https://courseoutline.auckland.ac.nz/dco/course/COMPSCI/230/1215

COMPSCI 230 : Object Oriented Software Development

Science

2021 Semester Two (1215) (15 POINTS)

Course Prescription

The design and implementation of object-oriented programmes. Analysis and design. Modelling with UML. Design for reuse, for testing, and for ease of change. Programming with classes, objects and polymorphism.

Course Overview

An introduction to object-oriented paradigm of designing and developing software applications. The focus of this course would be on learning good software design objectives and principles. Using Java programming language, students will learn modelling and developing software applications of reasonable complexity and quality through the application of established object-oriented design principles and patterns. In doing so, students will also demonstrate fundamental skills in object-oriented software development, GUI programming and application-level multi-threading.

This course is one of the prerequisites for the third year courses of COMPSCI 331, COMPSCI 335, COMPSCI 340, COMPSCI 345 and COMPSCI 373. The skills developed in this course are particularly useful for those wishing to have a career in professional software development. Students planning to take the capstone course next year are also expected to benefit from the learning outcomes of this course.

Course Requirements

Prerequisite: 15 points from COMPSCI 105, 107, 130

Capabilities Developed in this Course

Capability 1: Disciplinary Knowledge and Practice

Capability 2: Critical Thinking

Capability 3: Solution Seeking

Capability 4: Communication and Engagement

Capability 5: Independence and Integrity

Graduate Profile: Bachelor of Science

Learning Outcomes

By the end of this course, students will be able to:

1. Describe and use the features typically offered by an object-oriented programming language, including support for classes, visibility, inheritance, interfaces, polymorphism and dynamic binding. (Capability 1, 2, 3 and 4)
2. Explain and apply key design principles of object-oriented software development, including separation of concerns, abstraction, information hiding, programming to interfaces, coupling and cohesion, resilience to change, and reuse. (Capability 1, 2, 3, 4 and 5)
3. Create simple OO design models. (Capability 1, 2, 3, 4 and 5)
4. Describe important concepts of programming frameworks, including APIs, inversion of control, concurrency and event-driven programming. (Capability 1, 2, 3 and 4)
5. Use a framework to develop a multithreaded GUI application. (Capability 1, 2, 3 and 4)
6. Develop a small graphical user interface (GUI) based application in an object-oriented programming language; Assess and improve software design decisions based on object-oriented design objectives and principles. (Capability 1, 2, 3 and 5)

Assessments

Assessment Type	Percentage	Classification
Assessments	30%	Individual Coursework
Test	20%	Individual Test
Exam	50%	Individual Examination
3 types	100%	

Assessment Type	Learning Outcome Addressed					
	1	2	3	4	5	6
Assessments	✔	✔	✔	✔	✔	✔
Test	✔	✔	✔			
Exam	✔	✔	✔	✔	✔	✔

To pass the course, you must obtain at least 50% out of the full course total of 100%. You are required to pass both the practical invigilated online test and the final exam.

Tuākana

The School of Computer Science Tuākana programme provides support for this course. See: https://canvas.auckland.ac.nz/courses/34081

Key Topics

Java programming language
Object-oriented programming
Inheritance
Nested classes
Software design objectives, principles and patterns
Modelling and Design
Java GUI Event handling
Multithreading

Special Requirements

To pass the course, you must obtain at least 50% out of the full course total of 100%. You are required to pass both the practical invigilated online test and the final exam.

Workload Expectations

This course is a standard 15 point course and students are expected to spend 10 hours per week involved in each 15 point course that they are enrolled in.

For this course, you can expect 3 hours of lectures, a 1 hour tutorial, 2 hours of reading and thinking about the content and 4 hours of work on assignments and/or test preparation.

Delivery Mode

Campus Experience

Attendance is expected at scheduled activities including labs to complete components of the course.
Lectures will be available as recordings. Other learning activities including tutorials will not be available as recordings.
The course will not include live online events.
Attendance on campus is required for the the mid-semester test and the final exam.
The activities for the course are scheduled as a standard weekly timetable.

Learning Resources

All learning resources will be made available via Canvas. Lecture slides will be available before the lectures, and lecture recordings will be available after each lecture on Canvas.

Student Feedback

During the course Class Representatives in each class can take feedback to the staff responsible for the course and staff-student consultative committees.

At the end of the course students will be invited to give feedback on the course and teaching through a tool called SET or Qualtrics. The lecturers and course co-ordinators will consider all feedback.

Your feedback helps to improve the course and its delivery for all students.

Other Information

Please contact the course coordinator if you have any queries or concerns.

Digital Resources

Course materials are made available in a learning and collaboration tool called Canvas which also includes reading lists and lecture recordings (where available).

Please remember that the recording of any class on a personal device requires the permission of the instructor.

Academic Integrity

The University of Auckland will not tolerate cheating, or assisting others to cheat, and views cheating in coursework as a serious academic offence. The work that a student submits for grading must be the student's own work, reflecting their learning. Where work from other sources is used, it must be properly acknowledged and referenced. This requirement also applies to sources on the internet. A student's assessed work may be reviewed against online source material using computerised detection mechanisms.

Copyright

Inclusive Learning

All students are asked to discuss any impairment related requirements privately, face to face and/or in written form with the course coordinator, lecturer or tutor.

Student Disability Services also provides support for students with a wide range of impairments, both visible and invisible, to succeed and excel at the University. For more information and contact details, please visit the

Student Disability Services' website http://disability.auckland.ac.nz

Special Circumstances

If your ability to complete assessed coursework is affected by illness or other personal circumstances outside of your control, contact a member of teaching staff as soon as possible before the assessment is due.

If your personal circumstances significantly affect your performance, or preparation, for an exam or eligible written test, refer to the University's aegrotat or compassionate consideration page https://www.auckland.ac.nz/en/students/academic-information/exams-and-final-results/during-exams/aegrotat-and-compassionate-consideration.html.

This should be done as soon as possible and no later than seven days after the affected test or exam date.

Learning Continuity

In the event of an unexpected disruption we undertake to maintain the continuity and standard of teaching and learning in all your courses throughout the year. If there are unexpected disruptions the University has contingency plans to ensure that access to your course continues and your assessment is fair, and not compromised. Some adjustments may need to be made in emergencies. You will be kept fully informed by your course co-ordinator, and if disruption occurs you should refer to the University Website for information about how to proceed.

Level 1: Delivered normally as specified in the delivery mode
Level 2: You will not be required to attend in person. All teaching and assessment will have a remote option. The following activities will also have an on campus / in person option: lectures, labs, office hours
Level 3 / 4: All teaching activities and assessments are delivered remotely

Student Charter and Responsibilities

The Student Charter assumes and acknowledges that students are active participants in the learning process and that they have responsibilities to the institution and the international community of scholars. The University expects that students will act at all times in a way that demonstrates respect for the rights of other students and staff so that the learning environment is both safe and productive. For further information visit Student Charter https://www.auckland.ac.nz/en/students/forms-policies-and-guidelines/student-policies-and-guidelines/student-charter.html.

Disclaimer

Elements of this outline may be subject to change. The latest information about the course will be available for enrolled students in Canvas.

In this course you may be asked to submit your coursework assessments digitally. The University reserves the right to conduct scheduled tests and examinations for this course online or through the use of computers or other electronic devices. Where tests or examinations are conducted online remote invigilation arrangements

may be used. The final decision on the completion mode for a test or examination, and remote invigilation arrangements where applicable, will be advised to students at least 10 days prior to the scheduled date of the assessment, or in the case of an examination when the examination timetable is published.