



Department of Computing,
Faculty of Science

ITEC802 Object Oriented Technology

Study Guide

Semester 2, 2009

ITEC802 Object Oriented Technology

Welcome to the Study Guide for ITEC802 Object Oriented Technology. This document outlines contacts for the unit, the content you can expect and your responsibilities. Some information referred to here is located on the [Computing](#) or [University](#) websites. You will be expected to have read and understood both this Study Guide and the relevant web pages listed here. Please direct any queries to the appropriate contacts for the unit.

Course Description

Object-oriented design approaches apply methods for producing applications software that place correctness and reusability as principal aims. Its tools include object classes, inheritance, message passing and polymorphism. This unit examines object oriented design and programming with a focus on application development. Practical work is done in the Java programming language.

ITEC802 is not a just programming unit or just a design unit, **it is both**. Students passing this course will have fundamental programming abilities, equipping them for most of the programming required in later units. Students will also gain skill and experience in the software analysis and design process.

Assumed Knowledge

Students entering this unit are expected to have **some** programming experience in at least one programming language. Students who have never programmed before (or not for a long time) should consult the lecturer in the first week of classes.

Staff

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Course Material

Material relating to the course will be posted on the Blackboard system
<http://www.learn.mq.edu.au/>

Textbooks

Prescribed:

There are no prescribed books since there is no one book that satisfactorily covers all the topics from this unit. However, the following books are recommended for the purpose of this unit.

Recommended:

1. **Applying UML and patterns** Craig Larman. **Publisher:** Prentice Hall PTR; 3 edition (October 30, 2004). **ISBN-10:** 0131489062
2. **Head First Design Patterns** Elisabeth Freeman, Eric Freeman, Bert Bates & Kathy Sierra [2004]. O'Reilly Media, Inc. ISBN 0596007124.
3. **Object Oriented Software Development Using Java**: Xiaoping Jia [2002], Addison Wesley; 2 edition. ISBN 9780321210739
4. **Thinking in Java** Bruce Eckel [2002]. Prentice-Hall.
5. **UML 2.0 in a Nutshell** Dan Pilone & Neil Pitman [2005]. O'Reilly Media, Inc.; 2nd ed. Edition. ISBN 0596007957.

Objectives

A student successfully completing this unit will have the following knowledge:

- Object oriented analysis & design;
- Design patterns and when to use them; and
- UML diagrams and where they fit in the OO software development process.

A student successfully completing this unit will have the following practical skills:

- Object oriented programming in Java;
- Designing and programming systems using design patterns;
- Programming with the Java API; and
- Turning UML diagrams into Java code.

What Your Final Grade Means

Learn all about what your final grade means, how it is decided, how to make the most of assessment process, and how to appeal grades online at:

http://www.ics.mq.edu.au/ppdp/policies_forms/grades

Timetable

Four hours of contact time per week is to be undertaken including:

Lectures (start in week 1)

Day, Time: Saturday 12pm-2pm, C5A 229

Practicals (start in week 2)

Day, Time: Saturday 2pm-4pm, E6A 127

You should note that:

1. A class roll will be taken at lectures and practical sessions.
2. It is extremely unlikely that both the practical and assignment work can be completed solely within your scheduled practical class time – you are expected to complete assignment work at other times.
3. Successful completion of practical tasks will be assessed on a pass/fail basis.

Assessment

There are three components to your assessment:

Assignments	32% (3 assignments → 6, 6, 20)
Practical submissions	8% (8 submissions @ 1% each)
Final Examination	60%

In order to pass the unit you are required to perform satisfactorily in each of the assignments, the practical tasks, class participation and the final examination.

Pass All Assessment Items

In order to achieve a pass grade in the unit, you will need to achieve at least a pass in each assessment item. Failure to pass any assessment item may result in you failing the course. The Assignments (considered as a whole) are one assessment item and the Final Exam is another.

Assignments

There are three assignments. Students must attempt all assignments in order to pass the unit.

Assignment schedule:

Assignment	Type	Available	Topic	Due	Worth
1	Group	Week 2	Analysis	Week 5	6%
2	Group	Week 6	Design	Week 8	6%
3	Individual	Week 8	Patterns	Week 12	20%

Submission of Assignments

Assignments are due at the end of the semester week, i.e. Saturday evening. Late assignments will not be marked, except in the case of proven illness or misadventure. Note that crowded laboratories, equipment failure or loss of your files are not valid reasons for late submission of an assignment. Assignments should be submitted through the blackboard system unless stated otherwise. Kindly include the coversheet with your **individual** assignments, found [here](#). For group assignments, use this [alternative coversheet](#).

You are encouraged to:

- set your personal deadline earlier than the actual one
- keep backups of all your important files
- ensure someone else does not pick up your printouts

Assignments and practical submissions will be made available on Saturday evening 6:00pm of the release week and will be due on Sunday evening 6:00pm of the due week. **Any** late assignment will be assessed with a penalty of 25% per day.

Participation

This course will be extremely interactive and will involve all members in discussions of the relevance and usefulness of the topics to your work (past, present and/or future). You will be expected to actively participate in class *and* in online discussions. Each week a discussion topic related to the lecture will be posted on the You will also be encouraged to share your experiences with the class. There will also be lots of opportunities to debate different approaches to the object oriented analysis and design task.

Weekly Lecture Schedule

This schedule listed **below is an estimate only** and may vary during the course.

Week	Lecture Topic	Assignments
Week 1	Introduction to OO principles & Requirements Analysis: - The OO development process - Introduction to UML - Requirements Analysis using UML Use Cases	
Week 2	OO System Analysis with UML I - Objects, Classes and Class Diagrams - Encapsulation - Responsibilities - Relationships OO Programming with Java I - Classes - Messages - Relationships	<u>Assignment 1 Available</u>
Week 3	OO System Analysis with UML II - Inheritance - Polymorphism - Behaviour OO Programming with Java II - Inheritance - Interfaces	
Week 4	OO Programming with Java III - Collections - Exceptions - I/O	
Week 5	OO System Design with UML I - Collaboration - Sequence Diagrams - Class Diagrams Revisited	<u>Assignment 1 Due</u> <u>Assignment 2 Available</u>
Week 6	Application Development (Exercise involving Analysis, Design, Coding)	
Week 7	Introduction to Design Patterns	
Week 8	Design Patterns I -Singleton -Strategy -Adapter	<u>Assignment 2 Due</u> <u>Assignment 3 Available</u>
Week 9	Design Patterns II -Decorator -Iterator -Composite	
Week 10	Design Patterns III -Template -Abstract Factory -Factory Method	
Week 11	Design Patterns IV -Command -Observer -State	
Week 12	Design Patterns V -Façade -Visitor	<u>Assignment 3 Due</u>
Week 13	Review	

The practicals sessions are designed to give you practical experience with the concepts and techniques discussed in lectures. The lecturer will be available to answer questions and to help you use the computers and software. You should read the readings listed for the week *before* each lecture.

Computer Laboratories

Details of the computing facilities are available at:

<http://www.comp.mq.edu.au/undergrad/labfacilities.html>

The laboratory usage policy is available at:

http://www.comp.mq.edu.au/undergrad/policies/lab_usage.html

Liaison Committee

There is a Student-Staff Liaison Committee for postgraduate courses and a meeting is held twice a semester. Dates for the meeting shall be sent to the students and they are encouraged to participate to provide feedback on their units.

Your Feedback Is Welcome

As this is an important postgraduate coursework unit, student comment, positive and negative, is always very welcome. A TEDS form for formal evaluation, by the class, of the unit will be distributed towards the end of the semester. Please contact your Unit Convenor or the PPDP Program Services Officer if you have any urgent feedback during the semester.

Your Responsibilities as Students

You are expected to commit to the workload required to complete this unit. This includes attendance and active participation in lectures and prac sessions. The typical workload for one of our units is around 200 hours. This consists of 4 hours of classes and a day of self-directed study per week during teaching periods, and 12 hours a week of self-directed study during non-teaching periods.

You are expected to be aware of and abide by, the policies applying to postgraduate coursework. Policies specifically applying to this unit include:

- Plagiarism – we take a zero tolerance attitude to plagiarism!
- Special Consideration
- Laboratories: Rules of Use
- IT Security Policy and Rules

Other policies relating to your progress through our postgraduate degrees can be found at: http://www.ics.mq.edu.au/ppdp/policies_forms/

Plagiarism

Access the Plagiarism Policy (including definition) online at:

http://www.ics.mq.edu.au/ppdp/policies_forms/plagiarism/index.htmlPenalty

In all our units the penalty for any plagiarism whatsoever, once detected, will be that for the assignment concerned a mark of negative the full marks for the assignment will be awarded to all the parties involved.

To ensure that there is no opportunity for doubt on anyone's part, an explanation will be sought directly from the students concerned before any mark is officially recorded. Please note that this includes students who, knowingly or unknowingly, permit their work to be copied by others. The University keeps records of plagiarism on student files. Repeated cases of plagiarism will be referred to the Head of Division and/or the University's Disciplinary Committee for further penalty.

Special Consideration

Please contact Department of Computing on 9850-9500, if you have experienced circumstances beyond normal expectation and beyond your control that you believe have adversely affected your performance in a unit.

Access the Special Consideration Policy online at:

http://www.ics.mq.edu.au/ppdp/policies_forms/specialconsideration/

Laboratories: Rules of Use, IT Security Policy

Access the Laboratories: Rules of Use online at:

http://www.comp.mq.edu.au/undergrad/policies/lab_use.html

Access the IT Security Policy and Rules online at:

<http://www.ois.mq.edu.au/policy/mqrules.html>

Variations to This Unit

Macquarie University reserves the right to change the content of, or withdraw, or change the time or mode of offering of any unit which it offers. Reasons to withdraw a unit can include but are not limited to, minimum class size and the continuing availability of suitable lecturing staff. In the event of a withdrawal or change to the time or mode of offering of a unit, we will endeavour as far as practical to assist you in finding a suitable alternative program of studies. It is therefore vital that you ensure the University is aware of any change to your contact details by submitting a Change of Personal Information Form. We will make reasonable efforts to avoid disadvantage to any of our students resulting from a variation in our unit offerings. In some circumstances, it may be necessary for our students to accept alternative units in place of their original enrolment, which are offered outside normal teaching sessions or supported by flexible learning materials.