Course Code:	1004GRC
Course Name:	Computing & Programming
Semester:	Trimester 2, 2019
Program:	Diploma of Engineering
Credit Points:	10
Course Coordinator:	Dr.Seyedali Mirjalili
Document modified:	18th May 2019

Teaching Team

Your lecturer/tutor can be contacted via the email system on the portal.

Name	Email
Seyedali Mirjalili	ali.mirjalili@staff.griffithcollege.edu.au

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Staff Consultation

Your lecturer/tutor is available each week for consultation outside of normal class times. Times that your lecturer/tutor will be available for consultation will be given in the first week of lectures. A list of times and rooms will be published on the Griffith College Portal under the “myTimetable” link.

Prerequisites

There are no prerequisites for this course

Brief Course Description

Computing & Programming is a 10-credit point course within the Diploma of Engineering. The course introduces modern programming concepts and techniques in a general-purpose programming language (C) and a mathematical programming environment (MATLAB).

Rationale

The computer has become one of the most widely used tools in the modern world and has profound impact on how engineering and science are practised today. The goal of this course is to familiarise the student with both the hardware and software environments in a modern computing system, and to introduce the fundamentals of computing that apply to all programming languages, and specifically to the C and MATLAB languages which is widely used in electrical and electronic engineering.

Aims

This is one of the foundation courses required by other courses later in the Bachelor of Engineering degree program where programming and computing become an integral part of the simulation/design methodology. This course develops fundamental skills in problem conceptualization, formulation, and solution in two of the most powerful and versatile programming languages – C and MATLAB.

Learning Outcomes

Upon successful completion of this course students will be able to:

1. Apply computer programming principles to develop new algorithms to solve engineering problems in a structured and methodical manner.
2. Analyse C and MATLAB programs and predict the output of simple sections of C and Matlab code.
3. Program simple sections of C and Matlab code to achieve specified outcomes, using appropriate flow control mechanisms such as loops, variables, and conditional statements as well as basic input/output.

4. Design, implement and test/debug modern complex software systems by combining smaller modules using a formal software design methodology.

Texts and Supporting Materials

Matlab programming:

Moore H. (2011). MATLAB for Engineers, Prentice Hall, 3E, (or later edition).

C programming:
K.N. King, C Programming -- A Modern Approach, 2nd edition, Norton, New York, 2008.

Organisation and Teaching Strategies

The course will be taught using a combination of lectures, practical demonstration sessions, practical laboratory classes and self learning, designed to impart both theoretical understanding and hands-on experience of all topics covered. A total of 24 hours **lecture** (2 hours per week for 12 weeks) will be presented during the semester, providing theory on computer systems, algorithm design, programming concepts and programming in C and MATLAB, with appropriate examples. A total of 12 hours **workshop** (1 hour/week for weeks 1-12) will accompany the lectures for unpacking the theory before the laboratory sections. Practical reinforcement of the concepts will be undertaken in 36 hours **laboratory sessions** (3 hours/week for weeks 1-12) where you will be required to design and write programs to solve a variety of real-world problems.

Class Contact Summary

Attendance

Your attendance will be marked before each lecture and workshop class. To receive full attendance, you must be present in the classroom on both occasions. Therefore, you are encouraged to attend and participate in all classes throughout the semester.

Attendance at ALL the laboratory sessions in weeks 1-12 is also **COMPULSORY**, as these will provide opportunity to develop the understanding of lecture material and the skills needed for the major assessment items in this course. A total of 8% of marks for this course are given for participation and completion of laboratory classes (1% for each laboratory completed, up to 8 out of the11). Laboratory reports will be marked during the session. Because of the opportunities to complete eight assess labs there is no provision for marking deferred labs OR for marking labs missed due to late enrolment.

Participation in Class

You are expected to acquire the required resources (textbook) for this course as the lectures follow the textbook throughout the semester.

Consultant Times

Attendance during consultation times is optional but you are encouraged to use this extra help to improve your learning outcomes.

Course Materials

Lecture notes will be made available to you on the Learning@Griffith College site on the student portal and you are advised to print these out before each class to help guide you in your study program. You are expected to bring these lecture notes with you to each class so that extra notes can be added. You are also expected to bring your text book and calculator to each class.

Independent Learning

You are expected to reinforce your learning from class time by undertaking sufficient independent study {approximately 6 hours per week outside of class time} so that you can achieve the learning outcomes of the course.

You are expected to spend 1 hour per credit point per week on course related activities which include attending lectures, tutorials, workshops, reading the recommended texts / lecture notes, research and revision.

Program Progression

You are reminded that satisfactory Program Progression requires that attendance in classes is maintained at equal to or greater than 80%, and that GPA is maintained at equal to or greater than 3.5 [please see Griffith College Policy Library - Program Progression Policy - for more information].

Content Schedule

Weekly Teaching Schedule

Week	Topic	Activity	Readings
1	Introduction to computers & Introduction to the MATLAB Environment	Lecture	Matlab: Chapter 1 & Chapter 2
	Introduction to computers &	Laboratory	Matlab: Chapter 1 & Chapter 2

	Matlab Environment		
	Introduction to computers & Matlab Environment	Workshop	Matlab: Chapter 1 & Chapter 2
2	Introduction to C programming language Assignment statements and working with numbers	Lecture	Matlab: Chapter 2 C Programming: Chapter 1&2
	Assignment statements and working with numbers	Laboratory	Matlab: Chapter 2 C Programming: Chapter 1&2
	Assignment statements and working with numbers	Workshop	Matlab: Chapter 2 C Programming: Chapter 1&2
3	User controlled input & output	Lecture	Matlab: Chapter 7 C Programming: Chapter 3&4
	User controlled input & output	Laboratory	Matlab: Chapter 7 C Programming: Chapter 3&4
	User controlled input & output	Workshop	Matlab: Chapter 7 C Programming: Chapter 3&4
4	Algorithm design and pseudocode Selection statements	Lecture	Matlab: Chapter 8 C Programming: Chapter 5
	Algorithm design and pseudocode Selection statements	Workshop	Matlab: Chapter 8 C Programming: Chapter 5
	Algorithm design and pseudocode Selection statements	Examination	Matlab: Chapter 8 C Programming: Chapter 5

5	Loops	Lecture	Matlab: Chapter 9 C Programming: Chapter 6
	Loops	Laboratory	Matlab: Chapter 9 C Programming: Chapter 6
	Loops	Workshop	Matlab: Chapter 9 C Programming: Chapter 6
6	Built-in Functions	Lecture	Matlab: Chapter 3 C Programming: Chapter 2
	Built-in Functions	Laboratory	Matlab: Chapter 3 C Programming: Chapter 2
	Built-in Functions	Workshop	Matlab: Chapter 3 C Programming: Chapter 2
7	Arrays and matrices	Lecture	Matlab: Chapter 10 C Programming: Chapter 8
	Arrays and matrices	Laboratory	Matlab: Chapter 10 C Programming: Chapter 8
	Arrays and matrices	Workshop	Matlab: Chapter 10 C Programming: Chapter 8
8	Character and String	Lecture	Matlab: Chapter 11 C Programming: Chapter 13
	Character and String	Laboratory	Matlab: Chapter 11 C Programming: Chapter 13
	Character and String	Workshop	Matlab: Chapter 11 C Programming: Chapter 13
9	Plotting and data visualization	Lecture	Matlab: Chapter 5
	Plotting and data visualization	Laboratory	Matlab: Chapter 5
	Plotting and data visualization	Workshop	Matlab: Chapter 5
10	User-defined functions	Lecture	Matlab: Chapter 6 C Programming: Chapter 9
	User-defined functions	Laboratory	Matlab: Chapter 6 C Programming: Chapter 9
	User-defined functions	Examination	Matlab: Chapter 6 C Programming: Chapter 9
11	Advanced topics: Structures; Gamma Rays	Lecture	Matlab: Chapter 11 C Programming: Chapter 11

	Advanced topics	Laboratory	Matlab: Chapter 11 C Programming: Chapter 11
	Advanced topics	Workshop	Matlab: Chapter 11 C Programming: Chapter 11
12	Revision	Lecture	Refer to course web site
	Revision	Laboratory	Refer to course web site
	Revision	Workshop	Refer to course web site

Assessment

This section sets out the assessment requirements for this course.

Summary of Assessment

Item	Assessment Task	Weighting	Relevant Learning Outcomes	Due Date
1	Laboratories	10%	1,2,3,4	1-12
2	In Class Quiz 1	6%	1	4
3	Lab Quiz 2 -	8%	1,2	6
4	In Class Quiz 3	6%	3	8
5	Lab Quiz 4	10%	2,3,4	12
6	Assignment: Programming and written report	20%	1,2,3&4	11
7	Final Examination *- Students must pass this*	40%	1,2,3&4	TBA

	assessment with a mark of at least 16 out of 40 (40%) to pass the course			

Assessment Details

Laboratories:
You will be awarded up to 1% of marks for the effort at each laboratory session up to a maximum of 10%. Laboratory marks are designed to encourage you to attend laboratory sessions and to develop and reinforce your understanding and application of programming concepts in practice. Because of the opportunities to complete ten assessed labs there is no provision for marking deferred labs OR for marking labs missed due to late enrolment.

In Class Quizzes
The purpose of the quizzes is to motivate you and assess theoretical understanding of the conceptual material delivered in lectures, and developed through personal study and laboratory experience. The quizzes will be completed during the lecture in week 4 and 8. Attendance at these lectures is therefore compulsory. The quizzes will also provide you feedback on how you are progressing in the course.

Lab Quizzes
The purpose of the quizzes is to motivate you and assess your practical ability to write Matlab programs as solutions to given problems. The quizzes will be completed during the laboratory sessions in weeks 6 and 12. Attendance at these laboratory sessions is therefore compulsory. The quizzes will also provide you feedback on how you are progressing in the course.

Assignment:
The assignment consists of programming problems that you are required to solve using the knowledge and programming skills learnt from the course. A written report is required to be submitted with the programming codes. Details of these problems will be provided on an assignment sheet available from the course website:

Final Examination:
The purpose of the final examination is to examine your knowledge and skills acquired during the course. The examination will be held in the central examination period at the end of semester.
Students are required to gain a mark of 40% or greater in this exam to pass the course.

Submission and Return of Assessment Items

Normally you will be able to collect your assignments in class within fourteen [14] days of the due date for submission of the assignment.

Retention of Originals

You must be able to produce a copy of all work submitted if so requested. Copies should be retained until after the release of final results for the course.

Extensions

To apply for an extension of time for an assignment, you must submit an Application for Extension of Assignment form to your teacher at least 24 hours before the date the assignment is due. Grounds for extensions are usually: serious illness, accident, disability, bereavement or other compassionate circumstances and must be able to be substantiated with relevant documentation [e.g. Griffith College Medical Certificate]. Please refer to the Griffith College website - Policy Library - for guidelines regarding extensions and deferred assessment.

Assessment Feedback

Marks awarded for assessment items will also be available on the on-line grades system on the Griffith College portal within fourteen [14] days of the due date.

Feedback on lab quizzes will be given via e-mail when the quizzes is being marked.

Feedback on the quiz will be provided within 2 weeks of the assessment date. When the results are available the correct answers will be given in the lecture.

Feedback on assignment will be provided electronically as a mark breakdown and comments within 2 weeks of the submission due date.

Generic Skills

Griffith College aims to develop graduates who have an open and critical approach to learning and a capacity for lifelong learning. Through engagement in their studies, students are provided with opportunities to begin the development of these and other generic skills.

Studies in this course will give you opportunities to begin to develop the following skills:

Generic Skills	Taught	Practised	Assessed
Written Communication		Yes	
Oral Communication		Yes	
Information Literacy	Yes	Yes	Yes

Secondary Research	Yes	Yes	Yes
Critical and Innovative Thinking	Yes	Yes	Yes
Academic Integrity	Yes	Yes	Yes
Self Directed Learning	Yes	Yes	Yes
Team Work		Yes	
Cultural Intelligence	Yes	Yes	
English Language Proficiency	Yes	Yes	

Additional Course Generic Skills

Additional Course Information

In addition to formal contact hours, you are provided with extra support through individual consultation with teaching staff, tutorials in English language, and self-access computer laboratories.

Teacher and Course Evaluations

Your feedback is respected and valued by your lecturers and tutors. You are encouraged to provide your thoughts on the course and teaching, both positive and critical, directly to your lecturer and tutor or by completing course and lecturer evaluations via Griffith College's online evaluation tool whenever these are available.

Academic Integrity

Griffith College is committed to maintaining high academic standards to protect the value of its qualifications. Academic integrity means acting with the values of honesty, trust, fairness, respect and responsibility in learning, teaching and research. It is important for students, teachers, researchers and all staff to act in an honest way, be responsible for their actions, and show fairness in every part of their work. Academic integrity is important for an individual's and the College's reputation.

All staff and students of the College are responsible for academic integrity. As a student, you are expected to conduct your studies honestly, ethically and in accordance with accepted standards of academic conduct. Any form of academic conduct that is contrary to these standards is considered a breach of academic integrity and is unacceptable.

Some students deliberately breach academic integrity standards with intent to deceive. This

conscious, pre-meditated form of cheating is considered to be one of the most serious forms of fraudulent academic behaviour, for which the College has zero tolerance and for which penalties, including exclusion from the College, will be applied.

However, Griffith College also recognises many students breach academic integrity standards without intent to deceive. In these cases, students may be required to undertake additional educational activities to remediate their behaviour and may also be provided appropriate advice by academic staff.

As you undertake your studies at Griffith College, your lecturers, tutors and academic advisors will provide you with guidance to understand and maintain academic integrity; however, it is also your responsibility to seek out guidance if and when you are unsure about appropriate academic conduct.

In the case of any allegation of academic misconduct made against a student he or she may request the guidance and support of a Griffith College Student Learning Advisor or Student Counsellor.

Please ensure that you are familiar with the Griffith College Academic Integrity Policy; this policy provides an overview of some of the behaviours that are considered breaches of academic integrity, as well as the penalties and processes involved when a breach is identified.

For further information please refer to the Academic Integrity Policy on the Griffith College website – Policy Library.

Penalties for late submission without an approved extension

Penalties apply to assignments that are submitted after the due date without an approved extension. Assessment submitted after the due date will be penalised 10% of the TOTAL marks available for assessment (not the mark awarded) for each day the assessment is late. For example:

- > 5 minutes and <= 24 hours 10%
- > 24 hours and <= 48 hours 20%
- > 48 hours and <= 72 hours 30%
- > 72 hours and <= 96 hours 40%
- > 96 hours and <= 120 hours 50%
- > 120 hours 100%

Assessment submitted more than five days late will be awarded a mark of zero (0)

Note that:

- Two-day weekends will count as one day in the calculation of a penalty for late submission.
- When a public holiday falls immediately before or after a weekend, the three days will count as one day in the calculation of a penalty for late submission.
- When two public holidays (e.g. Easter), fall immediately before or after, or one day either side of a weekend, the four days will count as two days in the calculation of a penalty for late submission .
- When a single public holiday falls mid-week, the day will not be counted towards the calculation of a penalty.

Please refer to the Griffith College website - Policy Library > Assessment Policy for guidelines and penalties for late submission.

Note: For all Diploma level programs, Griffith College acknowledges content derived from Griffith University.