MONASH University
Information Technology

FIT2024
Software engineering practice

Unit Guide

Semester 1, 2013

Last updated: 04 Mar 2013

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FIT2024 Software engineering practice - Semester 1, 2013

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

Clayton (Day)

Contact Hours

2 hrs lectures/wk, 2 hrs laboratories/wk

Workload requirements

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

Clayton

David Squire

Tutors

Clayton

Robyn McNamara

Nabeel Mohammed

Academic Overview

Learning 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;
- reinforceing 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.

Unit Schedule

Week	Activities	Assessment
0		No formal assessment or activities are undertaken in week 0
1	Unit Overview; Object-Oriented Thinking	
2	SE & Quality; Data Structures and Assertions	Tutorials commence
3	SE Process, PSP; Design By Contract	Assessment Task 1 - Exercise 1 due in tutorial
4	Specification; Configuration Management	Assessment Task 1 - Exercise 2 due in tutorial
5	Project & Quality Management; Testing;	Assessment Task 1 - Exercise 3 due in tutorial; Hand out Assignment
6	Writing Test Plans and Test Reports	Assessment Task 1 - Exercise 4 due in tutorial and PIP due
7	Software Metrics	Team Project - Stage 1-Planning and development due Friday
8	Software Maintenance; Software Design	Team Project - Stage 1-Implementation and Testing due Friday
9	SQA & Reviews (PSP2)	
10	Software Reuse	Team Project - Stage 2-Planning and development due Friday
11	Software Performance	
12	SE Tools	Team Project - Stage 2 - Implementation and Testing due Monday
	SWOT VAC	No formal assessment is undertaken in SWOT VAC
	Examination period	LINK to Assessment Policy: http://policy.monash.edu.au/policy-bank/academic/education/assessment/assessment-in-coursework-policy.html

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

Assessment Summary

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

Assessment Task	Value	Due Date
Individual Exercises	10%	Weeks 3, 4, 5 and 6 during tutorial
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 - Monday, 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.

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

- **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, design, and testing skills 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 during tutorial

- **Assessment task 2**

  Title:
  Team Project
  Description:
  Teams will be provided with a codebase for an existing system. 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%
- 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 - Monday, week 12:

Examinations

- **Examination 1**

Weighting:
40%
Length:
2 hours
Type (open/closed book):
Closed book
Electronic devices allowed in the exam:
None

Learning resources

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.

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 Rumbaug 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.

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
- Interviews

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.

You will need access to:

- A Java IDE, such as **Eclipse**
- **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.

Recommended text(s)

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

Meyer, Bertrand. (1997). *Object-Oriented Software Construction*. () Prentice-Hall.

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

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.ht

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 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.htmlTelephone: 03 9905 5704 to book an appointment with a DLO; or contact the Student Advisor, Student Commuity Services at 03 55146018 at SunwayEmail: dlu@monash.eduDrop 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 and on student evaluations, see:
www.policy.monash.edu/policy-bank/academic/education/quality/student-evaluation-policy.html

Previous Student Evaluations of this Unit

Based on student feedback:

Feedback on each assignment submission will be given in the tutorial the week following the submission, by way of interviews, during which the assignment will be graded.

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