1. General Course Information

1.1 Course Details

Course Code:	**1007ITC**
Course Name:	**Computer Systems and Networks**
Trimester:	**Trimester 1, 2023**
Program:	Diploma of Information Technology
Credit Points:	10
Course Coordinator:	Dr Rob Baltrusch
Document modified:	13th February 2023

Course Description

Computer Systems Networks is a 10 credit point course within the Diploma of Information Technology. The course is situated within the second trimester of the program. The Diploma of Information Technology is designed to provide students with a pathway to:

- further university study in Information Technology and related degrees, or
- employment opportunities within the IT industry.

This course introduces the underlying structures and mechanisms of modern computer systems and networks.

IT professionals, whether involved in software or hardware development, information systems development or management, need to have a fundamental understanding of the basic architecture and operation of a computer system. This course provides an overview of the hardware, software and network technologies that define modern computer systems. Knowledge developed in this course assists in the application of computing technologies to solve real world problems.

Assumed Knowledge

This course is not a prerequisite for any other Diploma courses.

1.2 Teaching Team

Your teacher/s can be contacted via email as below:

You will also find their email in the Teacher's tile on your Course Site.

Name	Email
Dr Rob Baltrusch	rob.baltrusch@staff.griffithcollege.edu.au

1.3 Meet with your teacher

Your teacher is available each week to meet outside of normal class times. This is called consultation. Times that your teacher will be available for consultation will be found on the Teacher's tile on your Course Site.

1.4 Timetable

Your timetable is available on the Griffith College Digital Campus at My Apps, Timetable.

1.5 Technical Specifications

All students must have access to a computer or suitable mobile device such as laptop or tablet (mobile phones are not suitable). In addition, up-to-date browser access, a reliable high-speed internet connection with enough upload and download capacity, a webcam and headset including microphone are needed.

2. Aims, Outcomes & Generic Skills

2.1 Course Aims

Computer Systems Networks aims to provide students with a working knowledge of how the hardware, software and networking components that define a computer work together.

The primary cognitive learning outcome is for you to be able to confidently answer, in some detail from a technical perspective, the question, "How does a computer system work?" A secondary outcome is for you to understand the range of modern computing architectures that are available and their application to computing problems.

A specific application based outcome is that of learning how to control computer hardware through software.

2.2 Learning Outcomes

After successfully completing this course you should be able to:

1. Identify and describe common computer hardware and software elements and explain how they interact with each other
2. Operate digital data and construct and evaluate digital logic components and processes
3. Explain the workings of the processor, storage, common hardware components, and basic operating system services
4. Explain the basic concepts of common networking models and the underlying networking hardware
5. Explain the basic concepts relating to security mechanisms and security policy

2.3   Graduate Capabilities and Employability Skills

For further details on the Graduate Capabilities and Employability Skills please refer to the [Graduate Generic Skills and Abilities Policy](#)

Griffith College is committed to producing graduates who are able to demonstrate progress toward the development of a number of generic skills / capabilities that will allow them to successfully continue their studies at the tertiary level. This set of skills includes employability related skills that will ensure graduates are capable in the workplace of the future.

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

Graduate Capabilities and Employability Skills			Focus within this course
Interacting with People	Teamwork		
	Communication		✓
	Respect for Culture and Diversity		
Readiness for the Workplace	Problem Solving		✓
	Planning and Organisation		✓
	Creativity and Future Thinking		✓

3.   Learning Resources

3.1 Required Learning Resources

There are no required resources for this course.

3.2 Recommended Learning Resources

1. Barry G. Blundel, "Computer Systems and Networks", 1st ed., Thomson Learning, 2007
2. Behrouz A. Forouzan and Firouz Mosharaff, "Foundations of Computer Science: From Data Manipulation to Theory of Computation", 2nd ed., Cengage Learning, 2007.
3. J. Glenn Brookshear, "Computer Science: An Overview" 10th ed, Addison-Wesley, 2007
4. Irv Englander, "The Architecture of Computer Hardware and Systems Software - An Information Technology Approach." 3rd ed, John Wiley and Sons, 2003.
5. Andrew S. Tanenbaum, "Structured Computer Organization." 4th ed., Prentice Hall, 1999.
6. Randal E. Bryant and David O'Hallaron, "Computer Systems: A Programmer's Perspective", Prentice Hall, 2003.
7. Carl Hamacher, Zvonko Varanesic, and Safwat Zaky, "Computer Organization", 5th ed, McGraw Hill, 2002.

3.3 College Support Services and Learning Resources

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

- Digital Library – Databases to which Griffith College students have access to through the Griffith Library Databases.

- Study Toolbox – there is a dedicated website for this course on the Griffith College Digital Campus.

- Academic Integrity - Griffith College is committed to ensuring academic integrity is understood and maintained by all staff and students. All students learn about academic integrity through engagement with Academic Integrity online modules within the Academic and Professional Studies course.

- Services and Support provides a range of services to support students throughout their studies including academic advice and assignment help from Student Learning Advisors, and personal and welfare support from Student Counsellors.

- Jobs and Employment in the Student Hub can assist students with career direction, resume and interview preparation, job search tips, and more.

- IT Support provides details of accessing support, information on s numbers and internet access and computer lab rules.

3.4 Other Information about your Learning

Preparation and Participation in Learning

You need to prepare before attending your scheduled Learning Experience (In Class). Work through the Learning Content (Before Class) prepared by your teacher which is found on the course site. Make sure you complete the Learning Activities (After Class) set each week. Active participation in your learning will enhance your success. Ask questions when something is unclear or when you want to bring some issue to your teacher's attention; respond to questions to test your knowledge and engage in discussion to help yourself and others learn.

Attendance

You are expected to actively engage in all learning experiences which underpin the learning content in this course. You are expected to engage with the learning content and learning activities outside of timetabled class times. This requires you to be an active agent of your learning. You are expected to bring all necessary learning resources to class such as the required textbook and /or Workbook. In addition, you are encouraged to BYOD (bring your own device) to class such as a laptop or tablet. This is not a requirement as computer lab facilities are available on campus, however, the use of such devices in the classroom is encouraged with appropriate and considerate use principles being a priority.

Consultation Sessions

Teachers offer extra time each week to assist students outside the classroom. This is known as 'consultation time.' You may seek assistance from your teacher on email or in person according to how the teacher has explained this to the class. Attendance during consultation time is optional but you are encouraged to use this extra help to improve your learning outcomes.

Course Learning Materials

Learning materials are made available to you in the course site. The learning materials are arranged in Modules. In each Module you will find Learning Content (Before Class), Learning Experiences (In Class) and Learning Activities (After Class). **Learning Content (Before Class)** will be engaged with prior to the scheduled **Learning Experience (In Class)**. This will ensure you are prepared for the scheduled Learning Experience (In Class) by being aware of the content to be covered and therefore will be able to actively participate in the session. **Learning Activities (After Class)** are accessed after the scheduled session for purposes of review, consolidation of learning, and preparation for the Evidence of Learning Tasks (Assessments) in the course.
In addition, **Missed Class** learning material is provided in the course,   providing support, interactive tools and directions for students who occasionally cannot attend the weekly scheduled   Learning Experience (In Class, either in person or on Zoom) perhaps due to illness or other commitments. The Missed Class learning material should also be used in conjunction with Learning Content (Before Class) and Learning Activities (After Class) resources.

Self-Directed Learning

You will be expected to learn independently. This means you must organise and engage with the course Learning Content (Before Class) even when you are not specifically asked to do so by your teacher. The weekly guide (below) will be helpful to organise your learning. This involves revising the weekly Learning Content (Before Class) and completing the Learning Activities (After Class). It also means you will need to find additional information to evidence your learning beyond that given to you, and to construct your own response to a question or topic. All of this requires careful planning of your time. Expect to spend, on average, at least 10 hours per week including class time for each of your courses.

Program Progression

You are reminded that satisfactory Program Progression requires that attendance in classes is maintained at equal to or greater than 80%, students are engaged in their learning 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].

Teacher and Course Evaluation

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

4. Weekly Guide: Learning Content, Learning Experiences and Learning Activities

The information below lays out how your learning will be organised throughout the trimester:

Week	Learning Content (Before Class)	Learning Experiences (In Class)	Learning Activities (After Class)	Evidence of Learning (Assessment)	Learning Outcome
	Module 1 Digital data and logic				
1	**Introduction** Recommended reading: Blundel (2007), Chapter 1	Online activities Discussion forum	Weekly lesson plan exercises	Weekly lab work	1
2	**Data representations** Recommended reading: Blundel (2007), Chapter 4	Online activities Discussion forum	Weekly lesson plan exercises	Weekly lab work	1,2
3	**Digital logic** Recommended reading: Blundel (2007), Chapter 2	Online activities Discussion forum	Weekly lesson plan exercises	Weekly lab work	1,2
	Module 2 Digital processing and operating systems				
4	**Processors** Recommended reading: Blundel (2007), Chapter 3	Online activities Discussion forum	Weekly lesson plan exercises	Weekly lab work	1,2,3
5	**Processors** Recommended reading: Blundel (2007), Chapter 3	Online activities Discussion forum	Weekly lesson plan exercises	Weekly lab work	1,2,3
6	**Decimal Real Numbers** Recommended reading: Blundel (2007), Chapter 7	Online activities Discussion forum	Weekly lesson plan exercises	Weekly lab work	2

7	**Memory Organisation** Recommended reading: Blundel (2007), Chapter 7	Online activities Discussion forum	Weekly lesson plan exercises	Weekly lab work	1,3
8	**Operating systems** Recommended reading: Blundel (2007), Chapter 8	Online activities Discussion forum	Weekly lesson plan exercises	Weekly lab work	1,3
	Module 3 *Computer networks*				
9	**Computer Networks and Packet Transmission** Recommended reading: Blundel (2007), Chapter 9	Online activities Discussion forum	Weekly lesson plan exercises	Weekly lab work	1,4
10	**Internetworking** Recommended reading: Blundel (2007), Chapter 10	Online activities Discussion forum	Weekly lesson plan exercises	Weekly lab work	1,4
	Module 4 *Information security*				
11	**Cryptography, hashing, and digital certificates** Recommended reading: Blundel (2007), Chapter 12	Online activities Discussion forum	Weekly lesson plan exercises	Weekly lab work	1,4,5
12	**Course Review**	Topic review	Practice exam questions	Practice exam complete	1,2,3,4,5

5. Evidence of Learning (Assessment)

5.1 Evidence of Learning Summary

	Evidence of Learning (Assessment)	Weighting	Learning Outcome	Due Date
1	Lab work: ● Lab 1: Binary arithmetic ● Lab 2: data representation & logical operations ● Lab 3: memory addressing ● Lab 4: error detection and correction ● Lab 5: assembly language ● Lab 6: assembly language ● Lab 7: operating systems ● Lab 8: networking Hurdle: Obtain at least 50% of total weight.	20% in total Labs 1, 2, 3, 4: 2% each Labs 5,6,7,8: 3% each	1,2,3,4,5	Weekly: Lab 1: week 2 Lab 2: week 3 Lab 3: week 5 Lab 4: week 6 Lab 5: week 7 Lab 6: week 8 Lab 7: week 9 Lab 8: week 10
2	Mini Test 1: data representation, digital logic, memory addressing	5%	1,2	Week 4
3	Mini Test 2: sub-networking	5%	1,2,4	Week 11
4	Project: fetch-decode-execute cycle	30%	1,2,3	Week 12
5	Final Exam: all topics Hurdle: Obtain at least 40%	40%	1, 2, 3, 4, 5	Exam Week

5.2 Evidence of Learning Task Detail

Please note that web applications such as ChatGPT, Google Translate, Grammarly and Youdao (or equivalent services) are not permitted for assessment creation, translation, or extensive language assistance purposes. Wikipedia, and Baidu, Weibo and WeTalk are not permitted to be used.

1. Evidence of Learning Task 1: Laboratory (20%)

Task Type: Examination
Due Date: Weeks 2, 3, 5, 6, 7, 8, 9, 10
Weight: 20%, Marked out of: 20
Task Description: The assessed labs are incremental assessment items that are performed during tutorials. The rationale behind these labs is to incremental assessment that is performed during class. The rationale behind this assessment item is to provide students with practice in good study habits and to reinforce understanding of the learning experience material. This is a formative item of assessment. Unless at least 5 of the weekly lab exercises are performed, this assessment item will be considered not to have been submitted and no mark will be recorded. The assessed labs will be held weekly as per the schedule above. Please note that web applications such as ChatGPT, Google Translate, Grammarly and Youdao (or equivalent services) are not permitted for assessment creation, translation, or extensive language assistance purposes. Wikipedia, and Baidu, Weibo and WeTalk are not permitted to be used.

Criteria and Marking: Accuracy: Correct answer
Communication of methods and steps: Satisfactory communication of correct methods and steps.
Learning Activities will be evaluated in the workshop time each of the weeks mentioned above (total of 8 weeks for 20 marks in total).
In order to receive a mark for this assessment you must achieve a minimum of 10/20 marks or 50% of the total weight of this assessment.
Submission: via course site.

2. Evidence of Learning Task 2: Mini Tests (10%)

Task Type: Examination
Due Date: Weeks 4, 11
Weight: 10%, Marked out of: 10
Task Description: Mini Test 1 will be conducted during Week 4. It will cover learning experience material from Weeks 1 to 3. Mini Test 2 will be conducted during Week 11. It will cover learning experience material from Weeks 8 to 10. Please note that web applications such as ChatGPT, Google Translate, Grammarly and Youdao (or equivalent services) are not permitted for assessment creation, translation, or extensive language assistance purposes. Wikipedia, and Baidu, Weibo and WeTalk are not permitted to be used.
Criteria and Marking: Accuracy: Correct answer, 5% weighting.
Submission: online test.

3. Evidence of Learning Task 3: Project (30%)

Task Type: Assessment – Practical Assessment
Due Date: Week 11
Weight: 30%, Marked out of: 30
Task Description: The project tests the students' ability to apply and synthesise the knowledge and skills obtained in the learning experience and laboratory sessions. You are required to perform the fetch-decode-execute cycle on a stored program in memory using the CPU registers and provided memory addresses and values. This is a summative item of assessment. You will be required to explain your submission to the teaching staff as part of the assessment process. Please note that web applications such as ChatGPT, Google Translate, Grammarly and Youdao (or equivalent services) are not permitted for assessment creation, translation, or extensive language assistance purposes. Wikipedia, and Baidu, Weibo and WeTalk are not permitted to be used.
Criteria & Marking: Accuracy: Correct answer. Communication of methods and steps: Satisfactory communication of correct methods and steps.
Submission: online submission and may include individual interview.

4. Evidence of Learning Task 4: Final Exam (40%)

Task Type: Assessment – Practical Assessment
Due Date: Examination Period
Weight: 40%, Marked out of: 40
Task Description: The final exam is a summative assessment item that tests the student's grasp of the theoretical aspects of the course. Please note that web applications such as ChatGPT, Google Translate, Grammarly and Youdao (or equivalent services) are not permitted for assessment creation, translation, or extensive language assistance purposes. Wikipedia, and Baidu, Weibo and WeTalk are not permitted to be used.
Criteria & Marking: Accuracy: Correct answer. Communication of methods and steps: Satisfactory communication of correct methods and steps. Students must get at least 40% in the final exam to pass the course.
Submission: online exam.

In order to pass this Course, students must:

A. Demonstrate assurance of learning of all learning outcomes through graded Evidence of Learning Tasks.
B. Obtain at least 40% in the final exam.

5.3 Late Submission

An Evidence of Learning Task submitted after the due date, without an approved extension from the teacher, will be penalised. The standard penalty is the reduction of the mark allocated to the Evidence of Learning Task by 5% of the maximum mark applicable for the Evidence of Learning Task, for each calendar day that the task is late. Evidence of learning tasks submitted more than seven calendar days after the due date are awarded zero marks.

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

5.4 Other Information about Evidence of Learning

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.

Requests for extension

To apply for an extension of time for an evidence of learning task, 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 Student Medical Certificate]. Please refer to the Griffith College website – Policy Library for guidelines regarding extensions and deferred Evidence of Learning Tasks.

Return of Evidence of Learning Tasks

1. Marks awarded for in-trimester evidence of learning tasks, except those being moderated externally with Griffith University, will be available on the course site within fourteen [14] days of the due date. This does not apply to the final evidence of learning task in this course (marks for this task will be provided with the final course result).

2. Students will be advised of their final grade through the Digital Campus. Students can review their final exam papers after student grades have been published. Review of final exam papers will not be permitted after the final date to enrol.

3. Marks for **all** evidence of learning tasks including the final exam (if applicable) will be recorded in the Course Site and made available to students through the Course Site.

   The sum of your marks of evidence of learning *tasks in this course does not necessarily imply your final grade for the course. Standard grade cut off scores can be varied for particular courses, so you need to wait for the official release of grades to be sure of your grade for this course.*

6. Policies & Guidelines

Griffith College Evidence of Learning Tasks-related policies can be found in the Griffith College Policy Library which include the following policies:

Assessment Policy, Special Consideration, Deferred Assessment, Alternate Exam Sittings, Medical Certificates, Academic Integrity, Finalisation of Results, Review of Marks, Moderation of Assessment, Turn-it-in Software Use. These policies can be accessed within the Policy Library

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 teachers 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 an allegation of a breach of academic integrity being 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 Griffith College website - Policy Library > Academic Integrity Policy

Reasonable Adjustments for Evidence of Learning Tasks – The Disability Services policy

The Disability Services policy (accessed within the Policy Library) outlines the principles and processes that guide the College in making reasonable adjustments to Evidence of Learning Tasks for students with disabilities while maintaining academic robustness of its programs.

Risk Assessment Statement

There are no out of the ordinary risks associated with this course.