



UNIVERSITY  
OF WOLLONGONG  
AUSTRALIA

# SCIT

**School of Computing and Information Technology**

**Faculty of Engineering & Information Sciences**

Head of School Professor Willy Susilo

EIS Central

Tel: (02) 4221 3491

**CSCI318 Software Engineering Practices & Principles**

**Subject Outline**

**Spring Session 2017**

## Consultation Times

|                            |                    |
|----------------------------|--------------------|
| <b>Subject Coordinator</b> | Dr George Zhou     |
| Telephone Number:          | 0242 21 5399       |
| Email:                     | zhiquan@uow.edu.au |
| Location:                  | 3.208              |

Dr. Zhou's consultation times during session:

| Day | Time           |
|-----|----------------|
| Mon | 11:30 to 13:30 |
| Tue | 11:30 to 13:30 |

## Subject Organisation

|  |   |
|--|---|
| Session:   | Spring Session 2017, Wollongong Campus  |
| Credit Points                                    | 6   |
| Contact hours per week:                          | 3 hours lectures  |
| Lecture Times & Location:                        | <a href="http://www.uow.edu.au/student/timetables/index.html">http://www.uow.edu.au/student/timetables/index.html</a> |
| Tutorial Day, Time and Location can be found at: | <a href="http://www.uow.edu.au/student/timetables/index.html">http://www.uow.edu.au/student/timetables/index.html</a> |

The University uses the eLearning system Moodle to support all coursework subjects.

Students should check the subject's Moodle site regularly as important information, including **details of unavoidable changes in assessment requirements will be posted from time to time via Moodle space** <http://www.uow.edu.au/student/> . Any information posted to the web site is deemed to have been notified to all students.

In extraordinary circumstances the provisions stipulated in this Subject Outline may require amendment after the Subject Outline has been distributed. All students enrolled in the subject must be notified and have the opportunity to provide feedback in relation to the proposed amendment, prior to the amendment being finalised.

Data on student performance and engagement (such as Moodle and University Library usage, task marks, use of SOLS) will be available to the Subject Coordinator to assist in analysing student engagement, and to identify and recommend support to students who may be at risk of failure. If you have questions about the kinds of data the University uses, how we collect it, and how we protect your privacy in the use of this data, please refer to <http://www.uow.edu.au/dvca/bala/analytics/index.html>

## Subject Description

This subject examines the current state of software engineering both as an academic discipline and as a profession. The subject focuses on issues of requirements engineering, system procurement, and professional practice, and through case studies, the subject considers reasons for the failure and success of various software engineering projects. Topics which may be covered include: Requirements Elicitation, Functional and Non-Functional Requirements, Design Patterns and Refactoring, Reverse Engineering, Software Quality Assurance, Analysis and Verification of Specification and Design, Examples of Formal Techniques in Software Engineering.

## Subject Learning Outcomes

On successful completion of this subject, students will be able to:

1. Demonstrate an understanding of an existing Requirement Specification.
2. Derive design criteria from an implemented system.
3. Evaluate quality of existing software specification, design and implementation.
4. Identify appropriate formal techniques for a range of Software Engineering problems.

## Recent Improvements

The School is committed to continual improvement in teaching and learning and takes into consideration student feedback from many sources. These sources include direct student feedback to tutors and lecturers, feedback through Student Services and the Faculty Central, and responses to the Subject Evaluation Surveys. This information is also used to inform comprehensive reviews of subjects and courses.

### **Attendance Requirements**

It is the responsibility of students to attend all lectures/tutorials/labs/seminars/ practical work for subjects for which you are enrolled. It should be noted that the amount of time spent on each 6 credit point subject should be at least 12 hours per week, which includes lectures/tutorials/labs etc.

Satisfactory attendance is deemed by the University, to be attendance at approximately 80% of the allocated contact hours.

### **Optional Attendance Statement**

Attendance rolls may be kept for lectures. If you are present for less than 80% and would have otherwise passed you need to apply for student academic consideration, otherwise a TF (technical fail) grade may be recorded.

### **Method of Presentation**

In order to maximize learning outcomes, it is strongly recommended that students attend all lectures.

### **Lecture Schedule**

| <b>Week</b> | <b>Topic (subject to change)</b>          |
|-------------|---|
| 1           | Introduction                              |
| 2           | Software qualities (I)                    |
| 3           | Software qualities (II)                   |
| 4           | Software qualities (III)                  |
| 5           | Software engineering principles (I)       |
| 6           | Software engineering principles (II)      |
| 7           | Software engineering principles (III)     |
| 8           | Software design (I)                       |
| 9           | Software design (II)                      |
| 10          | Requirements engineering                  |
| 11          | Software verification and validation (I)  |
| 12          | Software verification and validation (II) |
| 13          | Project presentation and subject review   |

Note: Dr. Zhou will be on school's business trip on 9th and 10th Oct 2016 (Monday and Tuesday). Therefore, there is no lecture on these two days - the lectures will be moved to a later week (time and venue to be

announced) and the contents of this week will NOT be examinable.

## UOW Grade Descriptors

| GRADE                           | DESCRIPTOR   |
|---------------------------------|--|
| High Distinction(HD)<br>85-100% | <p>For performance that provides evidence of an outstanding level of attainment of the learning relevant subject outcomes, demonstrating the attributes of a distinction grade plus (as applicable) one or more of the following:</p> <ul style="list-style-type: none"> <li>• consistent evidence of deep and critical understanding</li> <li>• substantial originality and insight in identifying, generating and communicating competing arguments, perspectives or problem-solving approaches</li> <li>• critical evaluation of problems, their solutions and their implications</li> <li>• use of quantitative analysis of data as the basis for deep and thoughtful judgments, drawing insightful, carefully qualified conclusions from this work</li> <li>• creativity in application as appropriate to the discipline</li> <li>• eloquent and sophisticated communication of information and ideas in terms of the conventions of the discipline</li> <li>• consistent application of appropriate skills, techniques and methods with outstanding levels of precision and accuracy</li> <li>• all or almost all answers correct, very few or none incorrect</li> </ul> |
| Distinction (D)<br>75-84%       | <p>For performance that provides evidence of a superior level of attainment of the relevant subject learning outcomes, demonstrating the attributes of a credit grade plus (as applicable) one or more of the following:</p> <ul style="list-style-type: none"> <li>• evidence of integration and evaluation of critical ideas, principles, concepts and/or theories</li> <li>• distinctive insight and ability in applying relevant skills, techniques, methods and/or concepts</li> <li>• demonstration of frequent originality in defining and analysing issues or problems and providing solutions</li> <li>• fluent and thorough communication of information and ideas in terms of the conventions of the discipline</li> <li>• frequent application of appropriate skills, techniques and methods with superior levels of precision and accuracy</li> <li>• most answers correct, few incorrect</li> </ul>  |
| Credit (C)<br>65-74%            | <p>For performance that provides evidence of a high level of attainment of the relevant subject learning outcomes, demonstrating the attributes of a pass grade plus (as applicable) one or more of the following:</p> <ul style="list-style-type: none"> <li>• evidence of learning that goes beyond replication of content knowledge or skills</li> <li>• demonstration of solid understanding of fundamental concepts in the field of study</li> <li>• demonstration of the ability to apply these concepts in a variety of contexts</li> <li>• use of convincing arguments with appropriate coherent and logical reasoning</li> </ul>  |

|                     |   |
|---------------------|---|
|                     | <ul style="list-style-type: none"> <li>• clear communication of information and ideas in terms of the conventions of the discipline</li> <li>• regular application of appropriate skills, techniques and methods with high levels of precision and accuracy</li> <li>• many answers correct, some incorrect</li> </ul>  |
| Pass (P)<br>50-64%  | <p>For performance that provides evidence of a satisfactory level attainment of the relevant subject learning outcomes, demonstrating (as applicable) one or more of the following:</p> <ul style="list-style-type: none"> <li>• knowledge, understanding and application of fundamental concepts of the field of study</li> <li>• use of routine arguments with acceptable reasoning</li> <li>• adequate communication of information and ideas in terms of the conventions of the discipline</li> <li>• ability to apply appropriate skills, techniques and methods with satisfactory levels of precision and accuracy</li> <li>• a combination of correct and incorrect answers</li> </ul> |
| Fail (F) <50%       | For performance that does not provide sufficient evidence of attainment of the relevant subject learning outcomes.  |
| Technical Fail (TF) | When minimum performance level requirements for at least one assessment item in the subject as a whole has not been met despite the student achieving at least a satisfactory level of attainment of the subject learning outcomes.   |

<http://www.uow.edu.au/curriculum-transformation/aqc/uowgradedescriptors/...>

## Subject Materials

Any readings/references are recommended only and are not intended to be an exhaustive list. Students are encouraged to use the library catalogue and databases to locate additional readings.

## Textbook(s)

### Reference Book(s):

- Carlo Ghezzi, Mehdi Jazayeri, and Dino Mandrioli, Fundamentals of Software Engineering, Second or later edition, Prentice Hall.
- Ian Sommerville, Software Engineering, 7th or later Edition, Addison-Wesley.
- Roger Pressman, Software Engineering: A Practitioner's Approach, 6th or later edition, McGraw Hill.
- Hans Van Vliet, Software Engineering – Principles and Practice, Second or later edition, Wiley.

There is no prescribed textbook for this subject. Purchasing reference books is recommended but not compulsory. A wide range of texts on software engineering, as well as on more specialized areas such as requirements engineering, software specification and software verification are available in the university library and in online digital libraries such as those of IEEE and ACM. The homepages of various large software projects are also a good source with links to related papers, which can often be downloaded for free. The CiteSeer web site ( <http://citeseer.ist.psu.edu> ) is another source of computer science and software engineering

papers that can be downloaded for free. These readings will usually involve research papers, survey papers, tutorials, case studies, and best practices.

## Assessment

This subject has the following assessment components.

| ASSESSMENT ITEMS & FORMAT | % OF FINAL MARK | GROUP/ INDIVIDUAL | DUE DATE   | SUBJECT LEARNING OUTCOMES | CRITERIA TO ASSESS ITEM   |
|---------------------------|-----------------|-------------------|--|---------------------------|---|
| Project                   | 45%             | Group             | <ul style="list-style-type: none"> <li>Project final report (43 marks) is due in the beginning of the <b>first lecture in Week 13</b>. Submit to the lecturer in person a <b>folder</b> enclosing both a hardcopy report and its softcopy (together with program code, data, and any additional files) in a CD or DVD or USB drive.</li> <li>Project progress report (1 mark) is due in the <b>second lecture in Week 4</b>.</li> <li>Project presentation (1 mark) will be conducted starting from the first lecture in <b>Week 13</b> and may possibly extend to the second lecture of Week 13.</li> <li>No electronic submission.</li> <li>No late submission.</li> <li>Individual contributions are assessed.</li> </ul> <p>A detailed project description will be given in a separate document.</p> | 1,2,3,4                   | The marking is based on the technical merit of the project report as well as individual contributions. Detailed marking criteria are given in the separate project description. |
| Final Exam                | 55%             | Individual        | During university exam period  | 3,4                       | Final exam will include short answer questions and the marking is based on the correctness of students' answers.  |
|                           |                 |                   |  |                           |   |

## **Notes on Assessment**

All assignments are expected to be completed independently. Plagiarism may result in a FAIL grade being recorded.

### **Method for Submission of Assessment Items**

Both the project final report and the project progress report are to be submitted to the lecturer in person at the start of the lecture. Detailed instructions will be given in the separate project description.

### **Arrangement for acknowledging submission of written work**

By a receipt from the lecturer.

### **Procedure for the return of assessment items**

The marks of all assignments will be returned within 3 weeks of submission. Enquiries regarding the marks shall be made within 2 weeks of the marks being released.

### **Procedure for the retention of assessed work**

The University may retain copies of student work in order to facilitate quality assurance of assessment processes, in support of the continuous improvement of assessment design, assessment marking and for the review of the subject. The University retains records of students' academic work in accordance with the University Records Management Policy and the State Records Act 1988 and uses these records in accordance with the University Privacy Policy and the Privacy and Personal Information Protection Act 1998.

### **Formative feedback given to student prior census date consists of the following**

- verbal feedback will be given during tutorial/lab in relation to task/assessment/reading progress
- summary feedback about an assessment task will be provided after marking, outlining common errors or concerns identified by the markers (this could be written or verbal)

## **Assessment General**

Submission of assessment items via email will NOT be accepted.

Remarks on project reports will be sent to students via email.

### **Student contributions to tutorial and/or seminars**

Group assignments are typically assessed as a group product, usually with the same mark allocated to each group member. However, the subject coordinator reserves the right to allocate individual marks for students for an assessment task when necessary (for example, in cases where contributions of group members have been unequal).

## **Marks in this subject are not routinely scaled**

For more information refer to Standards for Finalisation of Student Results:

<http://www.uow.edu.au/about/policy/UOW039331.html>

## **Assessment task is set up to be checked by Turnitin**

This subject does not use Turnitin.

## **Assessment Quality Cycle**

The University of Wollongong is committed to the quality assurance and quality enhancement of assessment. The University will meet its legislative and regulatory obligations, to ensure consistent and appropriate assessment through course management and coordination, including assessment quality assurance procedures. An Assessment Quality Cycle is used to describe quality assurance at the points of assessment design, assessment delivery, the declaration of marks and grades, and review and improvement activities.

## **Referencing System**

Students can choose any standard referencing system to use, including but not limited to the Author-Date (Harvard) referencing system.

## **Internet Resources**

Students are allowed to use Internet resources but they must be cited and acknowledged explicitly.

## **Technical Fail**

To be eligible for a Pass in this subject a student must achieve a mark of at least 20 out of 55 in the final exam. Students who fail to achieve this minimum mark & would have otherwise passed may be given a TF (Technical Fail) for this subject.

All assessment tasks must be submitted. Students who do not meet the minimum performance requirements, as specified for each assessment, will receive a TF (Technical Fail) grade for this subject, which will appear on your Academic Transcript.

## **Supplementary Exams**

1. A student whose overall performance results in a TF will only be granted a supplementary assessment task (e.g. a supplementary exam or a supplementary assignment) if approved by the school assessment committee.
2. A student who achieves a mark of 48-49% will normally be eligible for a grade of WS and a supplementary exam organised by the University. In this case, the maximum grade attainable is PS (Pass Supplementary) and a mark of 50%.
3. A student who has successfully applied for academic consideration will receive either:



- a. A WD - Withheld Deferred Exam - and be allowed to sit only a supplementary exam, which will be supervised by the University or
  - b. A WH – Withheld – and be allowed to sit a supplementary exam not supervised by the University or complete some other supplementary task
4. If a student is being investigated for misconduct and the investigation cannot be completed before the grades are released the student will receive a grade of WH until a mark is declared.
5. Calculators will/will not be allowed in the final exam.

### **Penalties for late submission of assessment items**

Late submissions are NOT accepted because they are group work.

### **Extensions**

Extensions of time to submit material for assessment can only be requested in advance of the due date for an assessment activity through the Academic Consideration process on SOLS. For more information please refer to the Student Academic Consideration Policy at: <http://www.uow.edu.au/about/policy/UOW058721.html>

### **Reasonable Adjustment to Assessment**

A student with a disability may be entitled to reasonable adjustment to assessment.

A reasonable adjustment document is a recommendation that needs to be discussed and ratified by subject coordinators. Normal subject assessment requirements can only be adjusted with explicit written permission of the subject coordinator. In particular students cannot assume that a reasonable adjustment document bestows a right to deferred or supplementary exams.

### **Tutorial/Lab Closure Policy**

If for any reason, the number of students in a tutorial or lab falls below a sustainable enrolment level, as determined by the Head of School, tutorials/labs offered for that subject may be collapsed or deleted.

You will have to attend the new tutorials/lab if this closure affects the one you are attending.

We will endeavour to make this decision no later than Week 4 of session.

### **Exams**

Exams will be run in accordance with UOW Exam rules, please refer to changes to exams and grades at: <http://www.uow.edu.au/student/exams/UOW115867.html>

### **Supplementary Assessment**

In most circumstances the School does not offer a supplementary exam to a student who has sat a scheduled exam.

Supplementary Exams will be dealt with in accordance with student academic consideration policy ( <http://www.uow.edu.au/about/policy/UOW060110.html> ) 9.2 Timing of Supplementary Exams.

Supplementary assessment may be offered to students whose performance in this subject is close to that required to pass the subject, and are otherwise identified as meriting an offer of a supplementary assessment. The Subject Coordinator will determine the precise form of supplementary assessment at the time the offer of a supplementary is made. In some circumstances you may be offered a supplementary exam. For more information about Supplementary Exams refer to: <http://www.uow.edu.au/student/exams/aboutsupp/index.html>

### **Student Academic Consideration Policy**

The School recognises that it has a responsibility to ensure equity and consistency across its subjects for all students. Sometimes, in exceptional circumstances, students need to apply for student academic consideration in order to complete all assessable work.

If you believe that your submission of, performance in or attendance at an assessment activity, including an examination, has been affected on compassionate grounds, by illness or by other serious extenuating circumstances beyond your control, you can apply for academic consideration in Student OnLine Services (SOLS). Do not assume that an application for academic consideration will be automatically granted. For more information please refer to the Student Academic Consideration Policy at: <http://www.uow.edu.au/about/policy/UOW058721.html>

In some circumstances you may be offered a deferred exam. For more information about Deferred and Supplementary Exams refer to: <http://www.uow.edu.au/student/exams/aboutsupp/index.html>

### **Plagiarism - University's Academic Integrity Policy**

The University's policy on acknowledgement practice and plagiarism provides detailed information about how to acknowledge the work of others: <http://www.uow.edu.au/about/policy/UOW058648.html>

The University's Academic Integrity Policy, Faculty Handbooks and subject guides clearly set out the University's expectation that students submit only their own original work for assessment and avoid plagiarising the work of others or cheating. Re-using any of your own work (either in part or in full) which you have submitted previously for assessment is not permitted without appropriate acknowledgement or without the explicit permission of the Subject Coordinator. Plagiarism can be detected and has led to students being expelled from the University.

The use by students of any website that provides access to essays or other assessment items (sometimes marketed as 'resources'), is extremely unwise. Students who provide an assessment item (or provide access to an assessment item) to others, either directly or indirectly (for example by uploading an assessment item to a website) are considered by the University to be intentionally or recklessly helping other students to cheat.

Uploading an assessment task, subject outline or other course materials without express permission of the university is considered academic misconduct and students place themselves at risk of being expelled from the University.

**When you submit an assessment task, you are declaring the following**

1. It is your own work and you did not collaborate with or copy from others.
2. You have read and understand your responsibilities under the University of Wollongong's Academic Integrity Policy on plagiarism.
3. You have not plagiarised from published work (including the internet). Where you have used the work from others, you have referenced it in the text and provided a reference list at the end to the assignment.

Students must remember that:

- Plagiarism will not be tolerated.
- Students are responsible for submitting original work for assessment, without plagiarising or cheating, abiding by the University's Academic Integrity Policy as set out in the University Handbook, the University's online Policy Directory and in Faculty handbooks and subject guides.

**Student Academic Complaints Policy (Coursework or Higher Degree Research)**

In accordance with the Coursework Student Academic Complaints Policy, a student may request an explanation of a mark for an assessment task or a final grade for a subject consistent with the student's right to appropriate and useful feedback on their performance in an assessment task. Refer to the Coursework Student Academic Complaints Policy for further information <http://www.uow.edu.au/about/policy/UOW058653.html>

Any student who has a complaint over a result should obtain a Faculty of Engineering and Information Sciences Coursework Student Academic Review/Complaint form (<http://www.uow.edu.au/student/complaints/UOW008298.html>) from the EIS Central. The student should firstly take the form to the marker/lecturer to discuss the matter and, if the student is still not satisfied, s/he should take the next step as outlined on the form.

Once the complaint has been considered by the Faculty, if the student still feels the situation has not been fully resolved s/he may refer the matter to the Student Ombudsman.

**Relevant University Policies, procedures and students services**

For more information students must refer to the Course Handbook, relevant online references or consult the UOW General Course Rules in full <http://www.uow.edu.au/about/policy/UOW058680.html> which contains a range of policies on educational issues and student matters.

**Library Services**

To save yourself time and enhance your studies: connect with information specialists and resources anytime, anywhere via Ask Us: <http://www.library.uow.edu.au/ask/UOW026599.html> or *Google* “UOW library ask us”

|                                      |  |
|--------------------------------------|--|
| <b>Online – Ask a Librarian</b>      | Ask questions and receive a response within 1 business day   |
| <b>In person – Book a Librarian</b>  | 30-minute appointment with an Librarian  |
| <b>Research Consultation Service</b> | 1 hour appointment with an information specialist.<br>Available to UOW academics, HDRs, Postgraduate Coursework, Honours and Masters students. |
| <b>By phone</b>                      | +61 2 4221 3548  |

The Main Library (Building 16) and Education Curriculum Resources Centre (Building 22) are located at the Wollongong Campus. UOW Libraries at other locations are listed on the Library website.

This outline should be read in conjunction with the following:

Teaching and Assessment: Code of Practice - Teaching -  
<http://www.uow.edu.au/about/policy/UOW058666.html>

Teaching and Assessment: Assessment and Feedback Policy  
- <http://www.uow.edu.au/about/policy/alphalisting/UOW222905.html>

Teaching and Assessment: Subject Delivery Policy  
- <http://www.uow.edu.au/about/policy/alphalisting/UOW222906.html>

Key Dates: <http://www.uow.edu.au/student/dates/index.html>

Course Progress Policy: <http://www.uow.edu.au/about/policy/UOW058679.html>

Coursework Student Academic Complaints Policy: (Coursework and honours students):  
<http://www.uow.edu.au/about/policy/UOW058653.html>

Student Charter: [www.uow.edu.au/student/charter/](http://www.uow.edu.au/student/charter/)

Work Health & Safety Policy: <http://www.uow.edu.au/about/policy/UOW016894.html>

Human Research Ethics Guidelines: <http://www.uow.edu.au/research/ethics/human/index.html>

Student Support: EIS Central Building 4, Ground Floor, Phone: 4221 3491, Email: [eis@uow.edu.au](mailto:eis@uow.edu.au)

Faculty of Engineering & Information Sciences current students website: <http://eis.uow.edu.au/current-students/>

Student Support Adviser (SSA): <https://www.uow.edu.au/student/services/SSA/contact/index.html>

Faculty SEDLO (Student Support & Peer Learning Officer):

Building 4 Room 105 Phone 4221 3833

Mitz Perez - Mon -Tue -Wed, [mitz-perez@uow.edu.au](mailto:mitz-perez@uow.edu.au)

Danial Morgan - Thu and Fri, [danial\\_morgan@uow.edu.au](mailto:danial_morgan@uow.edu.au)

Information Technology Services and Policies: <http://www.uow.edu.au/its/accounts/index.html>

Student Representatives: <http://eis.uow.edu.au/current-students/get-involved/studentreps/index.html>

Academic Integrity Policy: <http://www.uow.edu.au/about/policy/UOW058648.html>

Student Academic Consideration Policy: <http://www.uow.edu.au/about/policy/UOW058721.html>

Student Conduct Rules and Accompanying Procedures:  
<http://www.uow.edu.au/about/policy/UOW058723.html>

Code of Practice - Research: <http://www.uow.edu.au/about/policy/UOW058663.html>

Code of Practice – Student Professional Experience: <http://www.uow.edu.au/about/policy/UOW058662>

Code of Practice - Honours: <http://www.uow.edu.au/about/policy/UOW058661.html>

Intellectual Property (IP) Policy: <http://www.uow.edu.au/about/policy/UOW058689.html>

Research Misconduct Policy: <http://www.uow.edu.au/about/policy/UOW058715.html>

Inclusive Language Guidelines: <http://www.uow.edu.au/student/honours/rules/cops/UOW140611.html>

Ownership of Work & Intellectual Property Policy:  
<http://www.uow.edu.au/handbook/generalcourserules/UOW028651.html>

Netiquette Guide: <http://www.uow.edu.au/student/elearning/netiquette/index.html>

Library Services: <http://www.library.uow.edu.au> Building 16, Phone: 4221 3548

Complete Start Smart: <http://www.uow.edu.au/student/services/fye/resources/startsmart> /

Copyright Policy: <http://www.library.uow.edu.au/copyright/policies/UOW026670.html>

Subject Outlines: <https://ssl.informatics.uow.edu.au/subjectoutlines/Current/>

