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The published on-line version of the Course Profile is the authoritative version and by the publication of the Course Profile on-line the University deems the student has been notified of and read the course requirements.

1. General Course Information

1.1 Course Details

COURSE CODE	1801ICT
COURSE TITLE	Object-Oriented Programming
ACADEMIC ORGANISATION	ICT School of Information and Communication Technology
TRIMESTER	Trimester 2 2019
MODE	In Person
LEVEL	Undergraduate
LOCATION	Gold Coast, On Campus
CREDIT POINT VALUE	10

Course Description:

This course introduces students to object oriented programming. A widely deployed language such as C++ is used to demonstrate practical understanding of the concepts presented. Prerequisite: 1806ICT Programming Fundamentals. For students in the Bachelor of Engineering (Honours)/Bachelor of Computer Science: 1305ENG Engineering Programming is the listed pre-requisite. Incompatible: 1801ICT Programming Languages.

Assumed Background:

All students are required to have successfully completed, with a passing grade, 1806ICT Programming Fundamentals.

1.2 Course Introduction

Computer programming is a core skill required for computer scientists and software developers. This course builds on the introduction to programming in the imperative programming paradigm provided by 1806ICT Programming Fundamentals. It introduces all of the fundamental concepts of the object-oriented programming paradigm, including objects, classes, encapsulation, data hiding, inheritance, and polymorphism. These concepts will be put into practice by creating object-oriented programs in C++, which is a commonly used programming language in industry. This course will also cover template meta programming, programming simple data structures, several searching and sorting algorithms, graphs and simple graph algorithms.

Previous Student Feedback

No feedback as this is a revised course.

1.3 Course Staff

Primary Convenor **Prof Abdul Sattar**

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EMAIL	a.sattar@griffith.edu.au
CAMPUS	Nathan Campus
BUILDING	Science 2 (N34)
ROOM	1.42B

Campus Convenor **Dr MAHakim Newton**

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CAMPUS	Nathan Campus
BUILDING	Science 2 (N34)
ROOM	1.42

1.4 Timetable

Timetables are available on *the Programs and Courses website*.

NB: Details contained in this section of the course profile and section 4.1 Learning Activities are to be read in conjunction with the official class timetable. The published class timetable which is the authoritative source for timetabling information for all campuses can be located by clicking on the link above.

1.5 Lecture Capture

It is standard practice at Griffith University that lectures timetabled in lecture capture-enabled venues are recorded and made available to students on the relevant course site, in accordance with the University's Lecture Capture Policy.

The lecture series delivered as part of this course will be recorded and accessible via the Learning@Griffith course site.

2. Aims, Outcomes & Graduate Attributes

2.1 Course Aims

All students enrolled in the Computer Science degree need to have a sound understanding of programming paradigms and the ability to write effective and efficient computer programs. Through this course, students will be introduced to some object-oriented programming concepts: abstraction, encapsulation, objects, classes, fields, methods, data hiding, inheritance, and polymorphism These programming concepts will be reinforced by practical experience through the design and implementation of programs written in an object-oriented programming language such as C++. Through this course, students will also learn template meta programming, programming basic data structures, several searching and sorting algorithms, graphs and simple graph algorithms.

2.2 Learning Outcomes

After successfully completing this course you should be able to:

1 Explain the differences between the imperative and the object-oriented programming paradigms, and select the appropriate one for a given project;

2 Design object-oriented programming solutions to problems, using classes, inheritance, polymorphism, and template classes;

3 Implement, test, and debug programs written in C++ using object-oriented constructs and standard libraries; and

4 Implement various basic data structures, several searching and sorting algorithms, and graphs and graph algorithms using object-oriented constructs in C++.

2.3. Graduate Attributes

For further details on the Griffith Graduate please click here

Griffith University prepares influential graduates to be:

- Knowledgeable and skilled, with critical judgement
- Effective communicators and collaborators
- Innovative, creative and entrepreneurial
- Socially responsible and engaged in their communities
- Culturally capable when working with First Australians
- Effective in culturally diverse and international environments

This table demonstrates where each of the Griffith Graduate Attributes is taught, practised and assessed in this course.

For further details on the Griffith Graduate Attributes please refer to The Griffith Graduate policy.

University wide attributes

GRADUATE ATTRIBUTE	TAUGHT	PRACTISED	ASSESSED
Knowledgeable and skilled, with critical judgement	•	•	•
Effective communicators and collaborators	•	•	
Innovative, creative and entrepreneurial	•	•	•
Effective in culturally diverse and international environments		•	

Additional Course Information on Graduate Attributes

Course Program Learning Outcomes

1. An ability to apply knowledge and understanding of the object-oriented programming paradigm using a widely deployed, general purpose programming language C++ and to create robust and non-trivial computer programs that solve specific problems on a variety of platforms.

Australian Computer Society (ACS) Accreditation Course Status

1. ACS Core Body of Knowledge Mappings : Bloom's Levels

Abstraction (Comprehension); Design (Application); Professional Expectations (Application); Interpersonal Communication (Application); Programming (Synthesis)

2. SFIA6 Skill :Programming / Software Development, Level 4

Designs, codes, tests, corrects, and documents moderately complex programs and program modifications from supplied specifications, using agreed standards and tools. Conducts reviews of supplied specifications, with others as appropriate.

3. ACS Complex Computing Characteristics

- *A solution requires the use of in-depth computing or domain knowledge and an analytical approach that is based on well-founded principles.*
- *Is a high-level problem possibly including many component parts or sub-problems.*
- *Identification of a requirement or the cause of a problem is ill defined or unknown.*

3. Learning Resources

3.1 Required Resources

Details of your Required Learning Resources are available from the Reading List.

3.2 Recommended Resources

Details of your Recommended Learning Resources are available from the Reading List.

3.3 University Learning Resources

The University provides many facilities and support services to assist students in their studies. Links to information about University support resources that are available to students are included below for easy reference.

Readings - New online service enabling students to access Required and Recommended Learning resources. It connects to the library catalogue to assist with quickly locating material held in Griffith libraries and enables students to manage and prioritise their readings, add personal study notes and export citations.

Learning@Griffith - there is a dedicated website for this course via the Learning@Griffith at myGriffith.

Academic Integrity Tutorial - this tutorial helps students to understand what academic integrity is and why it matters. You will be able to identify types of academic misconduct, understand what skills you will need in order to maintain academic integrity, and learn about the processes of referencing styles.

Student Services provides a range of services to support students throughout their studies including personal support such as Counselling and Health Services; Academic support; and Financial and Welfare support.

Careers and Employment Service can assist all enrolled students and recent graduates with career direction, course uncertainty, interview preparation, job search tips, LinkedIn reviews and much more. Our Unitemps Recruitment Service can assist you with finding paid casual work while you study.

Library and Learning Services: Library and Learning Services provides a wide range of quality client-focused services and programs to students, researchers and staff of the University. Library and Learning Services works in collaboration with the academic community to achieve academic and research outcomes.

Support for learning - the University provides access to common use computing facilities for educational purposes.

Code of Practice - Griffith Information Technology Resources.

4. Teaching & Learning Activities

4.1 Learning Activities

Week Commencing	Activity	Learning Outcomes
8 Jul 19 - 30 Sep 19	**Lectures (Lecture Series):** Overview of structured programming in C++ Introduction to Object-Oriented Programming using C++ Encapsulation: Classes, Objects, Methods, Attributes Data hiding, abstraction, inheritance, polymorphism Operator overloading, function overloading, namespaces Memory Management and Exception Handling Standard library and input-output classes Template Metaprogramming and Standard Template Library Introductory notions of algorithmic time and memory complexities Implementing basic data structures such as stacks, queues, linked lists Implementing search algorithms such as linear and binary search, binary search trees, hash tables Implementing sorting algorithms such as selection sort, insertion sort, bubble sort, quick sort Implementing graphs and performing breadth first, depth first search, shortest path algorithm	1, 2, 3, 4
7 Oct 19	**Revision (Lecture):** Revision	1, 2, 3, 4

4.2 Other Teaching and Learning Activities Information

- Attendance and participation at laboratory workshops is strongly recommended and expected.
- The lecture program will be supported by lecture notes published on the course web site. Attendance at lectures is strongly encouraged. Important course announcements may be made during the lectures and extra course content not contained in either this outline or lecture notes may also be presented.
- Students are encouraged to research and read the references and other material relevant to the course. The lecture notes are regarded as only guidelines and summaries to provide the basis for further reading. Other reference and support material will be listed on the course web-site and students are required to use their own resources to further develop their knowledge and skills.

5. Assessment Plan

5.1 Assessment Summary

This is a summary of the assessment in the course. For detailed information on each assessment, see **5.2 Assessment Detail** below.

ASSESSMENT TASK	DUE DATE	WEIGHTING	MARKED OUT OF	LEARNING OUTCOMES	MAXIMUM EXTENSION PERIOD
Assignment - Problem Solving Assignment Assessed Labs (4)	8 Jul 19 In lab sessions weeks 3, 6, 9, 12, or one week later if affected by a public holiday.	50%	100 marks	1, 2, 3, 4	
Exam - selected and constructed responses Final Examination	Examination Period	50%	100 marks	1, 2, 3, 4	

5.2 Assessment Detail

Title: Assessed Labs (4)
Type: Assignment - Problem Solving Assignment
Learning Outcomes Assessed: 1, 2, 3, 4
Due Date:
8 Jul 19 In lab sessions weeks 3, 6, 9, 12, or one week later if affected by a public holiday.
Weight: 50%
Marked out of: 100
Task Description:
Answer theory questions and perform programming exercises utilising techniques presented during the previous week's lecture and previous lab work.
Criteria & Marking:
The assessed labs are worth 8%, 14%, 14%, and 14% respectively.

Unless at least 3 of these assessed labs are performed, this assessment item will be considered not to have been submitted and no mark will be recorded.

Submission: Via the 'Assignments' tool in Learning@Griffith. Text Matching Tool - Turnitin. Text Matching Tool - Safe Assign. Assessed labs will be marked in-class and submitted electronically.

This assessment item:
- is a school based activity
- is an individual activity
- does not include a self assessment activity
- does not have a resubmission provision

Title: Final Examination
Type: Exam - selected and constructed responses
Learning Outcomes Assessed: 1, 2, 3, 4
Due Date:
Examination Period
Weight: 50%
Marked out of: 100
Perusal: 10 minutes
Duration: 120 minutes
Format: Closed Book
Task Description:
The final examination will test students' knowledge and skills acquired during the course.
Criteria & Marking:
The final exam will be closed book and students will not be allowed any written material. Relevant information will be provided in the exam. Calculators will not be allowed.

This assessment item:
- is a centrally organised activity
- is an individual activity
- does not include a self assessment activity

5.3 Late Submission

An assessment item submitted after the due date, without an approved extension, will be penalised. The standard penalty is the reduction of the mark allocated to the assessment item by 5% of the total weighted mark for the assessment item, for each working day that the item is late. A working day will be defined as Monday to Friday. Assessment items submitted more than five working days after the due date will be awarded zero marks. To understand how the mark is reduced please refer to Assessment Submission and Return Procedures

5.4 Other Assessment Information

Griffith University Disclosure Statement

The University shall provide reasonable adjustments to assessment for students with disabilities consistent with the Disabilities Standards for Education 2005, while maintaining the academic integrity of its programs. Adjustments shall be made on an individual basis. Please refer to this policy as it sets out the principles and processes that guide the University Reasonable Adjustments for Assessment - Students with Disabilities

Supplementary Assessment is available in this course in accordance with Section 8 of the University Assessment Policy. To achieve a Pass grade for the course a pass mark for the supplementary assessment item must be achieved.

Final Grades

A student's final grade for this course will be based on the aggregation and weighting of marks across assessment, any mandatory pass components and grade cut-offs. Grade cut-offs can vary, so you will need to wait for the official release of grades to be sure of your grade for this course.

- This course is a graded course (i.e 7, 6, 5, 4, 3, 2, 1).

Feedback on each Assessment Item

Laboratory demonstators will provide feedback on lab activities during the laboratory sessions.

Return of Assessment Items

Assessed laboratory marking is performed in class and electronically. There are no physical items to return.

Notification of Marks and Grades

Marks for all assessment items including the final exam will be recorded in the Marks Centre and made available through My Marks on Learning@Griffith.

6. Policies & Guidelines

This section contains the details of and links to the most relevant policies and course guidelines. For further details on University Policies please visit the Policy Library

6.1 Assessment Related Policies and Guidelines

University Policies & Guidelines

The University's assessment-related policies can be found in the Griffith Policy Library.

The Assessment policy covers topics including: assessment requirements; award of grades; supplementary assessment; special consideration; extensions and deferred assessment; conduct of students in examinations; cheating; plagiarism; notification of results; appeals against the award of grades.

Academic Integrity

Student academic misconduct encompasses all behaviour:

- involving the misrepresentation of academic achievement; or
- undermining the core values (honesty, trust, fairness, respect and responsibility) of academic integrity; or
- breaching academic integrity;

whether intentional or unintentional. Student academic misconduct includes doing as well as attempting to do any of the acts, omissions or things that constitute academic misconduct.

Student academic misconduct is defined in the Institutional Framework for Promoting Academic Integrity among Students.

Please also refer to the Student Academic Misconduct Policy.

Reasonable Adjustments for Assessment - Students with Disabilities Policy

The Reasonable Adjustments for Assessment - Students with Disabilities Policy sets out the principles and processes that guide the University in making reasonable adjustments to assessment for students with disabilities while maintaining the academic integrity of its programs.

Griffith University Disclosure Statement

The Griffith University Disclosure Statement has been developed to identify and negotiate whether necessary and reasonable accommodations and adjustments can be made, wherever possible, to enable students with disabilities and/or health conditions to undertake required learning activities. Course Convenors are encouraged to reference the Griffith University Disclosure Statement in the Learning Activities and Assessment Plan sections of their course profiles.

Assessment, how to submit an assignment and exams, viewing your grades

All you need to know about assessment, exams and grades

Text Matching Software

The University uses text matching software. Students should be aware that your Course Convenor may use software to check submitted assessment tasks. If this is the case, your Course Convenor will provide more detailed information about how the software will be used for individual assessment items.

Related links:

- Academic Integrity website
- Academic Standing, Progression and Exclusion Policy
- Assessment Policy
- Assessment Submission and Return Procedures
- End of Trimester Centrally Administered Examinations Policy and Procedures
- Governance of Assessment and Academic Achievement Standards
- Standards for First Year Assessment
- Institutional Framework for Promoting Academic Integrity among Students
- Student Academic Misconduct Policy

6.2 Other Policies and Guidelines

University Policies and Guidelines

Students are responsible for ensuring that they have read all sections of the Course Profile for the course/s in which they are enrolled in any enrolment period. The published online version of the Course Profile is the authoritative version and by the publication of the Course Profile online, the University deems the student has been notified of and read the course requirements. Variations to the Course Profile during the trimester of offer are not permitted except in exceptional circumstances and will be advised in writing to all enrolled students and via the *Learning@Griffith* website. Additional information regarding the content of this course may be published on the *Learning@Griffith* website.

Copyright matters

Copyright applies to all teaching materials and materials generated by students which substantially relate to Griffith University courses. *Students are warned against selling Griffith University teaching materials and their student notes online through commercial websites during and after their studies*. You will almost certainly be in breach of copyright law and Griffith's IT Code of Practice if you post these materials on the internet and commercial websites. Please refer to the Copyright Guide for Students for further information.

Health and Safety

Griffith University is committed to providing a safe work and study environment. However, all students, staff and visitors have an obligation to ensure the safety of themselves and those whose safety may be affected by their actions. Staff in control of learning activities will ensure as far as reasonably practical, that those activities are safe and that all safety obligations are being met. Students are required to comply with all safety instructions and are requested to report safety concerns to the University.

General health and safety information is available on the Health, Safety and Wellbeing website.

Other Key Student-Related Policies

All University policy documents are accessible to students via the Griffith Policy Library and links to key policy documents, in addition to those listed in 6.1 above, are included below for easy reference:

- Student Communications Policy
- Health and Safety Policy
- Student Administration Policy
- Student Charter

- Student Review and Appeals Policy
- Student Review and Appeals Procedures
- Student Complaints Policy

Other Course Guidelines

Students should refer to the course's Learning@Griffith site for further information about this course.

Learning Summary

Below is a table showing the relationship between the learning outcomes for this course, the learning activities used to develop each outcome and the assessment task used to assess each outcome.

Learning Outcomes

After successfully completing this course you should be able to:

1 Explain the differences between the imperative and the object-oriented programming paradigms, and select the appropriate one for a given project;
2 Design object-oriented programming solutions to problems, using classes, inheritance, polymorphism, and template classes;
3 Implement, test, and debug programs written in C++ using object-oriented constructs and standard libraries; and
4 Implement various basic data structures, several searching and sorting algorithms, and graphs and graph algorithms using object-oriented constructs in C++.

Assessment & Learning Activities

LEARNING ACTIVITIES	LEARNING OUTCOMES			
	1	2	3	4
Lectures (Lecture Series)	●	●	●	●
Revision (Lecture)	●	●	●	●
ASSESSMENT TASKS				
Assessed Labs (4)	●	●	●	●
Final Examination	●	●	●	●

Graduate Attributes

For further details on the Griffith Graduate please click here

Griffith University prepares influential graduates to be:

- Knowledgeable and skilled, with critical judgement
- Effective communicators and collaborators
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- Socially responsible and engaged in their communities
- Culturally capable when working with First Australians
- Effective in culturally diverse and international environments

This table demonstrates where each of the Griffith Graduate Attributes is taught, practised and assessed in this course.

University wide attributes

GRADUATE ATTRIBUTE	TAUGHT	PRACTISED	ASSESSED
Knowledgeable and skilled, with critical judgement	•	•	•
Effective communicators and collaborators	•	•	
Innovative, creative and entrepreneurial	•	•	•
Socially responsible and engaged in their communities			
Culturally capable when working with First Australians			
Effective in culturally diverse and international environments		•	