



Faculty of Computer Studies

M206 A: Computing: An Object Oriented Approach (Part A)

Course Guide

M206A: Computing: An Object Oriented Approach (Part A)

Credit Points/ Credit Hours: 15/4

Pre-Requisites:

T171 or its replacement course T175

Short Description:

Making the best use of appropriate media - print, computer, television, CD-ROM, internet - this innovative course covers the fundamentals of object-oriented computing and modern network computing. Students also learn programming skills using the object-oriented language Smalltalk. Students are assumed to have studied computer basic terminologies and skills, and experience of using a computer for word-processing and communication.

Aims:

The aims of this course are:

- To enable students to grasp the concepts of object oriented programming.
- To enable students to design and implement software solutions to various problems.
- To introduce students to software design and development process.

Learning Outcomes:

The Learning Outcomes of this course are given below.

A. Knowledge / Understanding of :

- A1. The principles, concepts and techniques of Object Oriented programming.
- A2. The main constructs and mechanisms in Smalltalk.
- A3. The implications of implementing Smalltalk applications.
- A4. Techniques used in developing a large Smalltalk classes.
- A5. The design and programming process.

B. Cognitive Skills:

- B1. Describe and apply key concepts and techniques in Object Oriented design.
- B2. Analyze and abstract away from the details of a problem.
- B3. To design and formulate an appropriate solution to a problem and evaluate it.
- B4. Describe and apply key concepts and techniques in software design and development.

C. Key Skills:

- C1. Find information from a range of sources to support a task.
- C2. Plan complex tasks.
- C3. Use variety of classes and objects.
- C4. Use appropriate numerical, mathematical and abstraction skills.
- C5. Enable students to progress to more advanced level studies.
- C6. Interact effectively within a group using electronic conferencing techniques.

D. Practical and / or Professional Skills:

- D1. Assemble, program, develop, test and evaluate software system, including non-trivial programs
- D2. Use software tools within Smalltalk environment.
- D3. Use appropriate programming skills.
- D4. Ability to work in an object-oriented using small talk.

Course Structure:

The M206A course consists of a total of four blocks of study. Each block covers one of the key themes in the course.

Table of Contents:

Block I: Foundations

- Familiarisation with Course aims, and software
- An introduction to HCI issues
- An introduction to key object-oriented ideas

Block II: Basic Smalltalk

- Smalltalk expressions and precedence
- References to objects
- Instances, instance variables, access or messages and encapsulation
- Inheritance and overriding
- Separation of domain model and GUI
- Boolean expressions
- Dialog boxes

Block III: Smalltalk Classes

- Syntactic, semantic and logical errors and the debugger
- Critiquing a user interface (group work)
- Collaboration and orchestrating objects
- Iteration messages
- Abstract classes and inheritance structures – the Magnitude subclasses
- Class variables and class methods

Block IV: Collections

- Unsorted Collections: Sets and Dictionaries
- Fixed Size collections: Arrays and Strings
- Ordered and Sorted Collections
- Black Box testing
- Overview of Collections messages
- Symbols
- Identity and immutability

Assessment:

- Tutor-marked assignments: 2 TMAs
- Quiz/Mid-term Assessment: 1 MTA
- Final Exam: 1 Final Exam

Grade Distributions:

- Tutor-marked assignments: 35%
- Quiz/MTA: 15%
- Final Exam: 50%

Course Calendar (Indicative Version):

There are 2 assignments, 1 midterm quiz and 1 final Exam associated with this course. Course result is determined on the basis of student's scores in assignments, midterm quiz and the final Exam. To be sure of passing the course the student needs to score at least 40% (at least 20% in the assignment and Quiz and at least 20% in the final exam) in the above 3 components and achieve an overall average score of 50%.

Week	Course Text	Downloaded Information	Assignments / Assessments
0	Preparatory Information Booklet Chapter (1,3,4)	Chapter 2,3 .See WEBSITE	
1	Chapters:5,6,7	Chapter 7 is Optional	
2	Chapters:8,9		
3	Chapter 10	Chapter 11.See WEBSITE	
4	Chapter 12		
5	Chapter 13,14		
6	Chapter 15,19		TMA 01 due date
7	Chapter 16		
8	Chapter 17,18	Chapter 18.See WEBSITE	Quiz/MTA
9	Chapter 20,21		
10	Chapter 22		
11	Chapter 23,25	Chapter 25.See WEBSITE	
12	Chapter 24		
13	Chapter 26,27	Chapter 27 is Optional	TMA 02 due date
14	Chapter 28,29		
15	Chapter 30	Chapter 30.See WEBSITE	
16	Midterm Exam Period		