

MACQUARIE
UNIVERSITY



Department of Computing,
Faculty of Science

ITEC802 Object Oriented Technology

Study Guide

Semester 2, 2011

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

ITEC802 is worth 4 credit points and hence involves 12 hours of workload per week. 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 both a programming unit and a design unit. 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 programming experience in at least one programming language including primitives such as conditions, loops, functions/methods/ arrays. **Students who have never programmed before (or not for a long time) should consult the lecturer in the first week of classes.**

Staff

Gaurav Gupta

Role: Unit Convenor & Lecturer

Email: gaurav.gupta@mq.edu.au (preferred way of contacting me)

Consultation hour: Mondays 5:00 to 6:00 (**by appointments only**, E6A127)

Course Material

Material relating to the course will be posted on the iLearn system
<https://ilearn.mq.edu.au/login/MQ/>

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. **Head First Design Patterns** Elisabeth Freeman, Eric Freeman, Bert Bates & Kathy Sierra [2004]. O'Reilly Media, Inc. ISBN 0596007124.
2. **Design Patterns: Elements of Reusable Object-Oriented Software** Erich Gamma, Richard Helm, Ralph Johnson, John Vlissides. Addison Wesley. ISBN: 9780201633610
3. **Refactoring: Improving the design of existing code** Martin Fowler. Addison Wesley. ISBN: 9780201485677
4. **Applying UML and patterns** Craig Larman. Prentice Hall PTR; 3 edition (October 30, 2004). ISBN-10: 0131489062
5. **Thinking in Java** Bruce Eckel [2002]. Prentice-Hall. Available for free from <http://www.mindview.net/Books/TIJ/>
6. **UML 2.0 in a Nutshell** Dan Pilone & Neil Pitman [2005]. O'Reilly Media, Inc.; 2nd ed. Edition. ISBN 0596007957.

Learning outcomes and graduate capabilities

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

- Fundamentals of Object Oriented methodology
- Object Oriented Principles
- Design principles for Object-Oriented software development
- Object oriented analysis & design;
- Design patterns, when and how 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
- Stepping forward from UML diagrams into Java code.

What Your Final Grade Means

The grading requirements for ITEC802 is as follows:

Pass: At least 40% in CA*, at least 40% in final exam and at least 50% overall

Credit: At least 60% in CA, at least 60% in final exam and at least 65% overall

Distinction: At least 75% in CA, at least 75% in final exam and at least 75% overall

High Distinction: At least 85% in CA, at least 85% in final exam and at least 85% overall

CA - continuous assessment (more about CA on next page)

Timetable

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

Lectures (start in week 1)

Monday 18:00 to 20:00 in E7B164

Practicals (start in week 2)

Monday 20:00 to 22:00 in E6A127

You should note that:

1. 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.
2. Successful completion of practical tasks will be assessed on a pass/fail basis.

Assessment

There are three components to your assessment:

Assignments **32% (2 assignments → 12, 20)**

Practical submissions **8% (4 submissions @ 2% 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.

The final exam will be after week 13 (University exam timetable is released around week 10). It will be a 3-hour written exam covering all topics covered during the semester, including analysis, design, programming (short codes), design patterns.

Assignments

Assignment schedule:

Assignment	Type	Available	Topic	Due	Worth
1	Individual	Week 3	Object Oriented Design and Programming	Week 6	12%
2	Individual	Week 8	Design Patterns	Week 12	20%

Submission of Assignments

Assignments are due at the end of the semester week, i.e. Sunday 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 iLearn 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

Late assignments shall not be marked. Any appeal for extension should be sent by email to convenor.

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. This will be done in response to the learning needs of students. In particular, we may include a guest lecture or move material around between weeks if and when it seems useful to do so.

Week	Lecture Topic	Assignments
Week 1	Introduction - Unit structure - Expectations - The OO development process - Introduction to UML	
Week 2	Lecture: OO Principles Practical: Java Programming - 1 - Classes and Objects, State and Behaviour	
Week 3	Lecture: Design Principles and OO Analysis – 2 Practical : Java Programming - 2 - Inheritance - Interfaces	Assignment 1 Available
Week 4	Lecture: Case Study: E-Travel Agency	
Week 5	OO System Design - Structural and dynamic Collaboration diagrams - Sequence Diagrams - Updating class diagrams through behavioural changes	
Week 6	Lecture: Application Development (Analysis, Design, Coding) Practical: JUnit testing	Assignment 1 Due
Week 7	Documentation through Javadoc Refactoring	
Week 8	Design Patterns I -Singleton -Strategy -Adapter	Assignment 2 Available
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	
Week 12	Design Patterns V -Façade -State	Assignment 2 Due
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 University honesty Policy (including definition) online at http://www.mq.edu.au/policy/docs/academic_honesty/policy.htm

Penalty

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

assignment is to be marked out of 8, a mark of -8 will be recorded, for that assignment, on the student's record.

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.mq.edu.au/policy/docs/special_consideration/policy.pdf

Laboratories: Rules of Use

Access the Laboratories: Rules of Use online at:

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

IT Security Policy and Rules

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.