

**FIT2024**  
**Software engineering practice**

**Unit Guide**

**Semester 1, 2012**

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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# Table of Contents

<b><u>FIT2024 Software engineering practice - Semester 1, 2012</u></b> .....	<b>1</b>
<u>Mode of Delivery</u> .....	1
<u>Contact Hours</u> .....	1
<u>Workload</u> .....	1
<u>Unit Relationships</u> .....	1
<u>Prohibitions</u> .....	1
<u>Prerequisites</u> .....	1
<u>Chief Examiner</u> .....	1
<u>Campus Lecturer</u> .....	1
<u>Sunway</u> .....	1
<b><u>Academic Overview</u></b> .....	<b>2</b>
<u>Outcomes</u> .....	2
<u>Graduate Attributes</u> .....	2
<u>Assessment Summary</u> .....	3
<u>Teaching Approach</u> .....	3
<u>Feedback</u> .....	3
<u>Our feedback to You</u> .....	3
<u>Your feedback to Us</u> .....	3
<u>Previous Student Evaluations of this unit</u> .....	3
<u>Required Resources</u> .....	4
<u>Prescribed text(s)</u> .....	4
<b><u>Unit Schedule</u></b> .....	<b>5</b>
<b><u>Assessment Requirements</u></b> .....	<b>6</b>
<u>Assessment Policy</u> .....	6
<u>Assessment Tasks</u> .....	6
<u>Participation</u> .....	6
<u>Examinations</u> .....	7
<u>Examination 1</u> .....	7
<u>Assignment submission</u> .....	7
<u>Online submission</u> .....	7
<u>Extensions and penalties</u> .....	8
<u>Returning assignments</u> .....	8
<b><u>Other Information</u></b> .....	<b>9</b>
<u>Policies</u> .....	9
<u>Student services</u> .....	9
<u>Reading list</u> .....	10

# **FIT2024 Software engineering practice - Semester 1, 2012**

This unit develops students understanding of and skills in professional Software Engineering practices at the personal level. Students experience work in a team environment and extend their programming skills by learning a new object oriented language and maintaining a system that is larger than their experience in prior units. Students develop skills in estimating, monitoring, reviewing and reporting on practical projects.

## **Mode of Delivery**

Sunway (Day)

## **Contact Hours**

2 hrs lectures/wk, 2 hrs laboratories/wk

## **Workload**

Students will be expected to spend a total of 12 hours per week during semester on this unit as follows:

- two-hour lecture and
- two-hour tutorial (or laboratory) (requiring advance preparation)and
- up to an additional 8 hours in some weeks for completing lab and project work, private study and revision.

## **Unit Relationships**

### **Prohibitions**

CSE2201, GCO3811, FIT3037

### **Prerequisites**

FIT1007 or FIT1008 or FIT1015 or CSE1303 or CSE1203 or BUS2011 or FIT2034

## **Chief Examiner**

Dr David Squire

## **Campus Lecturer**

## **Sunway**

Thomas O'Daniel

# Academic Overview

## Outcomes

At the completion of this unit students will have -  
A knowledge and understanding of:

- the Personal Software Process and its benefits, including the need for planning, estimation, recording time, product and defect metrics, reviews, and reflection;
- the importance of, and the relationship between, a quality process and a quality product;
- reinforcing and extending their knowledge of OO programming concepts by learning how they are implemented in another programming language;
- the Software Engineers role in software development and maintenance and working with large systems;
- the Team Software Process and how it relates to the Personal Software Process.

Developed attitudes that enable them to:

- develop a positive professional attitude;
- recognise the importance of adhering to software engineering principles in designing and implementing systems;

Developed the skills to:

- make personal estimates and work plans, produce work logs and diaries, produce product and defect metrics, and participate in technical review meetings;
- monitor, reflect upon, and improve their own productivity and effectiveness;
- use a new object oriented programming language to construct systems consisting of many interacting classes;
- analyse, debug and perform maintenance on large existing object-oriented programs.

Demonstrated the communication skills necessary to:

- be able to produce reports on their plans, progress, and reviews;
- be able to work effectively in small teams, and cooperatively with other teams.

## Graduate Attributes

Monash prepares its graduates to be:

1. responsible and effective global citizens who:

- a. engage in an internationalised world
- b. exhibit cross-cultural competence
- c. demonstrate ethical values

critical and creative scholars who:

- a. produce innovative solutions to problems
- b. apply research skills to a range of challenges
- c. communicate perceptively and effectively

## Assessment Summary

Examination (2 hours): 40%; In-semester assessment: 60%

Assessment Task	Value	Due Date
Individual Exercises	10%	Weeks 3, 4, 5 and 6
Team Project	10 + 10 + 15 + 15 = 50%	Stage 1 - P & D - Friday, week 7: Stage 1 - I & T - Friday, week 8: Stage 2 - P & D - Friday, week 10: Stage 2 - I & T - Friday, week 12:
Examination 1	40%	To be advised

## Teaching Approach

### Lecture and tutorials or problem classes

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

## Feedback

### Our 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
- Interviews

### 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 SETU, Student Evaluation of Teacher and Unit. 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, and on student evaluations, see:

<http://www.monash.edu.au/about/monash-directions/directions.html>

<http://www.policy.monash.edu/policy-bank/academic/education/quality/student-evaluation-policy.html>

## Previous Student Evaluations of this unit

Feedback on each assignment submission will be given in the tutorial the week following the submission, by way of mini-interviews.

If you wish to view how previous students rated this unit, please go to

<https://emuapps.monash.edu.au/unitevaluations/index.jsp>

## Required Resources

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

You will need access to:

- **EiffelStudio** - Available for MS Windows, Linux, and Mac OS X
- **TortoiseSVN (for MS Windows only)** - or any other Subversion client
- A tool for creating UML diagrams, such as Visual Paradigm

This software is installed in the computing labs; links to sites where these tools can be downloaded for free will be provided on the unit website. Information about computer use for students is available from the ITS Student Resource Guide in the Monash University Handbook.

## Prescribed text(s)

Prescribed texts are available for you to borrow in the library.

Pressman, R.S.,. (2005). *Software Engineering: A Practitioner's Approach*. (6th Edition) McGraw-Hill.

Meyer, B.,. (1997). *Object-Oriented Software Construction*. (2nd Edition) Prentice-Hall.

## Unit Schedule

Week	Activities	Assessment
0		No formal assessment or activities are undertaken in week 0
1	Introduction to Eiffel	
2	SE & Quality; Eiffel	Tutorials commence
3	SE Process, PSP; Eiffel	Assessment Task 1 - Exercise 1 due
4	Specification; Configuration Management	Assessment Task 1 - Exercise 2 due
5	Project & Quality Management; Testing;	Assessment Task 1 - Exercise 3 due; Hand out Assignment
6	Writing Test Plans and Test Reports	Assessment Task 1 - Exercise 4 and PIP due
7	Software Metrics	Stage 1-Planning due
8	Software Maintenance; Software Design	Stage 1-Implementation due
9	SQA & Reviews (PSP2)	
10	Software Reuse	Stage 2-Planning due
11	Software Performance	
12	SE Tools	Stage 2-Implementation due
	SWOT VAC	No formal assessment is undertaken 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 MUSO (Blackboard or Moodle) learning system.

# Assessment Requirements

## Assessment Policy

Faculty Policy - Unit Assessment Hurdles

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

## Assessment Tasks

### Participation

#### • Assessment task 1

**Title:**

Individual Exercises

**Description:**

Four (4) programming exercises will be set in weeks 2 through 5. Each of these four exercises is due at the following week's tutorial, where it will be briefly assessed. It will not be possible to obtain marks for work presented after this time. The exercises are cumulative, so it is vital that students keep up with the schedule.

Students must attend tutorials to submit your work and receive feedback. The exercises are designed to improve object-oriented programming and testing skills, and knowledge of Eiffel, prior to the commencement of the major assignment work. The Personal Software Process (PSP) will be introduced as part of these exercises, and a Process Improvement Proposal (PIP) will be due with the final exercise, which is assessed in week 6.

**Weighting:**

10%

**Criteria for assessment:**

Each program will be assessed for correctness with respect to:

- ◆ its functional specification, as well as
- ◆ for good programming style and
- ◆ object-oriented design.

**Due date:**

Weeks 3, 4, 5 and 6

#### • Assessment task 2

**Title:**

Team Project

**Description:**

Teams will be provided with an existing system written in Eiffel. The project has two (2) stages. In the first stage, they will be required to debug the existing code, and extend it to implement some new functionality. In the second stage further requirements will be added, and students will have to design and implement changes to the system to meet these new requirements. All work must be planned, measured and tested according to the Personal Software Process (PSP). Each stage consists of a software engineering planning and design component, and an implementation component. These components are submitted and marked separately.

- ◆ Stage 1 - Planning and Design (P&D): 10%



## Assessment Requirements

- ◆ Stage 1 - Implementation and Testing (I&T): 10%
- ◆ Stage 2 - Planning and Design: 15%
- ◆ Stage 2 - Implementation and Testing: 15%

### Weighting:

10 + 10 + 15 + 15 = 50%

### Criteria for assessment:

Plans will be assessed for completeness with respect to the requirements and the PSP.

Designs and code will be assessed for:

- ◆ completeness with respect to the requirements,
- ◆ quality of object-oriented design, and
- ◆ coding style.

All PSP metrics and test documentation will be assessed for completeness, accuracy and conformance to PSP guidelines.

The tutor will monitor individual contributions to the group when allocating marks to members of the group

### Due date:

Stage 1 - P & D - Friday, week 7: Stage 1 - I & T - Friday, week 8: Stage 2 - P & D - Friday, week 10: Stage 2 - I & T - Friday, week 12:

## Examinations

### • Examination 1

#### Weighting:

40%

#### Length:

2 hours

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

Closed book

#### Electronic devices allowed in the exam:

None

## 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 VLE site for this unit, which you can access via links in the my.monash portal.

## **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.

## 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:

<http://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  
(<http://www.policy.monash.edu/policy-bank/academic/education/assessment/assessment-in-coursework-policy.html>)
- Special Consideration  
(<http://www.policy.monash.edu/policy-bank/academic/education/assessment/special-consideration-policy.html>)
- 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/key-dates/>);
- Orientation and Transition (<http://www.infotech.monash.edu.au/resources/student/orientation/>);  
and
- Academic and Administrative Complaints and Grievances Policy  
(<http://www.policy.monash.edu/policy-bank/academic/education/management/complaints-grievance-policy.html>)
- Codes of Practice for Teaching and Learning  
(<http://www.policy.monash.edu.au/policy-bank/academic/education/conduct/suppdocs/code-of-practice-teaching-and-learning.html>)

### 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 [www.monash.edu.au/students](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/>

The Monash University Library provides a range of services and resources that enable you to save time and be more effective in your learning and research. Go to <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/>.

Academic support services may be available for students who have a disability or medical condition. Registration with the Disability Liaison Unit is required. Further information is available as follows:

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

## Reading list

Other texts you might find useful include:

- Pfleeger, S. L., Software Engineering Theory and Practice, 2nd Edition, Prentice Hall, 2001.
- Sommerville, I., Software Engineering 7th edition, Addison-Wesley, 2004.
- Humphrey, W.S., Introduction to the Personal Software Process, Addison Wesley 1997.
- Humphrey, W.S., A Discipline for Software Engineering, Addison Wesley 1995.
- Humphrey, W.S., Managing the Software Process, Addison Wesley 1990.
- Humphrey, W.S., Lovelace, M., Hoppes, R., Introduction to the Team Software Process, Addison Wesley, 1998.
- Peters, J. S., Pedrycz, W., Software Engineering, An Engineering Approach, J Wiley, 2000.
- Wiener R.S., Introduction to Computer Science with Eiffel, Prentice Hall 1996.

Further Reading:

- Bennett S, Skelton and Lunn, Schaum's Outlines UML, McGraw-Hill, 2001.
- Larman C, Applying UML and patterns, Prentice-Hall, 1999.
- Jacobson I, Booch G and Rumbaugh J, The Unified Software Development Process , Addison-Wesley.
- Covey, S.R., The 7 Habits of Highly Effective People, Pocket Books, 1999.
- Brooks, F., The Mythical Man Month, Addison-Wesley, 1995.