

SENG1110: Object Oriented Programming

Callaghan

Semester 1 - 2024



THE UNIVERSITY OF
NEWCASTLE
AUSTRALIA

OVERVIEW

Course Description	This course is an introduction to an object-oriented programming language. The course introduces the fundamentals of analysing a problem and then implementing a solution as a computer software system using an object-oriented language. Students learn about problem-solving strategies, top-down program development and programming style. The course provides a basic introduction to data abstraction and object-oriented analysis and design. Emphasis is placed on programming and testing.
Academic Progress Requirements	Nil
Contact Hours	Callaghan Computer Lab * Face to Face On Campus 2 hour(s) per week(s) for 13 week(s) starting Week 1 Lecture Face to Face On Campus 2 hour(s) per week(s) for 13 week(s) starting Week 1
Unit Weighting Workload	* This contact type has a compulsory requirement. 10 Students are required to spend on average 120-140 hours of effort (contact and non-contact) including assessments per 10 unit course.

COURSE OUTLINE

CONTACTS

Course Coordinator **Callaghan**
Dr Khaled Saleh
Khaled.Saleh@newcastle.edu.au
Consultation: Details in Canvas

Teaching Staff Other teaching staff will be advised on the course Canvas site.

School Office **School of Information and Physical Sciences**
SR233, Social Sciences Building
Callaghan
CESE-SIPS-Admin@newcastle.edu.au
+61 2 4921 5513
9am-5pm (Mon-Fri)

SYLLABUS

Course Content

1. Programming language syntax
2. Elementary programming concepts
3. Control structures
4. Object oriented programming basics
5. Methods and classes
6. Documentation techniques
7. Testing and debugging techniques
8. Arrays

Course Learning Outcomes **On successful completion of this course, students will be able to:**

1. Comprehend the concepts of object-oriented programming
2. Comprehend a programming problem and design a solution
3. Code a solution to a problem
4. Comprehend and implement selection and loop structures
5. Comprehend and implement classes and methods
6. Comprehend and implement different input/output solutions
7. Comprehend and implement arrays
8. Test and document program solutions

Course Materials **Recommended Text:**
- *Java: An Introduction to Problem Solving and Programming, Walter Savitch, Pearson*

COMPULSORY REQUIREMENTS

In order to pass this course, each student must complete ALL of the following compulsory requirements:

Contact Hour Requirements:

- Computer Lab Attend 80% of sessions

Course Assessment Requirements:

- Assessment 4 - Formal Examination: Minimum Grade / Mark Requirement - Students must obtain a specified minimum grade / mark in this assessment item to pass the course. Students whose overall mark in the course is 50% or more, but who score less than 40% in the compulsory item and thus fail to demonstrate the required proficiency, will be awarded a Criterion Fail grade, which will show as FF on their formal transcript. However, students in this position who have scored at least 25% in the compulsory item will be allowed to undertake a supplementary 'capped' assessment in which they can score at most 50% of the possible mark for that item.

Compulsory Placement and WHS Requirements:

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SCHEDULE

Week	Week Begins	Topic	Learning Activity	Assessment Due
1	26 Feb	Outline, Introduction Java Basics – I	Textbook - chapter 1 Computer lab exercises	Quiz 1
2	4 Mar	Java Basics – II	Textbook - chapter 2 Computer lab exercises	Quiz 2
3	11 Mar	Control structures – if and switch	Textbook - chapter 3 Computer lab exercises	Quiz 3
4	18 Mar	Loop statements – while, do- while, for	Textbook - chapter 4 Computer lab exercises	Quiz 4
5	25 Mar	Classes and Methods – I	Textbook - chapter 5 Computer lab exercises Programming Assignment 1 instructions available	Quiz 5
6	1 Apr	No lecture - University Holiday	lab - Help with programming assignment 1	
7	8 Apr	Review	lab - Help with programming assignment 1	Quiz 6
Mid-Semester Recess				
Mid-Semester Recess				
8	29 Apr	Midterm exam	lab - Help with programming assignment 1	Midterm exam Assignment 1
9	6 May	Classes and methods - II	Textbook - chapter 6 Computer lab exercises	Quiz 7
10	13 May	Array - I	Textbook - chapter 7 Computer lab exercises Assignment 2 instructions available	Quiz 8
11	20 May	Array - II	Textbook - chapter 7 Computer lab exercises	Quiz 9
12	27 May	Inheritance and polymorphism, Exception and Streams and files	Textbook - chapter 8, 9 and 10 Computer lab exercises	Quiz 10
13	3 Jun	Revision	Assignment 2 help in computer labs	Assignment 2
Examination Period				
Examination Period				

ASSESSMENTS

This course has 5 assessments. Each assessment is described in more detail in the sections below.

	Assessment Name	Due Date	Involvement	Weighting	Learning Outcomes
1	Programming Assignment 1	Week 8, Fri, 11:59pm	Combination	15%	1, 2, 3, 4, 5, 6
2	Programming Assignment 2	Week 13, Fri, 11:59pm	Combination	20%	1, 2, 3, 4, 5, 6, 7, 8
3	Mid Term Exam	Week 8	Individual	15%	1, 2, 3, 4, 5, 6
4	Final Exam*	As per University Timetable	Individual	40%	1, 2, 3, 4, 5, 6, 7, 8
5	Quizzes	Every Sunday, 11:59pm	Individual	10%	1, 2, 3, 4, 5, 6, 7, 8

* This assessment has a compulsory requirement.

Late Submissions

The mark for an assessment item submitted after the designated time on the due date, without an approved extension of time, will be reduced by 10% of the possible maximum mark for that assessment item for each day or part day that the assessment item is late. Note: this applies equally to week and weekend days.

Assessment 1 - Programming Assignment 1

Assessment Type	Written Assignment
Description	Programming task (more details will be available in Canvas). Students will be able to work in pairs and will have around 3 weeks to complete the assignment.
Weighting	15%
Due Date	Week 8, Fri, 11:59pm
Submission Method	Online
Assessment Criteria	in Canvas
Return Method	Not Returned
Feedback Provided	Online - 2 weeks after submission.
Opportunity to Reattempt	Students WILL NOT be given the opportunity to reattempt this assessment.

Assessment 2 - Programming Assignment 2

Assessment Type	Written Assignment
Description	Programming task (more details will be available in Canvas). Students will be able to work in pairs and will have around 3 weeks to complete the assignment.
Weighting	20%
Due Date	Week 13, Fri, 11:59pm
Submission Method	Online
Assessment Criteria	in Canvas
Return Method	Not Returned
Feedback Provided	Online – 2 weeks after submission.
Opportunity to Reattempt	Students WILL NOT be given the opportunity to reattempt this assessment.

Assessment 3 - Mid Term Exam

Assessment Type	In Term Test
Description	Written exams, which are designed to test students' knowledge and understanding of the course material and their ability to apply it. More details will be available in Canvas.
Weighting	15%
Due Date	Week 8

Submission Method

Details will be provided on Canvas

Assessment Criteria

Details about the structure of the exam will be provided on Canvas prior to exam

Return Method

Not Returned

Feedback Provided

2 weeks after submission.

Opportunity to

Students WILL NOT be given the opportunity to reattempt this assessment.

Reattempt

Assessment 4 - Final Exam

Assessment Type

Formal Examination

Description

Written exams, which are designed to test students' knowledge and understanding of the course material and their ability to apply it. More details will be in Canvas.

Weighting

40%

Compulsory

Pass requirement 40% - Must obtain 40% in this assessment item to pass the course..

Requirements

Due Date

As per University Timetable

Submission Method

Formal Exam

Assessment Criteria

Details about the structure of the exam will be provided on Canvas prior to exam

Return Method

Not Returned

Feedback Provided

Online

Opportunity to

Students WILL be given the opportunity to reattempt this assessment.

Reattempt

Assessment 5 - Quizzes

Assessment Type

Quiz

Description

Multiple choice questions.

Weighting

10%

Due Date

Every Sunday, 11:59pm

Submission Method

Online

Assessment Criteria

Return Method

Not Returned

Feedback Provided

Opportunity to

Students WILL NOT be given the opportunity to reattempt this assessment.

Reattempt

ADDITIONAL INFORMATION

Grading Scheme

This course is graded as follows:

Range of Marks	Grade	Description
85-100	High Distinction (HD)	Outstanding standard indicating comprehensive knowledge and understanding of the relevant materials; demonstration of an outstanding level of academic achievement; mastery of skills*; and achievement of all assessment objectives.
75-84	Distinction (D)	Excellent standard indicating a very high level of knowledge and understanding of the relevant materials; demonstration of a very high level of academic ability; sound development of skills*; and achievement of all assessment objectives.
65-74	Credit (C)	Good standard indicating a high level of knowledge and understanding of the relevant materials; demonstration of a high level of academic achievement; reasonable development of skills*; and achievement of all learning outcomes.
50-64	Pass (P)	Satisfactory standard indicating an adequate knowledge and understanding of the relevant materials; demonstration of an adequate level of academic achievement; satisfactory development of skills*; and achievement of all learning outcomes.
0-49	Fail	Failure to satisfactorily achieve learning outcomes. If all

	(FF)	compulsory course components are not completed the mark will be zero. A fail grade may also be awarded following disciplinary action.
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Attendance

*Skills are those identified for the purposes of assessment task(s).
Attendance/participation will be recorded in the following components:

- Computer Lab (Method of recording: demonstrator will check)

Communication Methods

Communication methods used in this course include:

- Canvas Course Site: Students will receive communications via the posting of content or announcements on the Canvas course site.
- Email: Students will receive communications via their student email account.

Course Evaluation

Each year feedback is sought from students and other stakeholders about the courses offered in the University for the purposes of identifying areas of excellence and potential improvement.

Oral Interviews (Vivas)

As part of the evaluation process of any assessment item in this course an oral examination (viva) may be conducted. The purpose of the oral examination is to verify the authorship of the material submitted in response to the assessment task. The oral examination will be conducted in accordance with the principles set out in the [Oral Examination \(viva\) Procedure](#). In cases where the oral examination reveals the assessment item may not be the student's own work the case will be dealt with under the [Student Conduct Rule](#).

Academic Misconduct

All students are required to meet the academic integrity standards of the University. These standards reinforce the importance of integrity and honesty in an academic environment. Academic Integrity policies apply to all students of the University in all modes of study and in all locations. For the Student Academic Integrity Policy, refer to <https://policies.newcastle.edu.au/document/view-current.php?id=35>.

Adverse Circumstances

The University acknowledges the right of students to seek consideration for the impact of allowable adverse circumstances that may affect their performance in assessment item(s). Applications for special consideration due to adverse circumstances will be made using the online Adverse Circumstances system where:

1. the assessment item is a major assessment item; or
2. the assessment item is a minor assessment item and the Course Co-ordinator has specified in the Course Outline that students may apply the online Adverse Circumstances system;
3. you are requesting a change of placement; or
4. the course has a compulsory attendance requirement.

Before applying you must refer to the Adverse Circumstance Affecting Assessment Items Procedure available at:
<https://policies.newcastle.edu.au/document/view-current.php?id=236>

Important Policy Information

The Help button in the Canvas Navigation menu contains helpful information for using the Learning Management System. Students should familiarise themselves with the policies and procedures at <https://www.newcastle.edu.au/current-students/respect-at-uni/policies-and-procedures> that support a safe and respectful environment at the University.

Graduate Profile Statements

The following table illustrates how this course contributes towards building the skills students will need to work in their profession.

Level of capability

- Level 1 indicates an introduction to a topic at a university level
- Levels 2 and 3 indicate progressive reinforcement of that topic

- Level 4 indicates skills commensurate with a graduate – entry to professional practice

Graduate attribute	University of Newcastle Bachelor of Computer Science Graduate Profile Statements	Taught	Practised	Assessed	Level of capability
1	Knowledge of basic science and computer science fundamentals.				
2	In depth technical competence in the discipline of computer science	☑	☑	☑	1
3	An ability to carry out problem analysis, requirements capture, problem formulation and integrated software development for the solution of a problem.				
4	Capacity to continue developing relevant knowledge, skills and expertise in computer science throughout their careers.				
5	An ability to communicate effectively with other Computer Scientists, Software Engineers, other professional disciplines, managers and the community generally.	☑	☑	☑	1
6	Ability to undertake and co-ordinate large computer science projects and to identify problems, their formulation and solution.				
7	Ability to function effectively as an individual, a team member in multidisciplinary and multicultural teams and as leader/manager with capacity to assist and encourage those under their direction.				
8	Understanding of social, cultural, global and business opportunities of the professional computer scientist; understanding the need for and principles of sustainability and adaptability				
9	Understanding of professional and ethical responsibilities and a commitment to them.				
10	Understanding of entrepreneurship; need of and process of innovation, as well as the need of and capacity for lifelong learning.				

Graduate attribute	University of Newcastle Bachelor of Engineering Graduate Profile Statements	Taught	Practised	Assessed	Level of capability
Knowledge Base					
1	1.1. Comprehensive, theory based understanding of the underpinning natural and physical sciences and the engineering fundamentals applicable to the engineering discipline.				
2	1.2. Conceptual understanding of the, mathematics, numerical analysis, statistics, and computer and information sciences which underpin the engineering discipline.				
3	1.3. In-depth understanding of specialist bodies of knowledge within the engineering discipline.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1
4	1.4. Discernment of knowledge development and research directions within the engineering discipline.				
5	1.5. Knowledge of contextual factors impacting the engineering discipline.				
6	1.6. Understanding of the scope, principles, norms, accountabilities and bounds of contemporary engineering practice in the specific discipline.				
Engineering Ability					
7	2.1. Application of established engineering methods to complex engineering problem solving.				
8	2.2. Fluent application of engineering techniques, tools and resources.				
9	2.3. Application of systematic engineering synthesis and design processes.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1
10	2.4. Application of systematic approaches to the conduct and management of engineering projects.				
Professional Attributes					
11	3.1. Ethical conduct and professional accountability				
12	3.2. Effective oral and written communication in professional and lay domains.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1
13	3.3. Creative, innovative and pro-active demeanour.				
14	3.4. Professional use and management of information.				
15	3.5. Orderly management of self, and professional conduct.				
16	3.6. Effective team membership and team leadership.				

Graduate attribute	University of Newcastle Bachelor of IT Graduate Profile Statements	Taught	Practised	Assessed	Level of capability
1	Demonstrate a comprehensive understanding of the discipline of information technologies with an emphasis on net-centric applications, information management and user requirements for ethical professional practice				
2	Apply critical reasoning and systems thinking to understand and support the operation and constraints of contemporary enterprises and their dynamic environment				
3	Work independently and collaboratively to locate, manage and organize information and resources and apply evidence-based	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1

	methodologies to create, modify and maintain designs and design solutions				
4	Use creativity, problem solving skills, project management skills and technical expertise to analyse, interpret, evaluate and generate solutions to complex technical and organizational problems	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1
5	Demonstrate professional judgement and responsibility by communicating information technology principles, practices, standards to specialist and non-specialist audience clearly and persuasively				

This course outline was approved by the Head of School. No alteration of this course outline is permitted without Head of School approval. If a change is approved, students will be notified and an amended course outline will be provided in the same manner as the original.

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