) and adding rich graphics functionality and interactivity to Java applications.

Detailed Syllabus   Graphical User Interfaces and their implementation in Java. Event-driven programming in Java. HCI: introduction to applets. Extended exception handling. Introduction to threading. File input/output.

Reading List

[A] C. Thomas Wu, *An Introduction to Object-Oriented Programming with Java, 5th (international) edition; ISBN: 978-0071283687,* McGraw-Hill.

[B] Kathy Walrath, Mary Campione, Alison Huml, Sharon Zakhour, *The JFC Swing Tutorial: A Guide to Constructing GUIs (2nd Edition) (Java Series) (Paperback),* Prentice Hall PTR.

Also available online at:

http://java.sun.com/docs/books/tutorial/uiswing/index.html

[C] Paul Fische, *An Introduction to Graphical User Interfaces with Java Swing,* Addison Wesley.

[C] Mauro Marinilli, *Professional Java User Interfaces,* Wiley.

[C] Scott Oaks, Henry Wong, *Java Threads (Paperback),* Oreilly.

[C] Kathy Walrath, Mary Campione, Alison Huml, *The Java Tutorial: A Short Course on the Basics (Java Series) (Paperback),* Prentice Hall PTR.

[C] Marc Loy, Robert Eckstein, Dave Wood, James Elliott, Brian Cole, *Java Swing, Second Edition,* Oreilly.

[C] Isaac Rabinovitch, Sharon Zakhour, Scott Hommel, Jacob Royal and Thomas Risser, *The Java Tutorial, Fourth Edition,* Prentice Hall, Fourth edition, 672 pages.

[C] Chet Hasse, Romain Guy , *Filthy Rich Clients,* Addison Wesley.

Resources   Online resources, course notes, departmental web page, study guide, worksheets, handouts, lecture rooms with projection facilities and OHPs.

Module Evaluation   Course questionnaires, course review.