



**MONASH** University  
Information Technology

**FIT3011**  
**Enterprise programming**

**Unit Guide**

**Semester 1, 2013**

The information contained in this unit guide is correct at time of publication. The University has the right to change any of the elements contained in this document at any time.

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# **FIT3011 Enterprise programming - Semester 1, 2013**

This unit covers: Distributed database systems: clients, servers, application servers; Database servers, clusters of servers; Distributed database architectures: single-tier, two-tier, multi-tier; Implementation issues: performance, security, transactions; Enterprise application server capabilities: hot deployment, clean shutdown, clustering, farming, load balancing, automatic fail-over; Enterprise application coding: DBMS access, distributed components, messaging services, authentication, authorisation, encryption, transactions; and Enterprise application software development tools. Access to the University's computer systems through an Internet service provider is compulsory for off-campus students.

## **Mode of Delivery**

Sunway (Day)

## **Contact Hours**

2 hrs lectures/wk, 2 hrs laboratories/wk

## **Workload requirements**

The workload commitments for this unit is 12 hours per week.

For on-campus students: 2 hours of lectures, 2 hours of computer laboratories, plus 8 hours of private study and programming.

## **Unit Relationships**

### **Prohibitions**

CSE3450, GCO3823, GCO4823

### **Prerequisites**

FIT1007 or GCO1812 or [FIT2034](#) or equivalent.

## **Chief Examiner**

Dr Simon Egerton

## **Campus Lecturer**

## **Sunway**

Sylvester Oremaye Olubolu

## **Tutors**

### **Sunway**

**Sylvester Oremaye Olubolu**

# Academic Overview

## Learning Outcomes

At the completion of this unit students will:

- understand the various ways in which a database application may be scaled to the enterprise level, including: applications being split between clients and servers; servers being split between application servers and database servers; application servers being split into clusters of application servers;
- be able to evaluate the advantages and disadvantages of single-tier, two-tier and multi-tier architectures;
- be aware of some of the pitfalls (and ways to avoid or minimise them) of distributed applications, including: performance problems due to network latency and bandwidth; security problems when transmitting data over an untrusted network; transactional problems when transactions must be distributed over multiple servers;
- be able to evaluate when it is appropriate to use enterprise programming techniques, and when simpler solutions will suffice.
- be able to configure an enterprise application and application server to take advantage of advanced capabilities such as: hot deployment; clean shutdown; clustering; farming; load balancing; automatic fail-over;
- be able to design and implement an enterprise application that makes appropriate use of the following: DBMSs; distributed components; messaging services; security (authentication, authorisation and encryption); transactions; fat clients; thin (web) clients;
- be familiar with a selection of software tools (both GUI and command-line) to speed enterprise application development;
- accept the importance of client and server operating system platforms other than Windows, and therefore the need for technologies that support multiple platforms;
- appreciate the value that an application server adds to an application with remarkably little additional coding effort.

## Unit Schedule

Week	Activities	Assessment
0		No formal assessment or activities are undertaken in week 0
1	Introduction to developing enterprise applications	
2	Software management practices and agile development	
3	Software design patterns	
4	Introduction to software modularization with OSGi	
5	Enterprise Software Modularization with OSGi	
6	Software quality and continuous improvement	Assignment - First milestone due
7	Logging and persistence	
8	Messaging and Message Brokering	
9	Authentication and authorization services	
10	Unit and UA testing	
11	Systems testing, mocking and debugging	Assignment - Second milestone due
12	Exam review	
	SWOT VAC	No formal assessment is undertaken in SWOT VAC
	Examination period	LINK to Assessment Policy: <a href="http://policy.monash.edu.au/policy-bank/academic/education/assessment/assessment-in-coursework-policy.html">http://policy.monash.edu.au/policy-bank/academic/education/assessment/assessment-in-coursework-policy.html</a>

\*Unit Schedule details will be maintained and communicated to you via your learning system.

## Assessment Summary

Examination (3 hours): 60%; In-semester assessment: 40%

Assessment Task	Value	Due Date
Assignment - First milestone	20%	Week 6
Assignment - Second milestone	20%	Week 11
Examination 1	60%	To be advised

## Teaching Approach

### Lecture and tutorials or problem classes

This teaching and learning approach provides facilitated learning, practical exploration and peer learning.

# Assessment Requirements

## Assessment Policy

Faculty Policy - Unit Assessment Hurdles

(<http://www.infotech.monash.edu.au/resources/staff/edgov/policies/assessment-examinations/unit-assessment-hu>)

Academic Integrity - Please see the Demystifying Citing and Referencing tutorial at

<http://lib.monash.edu/tutorials/citing/>

## Assessment Tasks

### Participation

Group project that demonstrates the practical application of knowledge gained through the course material. The group project will be assessed on an ongoing basis, with the first phase due in Week 6 and the final phase due in Week 11.

#### • Assessment task 1

**Title:**

Assignment - First milestone

**Description:**

Development of an enterprise application for a client server architecture.

**Weighting:**

20%

**Criteria for assessment:**

Correctness, Robustness, User Interface, Efficiency, Simplicity, Modularity and Layout.

These will be detailed in the assignment preparation guide of the unit book.

The centralised project management system at [www.pivotaltracker.com](http://www.pivotaltracker.com) will be used to distinguish individual contributions to group work.

**Due date:**

Week 6

#### • Assessment task 2

**Title:**

Assignment - Second milestone

**Description:**

Development of a web-based enterprise application for a client server architecture.

**Weighting:**

20%

**Criteria for assessment:**

Correctness, Robustness, User Interface, Efficiency, Simplicity, Modularity, Layout, Multiuser, Transactions, Authentication and Authorization.

Most of these will be detailed in the assignment preparation guide.

The centralised project management system at [www.pivotaltracker.com](http://www.pivotaltracker.com) will be used to distinguish individual contributions to group work.

**Due date:**

Week 11

## Examinations

- **Examination 1**

**Weighting:**

60%

**Length:**

3 hours

**Type (open/closed book):**

Closed book

**Electronic devices allowed in the exam:**

None

## Learning resources

### Reading list

Reading list and additional resources will be continuously updated on Moodle.

Monash Library Unit Reading List

<http://readinglists.lib.monash.edu/index.html>

### Feedback to you

Types of feedback you can expect to receive in this unit are:

- Informal feedback on progress in labs/tutes
- Graded assignments with comments

### Extensions and penalties

Submission must be made by the due date otherwise penalties will be enforced.

You must negotiate any extensions formally with your campus unit leader via the in-semester special consideration process:

<http://www.infotech.monash.edu.au/resources/student/equity/special-consideration.html>.

### Returning assignments

Students can expect assignments to be returned within two weeks of the submission date or after receipt, whichever is later.



## Assignment submission

It is a University requirement

(<http://www.policy.monash.edu/policy-bank/academic/education/conduct/plagiarism-procedures.html>) for students to submit an assignment coversheet for each assessment item. Faculty Assignment coversheets can be found at <http://www.infotech.monash.edu.au/resources/student/forms/>. Please check with your Lecturer on the submission method for your assignment coversheet (e.g. attach a file to the online assignment submission, hand-in a hard copy, or use an online quiz).

## Online submission

If Electronic Submission has been approved for your unit, please submit your work via the learning system for this unit, which you can access via links in the my.monash portal.

## Required Resources

Please check with your lecturer before purchasing any Required Resources. Limited copies of prescribed texts are available for you to borrow in the library, and prescribed software is available in student labs.

This is community-supported software - it will be available in the labs or you can download and install it yourself.

- Netbeans or Eclipse [Development Environment]
- Eclipse Virgo [OSGi Server]
- Jenkins [CI Server]
- RabbitMQ (with STOMP) [Message Broker]
- Apache Maven 3.x [Build Tool]
- Apache JackRabbit [Content Repository]
- Log4J and LogBack [Logging]
- Junit 4.x and EasyMock [Testing]
- Groovy [Scripting]
- TortoiseSVN or another SVN client [Version Control]
- Web Browser for updating project status

## Other Information

### Policies

Monash has educational policies, procedures and guidelines, which are designed to ensure that staff and students are aware of the University's academic standards, and to provide advice on how they might uphold them. You can find Monash's Education Policies at:

[www.policy.monash.edu.au/policy-bank/academic/education/index.html](http://www.policy.monash.edu.au/policy-bank/academic/education/index.html)

Key educational policies include:

- Plagiarism;  
<http://www.policy.monash.edu/policy-bank/academic/education/conduct/plagiarism-policy.html>
- Assessment in Coursework Programs;  
<http://www.policy.monash.edu/policy-bank/academic/education/assessment/assessment-in-coursework-po>
- Special Consideration;  
<http://www.policy.monash.edu/policy-bank/academic/education/assessment/special-consideration-policy.ht>
- Grading Scale;  
<http://www.policy.monash.edu/policy-bank/academic/education/assessment/grading-scale-policy.html>
- Discipline: Student Policy;  
<http://www.policy.monash.edu/policy-bank/academic/education/conduct/student-discipline-policy.html>
- Academic Calendar and Semesters; <http://www.monash.edu.au/students/dates/>
- Orientation and Transition; <http://intranet.monash.edu.au/infotech/resources/students/orientation/>
- Academic and Administrative Complaints and Grievances Policy;  
<http://www.policy.monash.edu/policy-bank/academic/education/management/complaints-grievance-policy.h>
- Code of Practice for Teaching and Learning;  
<http://www.policy.monash.edu.au/policy-bank/academic/education/conduct/suppdocs/code-of-practice-teac>

### Graduate Attributes Policy

<http://www.policy.monash.edu/policy-bank/academic/education/management/monash-graduate-attributes-policy.h>

### Student services

The University provides many different kinds of support services for you. Contact your tutor if you need advice and see the range of services available at <http://www.monash.edu.au/students>. For Sunway see <http://www.monash.edu.my/Student-services>, and for South Africa see <http://www.monash.ac.za/current/>.

### Monash University Library

The Monash University Library provides a range of services, resources and programs that enable you to save time and be more effective in your learning and research. Go to [www.lib.monash.edu.au](http://www.lib.monash.edu.au) or the library tab in [my.monash](#) portal for more information. At Sunway, visit the Library and Learning Commons at <http://www.lib.monash.edu.my/>. At South Africa visit <http://www.lib.monash.ac.za/>.

## Disability Liaison Unit

Students who have a disability or medical condition are welcome to contact the Disability Liaison Unit to discuss academic support services. Disability Liaison Officers (DLOs) visit all Victorian campuses on a regular basis.

Website: <http://www.monash.edu/equity-diversity/disability/index.html> Telephone: 03 9905 5704 to book an appointment with a DLO; or contact the Student Advisor, Student Community Services at 03 55146018 at Sunway Email: [dlu@monash.edu](mailto:dlu@monash.edu) Drop In: Equity and Diversity Centre, Level 1, Building 55, Clayton Campus, or Student Community Services Department, Level 2, Building 2, Monash University, Sunway Campus

## Your feedback to Us

Monash is committed to excellence in education and regularly seeks feedback from students, employers and staff. One of the key formal ways students have to provide feedback is through the Student Evaluation of Teaching and Units (SETU) survey. The University's student evaluation policy requires that every unit is evaluated each year. Students are strongly encouraged to complete the surveys. The feedback is anonymous and provides the Faculty with evidence of aspects that students are satisfied and areas for improvement.

For more information on Monash's educational strategy, see:

[www.monash.edu.au/about/monash-directions](http://www.monash.edu.au/about/monash-directions) and on student evaluations, see:  
[www.policy.monash.edu/policy-bank/academic/education/quality/student-evaluation-policy.html](http://www.policy.monash.edu/policy-bank/academic/education/quality/student-evaluation-policy.html)

## Previous Student Evaluations of this Unit

Based on previous student feedback this unit is well structured and no changes have been made for this semester.

If you wish to view how previous students rated this unit, please go to  
<https://emuapps.monash.edu.au/unitevaluations/index.jsp>