ICT106 DATA COMMUNICATIONS AND NETWORKS T326 BRIEF

All information in the Subject Outline is correct at the time of approval. KOI reserves the right to make changes to the Subject Outline if they become necessary. Any changes require the approval of the KOI Academic Board and will be formally advised to those students who may be affected by email and via Moodle.
Information contained within this Subject Outline applies to students enrolled in the trimester as indicated

1. General Information

1.1 Administrative Details

Associated HE Award(s)	Duration	Level	Subject Coordinator
Bachelor of Information Technology (BIT) Diploma in Information Technology (DIT)	1 trimester	Level 1	Mr Mel Razmjoo mel.razmjoo@koi.edu.au P: +61 (2) 9283 3583 L: 7-11,11 York St. Consultation: via Moodle or by appointment.

1.2 Core / Elective

Core subject for BIT
Core subject for DIT

1.3 Subject Weighting

Indicated below is the weighting of this subject and the total course points.

Subject Credit Points	Total Course Credit Points
4	BIT (96 Credit Points) DIT (32 Credit Points)

1.4 Student Workload

Indicated below is the expected student workload per week for this subject

No. Timetabled Hours/Week*	No. Personal Study Hours/Week**	Total Workload Hours/Week***
4 hours/week (2 hour Lecture + 2 hour Tutorial)	6 hours/week	10 hours/week

* Total time spent per week at lectures and tutorials
** Total time students are expected to spend per week in studying, completing assignments, etc.
*** Combination of timetable hours and personal study.

1.5 Mode of Delivery Classes will be face-to-face or hybrid. Certain classes will be online (e.g., special arrangements).

1.6 Pre-requisites NIL

1.7 General Study and Resource Requirements

- Dedicated computer laboratories are available for student use. Normally, tutorial classes are conducted in the computer laboratories.
- Students are expected to attend classes with the requisite textbook and must read specific chapters prior to each tutorial. This will allow them to actively take part in discussions. Students should have elementary skills in both word processing and electronic spreadsheet software, such as Office 365 or MS Word and MS Excel.

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- Computers and WIFI facilities are extensively available for student use throughout KOI. Students are encouraged to make use of the campus Library for reference materials.
- Students will require access to the internet and email. Where students use their own computers, they should have internet access. KOI will provide access to required software.

Resource requirements specific to this subject: MS Imagine, Office 365, WireShark and Packet Tracer.

1.8 Academic Advising

Academic advising is available to students throughout teaching periods including the exam weeks. As well as requesting help during scheduled class times, students have the following options:

- Consultation times: A list of consultation hours is provided on the homepage of Moodle where appointments can be booked.
- Subject coordinator: Subject coordinators are available for contact via email. The email address of the subject coordinator is provided at the top of this subject outline.
- Academic staff: Lecturers and Tutors provide their contact details in Moodle for the specific subject. In most cases, this will be via email. Some subjects may also provide a discussion forum where questions can be raised.
- Head of Program: The Head of Program is available to all students in the program if they need advice about their studies and KOI procedures.
- Vice President (Academic): The Vice President (Academic) will assist students to resolve complex issues (but may refer students to the relevant lecturers for detailed academic advice).

2 Academic Details

2.1 Overview of the Subject

The subject provides the foundation knowledge of computer and network infrastructure. Students study the physical and logical components of ICT including the concepts and terminologies relating to computers and networking. Specifically, the subject focuses on computer architecture components, operating systems, network evolution, network hardware, network protocols and security. This subject provides the pre-requisite knowledge required for advanced networking and security courses.

2.2 Graduate Attributes for Undergraduate Courses

Graduates of Bachelor courses from King's Own Institute (KOI) will achieve the graduate attributes expected under the Australian Qualifications Framework (2nd edition, January 2013). Graduates at this level will be able to apply a broad and coherent body of knowledge from their major area of study in a range of contexts for professional practice or scholarship and as a pathway for further learning.

King's Own Institute's generic graduate attributes for a bachelor's level degree are summarised below:

	KOI Bachelor Degree Graduate Attributes	Detailed Description
	Knowledge	Current, comprehensive, and coherent and connected knowledge
	Critical Thinking	Critical thinking and creative skills to analyse and synthesise information and evaluate new problems
	Communication	Communication skills for effective reading, writing, listening and presenting in varied modes and contexts and for transferring knowledge and skills to a variety of audiences

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	Information Literacy	Information and technological skills for accessing, evaluating, managing and using information professionally
	Problem-Solving Skills	Skills to apply logical and creative thinking to solve problems and evaluate solutions
	Ethical and Cultural Sensitivity	Appreciation of ethical principles, cultural sensitivity and social responsibility, both personally and professionally
	Teamwork	Leadership and teamwork skills to collaborate, inspire colleagues and manage responsibly with positive results
	Professional Skills	Professional skills to exercise judgment in planning, problem-solving and decision-making

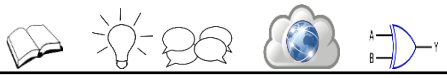
Across the course, these skills are developed progressively at three levels:

- **Level 1 Foundation** – Students learn the basic skills, theories and techniques of the subject and apply them in basic, standalone contexts
- **Level 2 Intermediate** – Students further develop the skills, theories and techniques of the subject and apply them in more complex contexts, and begin to integrate this application with other subjects.
- **Level 3 Advanced** – Students demonstrate an ability to plan, research and apply the skills, theories and techniques of the subject in complex situations, integrating the subject content with a range of other subject disciplines within the context of the course.

2.3 Subject Learning Outcomes

This is a Level 1 subject.

On successful completion of this subject, students should be able to:

Subject Learning Outcomes	Contribution to Graduate Attributes
a) Discuss fundamental concepts of computer and data networks	
b) Explain how protocols are used to link computer networks and manage data traffic.	
c) Analyse industry standards and frameworks that are related to networking, security and cybersecurity.	
d) Apply IP addressing, routing and subnetting in the design of a network.	
e) Apply networking concepts to solve a business problem.	

2.4 Subject Content and Structure

Below are details of the subject content and how it is structured, including specific topics covered in lectures and tutorials. Reading refers to the text unless otherwise indicated.

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Weekly Planner:

Week (beginning)	Topic covered in each week's lecture	Reading(s)	Expected work as listed in Moodle
Week 1 26 October	Introduction	Chapter 1	Discuss review questions in the tutorial on basic network components Introduction to Packet Tracer (Packet Tracer)
Week 2 02 November	Network hardware essentials	Chapter 2	Discuss review questions in the tutorial on different types of computer networks. Use of network components in Packet Tracer Summative worth 2%
Week 3 09 November	Network topologies and technologies	Chapter 3	Discuss review questions in the tutorial on network essentials. Use of networking commands in Packet Tracer Summative worth 2%
Week 4 16 November	Network media	Chapter 4	Discuss review questions on topologies and technologies in the tutorial. Use of networking commands in Packet Tracer Summative worth 2%
Week 5 23 November	Network protocols	Chapter 5	Discuss review questions in the tutorial on network media. Identifying and using different types of cables in Packet Tracer using a simple network design Summative worth 2%
Week 6 30 November	Network Protocols	Chapter 5	Discuss review questions on network protocols. In the tutorial, work on the week 5 hands-on project Creating a simple network design with Packet Tracer Summative worth 2%
Week 7 07 December	IP Addressing	Chapter 6	Discuss review questions in the tutorial on network protocols. Using IP Addressing for network design using Packet Tracer Summative worth 2%

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Week (beginning)	Topic covered in each week's lecture	Reading(s)	Expected work as listed in Moodle
Week 8 14 December	IP Addressing	Chapter 6	Discuss review questions in the tutorial on IP Addressing. Using IP Addressing for network design using Packet Tracer Summative worth 2% **Assessment 2: QUIZ: 15%. Must be completed face-to-face during the tutorial.**
Week 9 04 January	Network reference models and ACS code of ethics	Chapter 7	Discuss review questions in the tutorial on IP Addressing. Using IP Addressing for network design and interconnecting networks using a Packet Tracer Summative worth 2%
Week 10 11 January	Hardware in-depth	Chapter 8	Discuss review questions in the tutorial on Hardware components and a case study based on the ACS Code of ethic Using IP Addressing for network design and interconnecting networks using a Packet Tracer Summative worth 2%
Week 11 18 January	Introduction to network security and Data protection	Chapter 9	Discuss review questions in the tutorial on network security and data protection Using case studies related to network security and data protection Summative worth 2% **Assessment 3 Individual report** Summative is worth 25%
Week 12 25 January	Revision	All Chapters	Revision **Assessment 3 presentation,** Summative worth 5%.
Week 13 01 February	Study review week and Final Exam Week		
Week 14 08 February	- Final Exam Week - Continuing students - enrolments for T127 open		Please see the exam timetable for the exam date, time and location
Week 15 15 February	- Student Vacation begins - New students - enrolments for T127 open		
Week 16 22 February	• Results Released • Review of Grade Day for T326 – see Sections 2.6 and 3.2 below for relevant information. • Certification of Grades NOTE: More information about the dates will be provided at a later date through Moodle/KOI email.		

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Week (beginning)	Topic covered in each week's lecture	Reading(s)	Expected work as listed in Moodle
T127 01 March 2027			
Week 1 01 March	Week 1 of classes for T127		

2.5 Teaching Methods/Strategies

Briefly described below are the teaching methods/strategies used in this subject:

- *Lectures* (2 hours/week) are conducted in seminar style and address the subject content, provide motivation and context and draw on the students' experience and preparatory reading.
- *Tutorials* (2 hours/week) include class discussion of case studies and research papers, practice sets and problem-solving and syndicate work on group projects. Tutorials often include group exercises and so contribute to the development of teamwork skills and cultural understanding. Tutorial participation is an essential component of the subject and contributes to the development of many of the graduate attributes (see section 2.2 above). Tutorial participation contributes towards the assessment in many subjects (see details in Section 3.1 for this subject). Supplementary tutorial material such as case studies, recommended readings, review questions etc. will be made available each week in Moodle.
- *Online* teaching resources include class materials, readings, model answers to assignments and exercises and discussion boards. All online materials for this subject as provided by KOI will be found in the Moodle page for this subject. Students should access Moodle regularly as material may be updated at any time during the trimester
- *Other contact* - academic staff may also contact students either via Moodle messaging, or via email to the email address provided to KOI on enrolment.

2.6 Student Assessment

Assessment is designed to encourage effective student learning and enable students to develop and demonstrate the skills and knowledge identified in the subject learning outcomes. Assessment tasks during the first half of the study period are usually intended to maximise the developmental function of assessment (formative assessment). These assessment tasks include weekly tutorial exercises (as indicated in the weekly planner) and low stakes graded assessment (as shown in the graded assessment table). The major assessment tasks where students demonstrate their knowledge and skills (summative assessment) generally occur later in the study period. These are the major graded assessment items shown in the graded assessment table.

Final grades are awarded by the Board of Examiners in accordance with KOI's Assessment and Assessment Appeals Policy. The definitions and guidelines for the awarding of final grades within the BIT degree are:

- HD High distinction (85-100%) an outstanding level of achievement in relation to the assessment process.
- DI Distinction (75-84%) a high level of achievement in relation to the assessment process.
- CR Credit (65-74%) a better than satisfactory level of achievement in relation to the assessment process.
- P Pass (50-64%) a satisfactory level of achievement in relation to the assessment process.
- F Fail (0-49%) an unsatisfactory level of achievement in relation to the assessment process.

Provided below is a schedule of formal assessment tasks and major examinations for the subject.

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Assessment Type	When assessed	Weighting	Learning Outcomes Assessed
Assessment 1: Tutorial Exercises	Weeks 2 - 11	20%	a, b, c, d, e
Assessment 2: Quiz **(Must be completed face-to-face during the tutorial)**	Week 8	15%	a, b, c, e
Assessment 3: Problem-based scenario Individual report (1,500 words) Individual presentation (5 minutes)	Week 11 Week 12	Report: 25% Presentation : 5% Total: 30%	c, d, e
Assessment 4: Final examination On-campus: 2 hours + 10 mins reading time	Final exam period	35%	a, b, c, d, e

Requirements to Pass the Subject:

To gain a pass or better in this subject, students must gain a *minimum of 50%* of the total available subject marks.

2.7 Prescribed and Recommended Readings

Provided below, in formal reference format, is a list of the prescribed and recommended readings.

Prescribed Text:

Tomsho, G., 2025, *Guide to Networking Essentials*, 9th ed., Cengage Learning, Boston, USA. ISBN: 9788214012668.

Recommended Readings:

Heidari, A., and Jamali, M.A.J., 2023, Internet of Things intrusion detection systems: a comprehensive review and future directions', *Cluster Computing*, vol. 26, no. 6, pp. 3753–3780. DOI: 10.1007/s10586-022-03776-z.

Hanako, A., 2018, *Computer Networks: Design and Implementation*, Wilford Press, New York. ISBN: 9781682854761.

Elahi, A. and Cushman, A., 2024, Computer Networks: Data Communications, Internet and Security, Springer, Cham. ISBN: 9783031420184.

FitzGerald, J., Dennis, A., and Durcikova, A., 2020, *Business Data Communications and Networking*, 14th ed., John Wiley & Sons, Hoboken, NJ. ISBN: 9781119702849.

Forouzan, B.A., 2025, Data Communications and Networking with TCP/IP Protocol Suite, 6th ed., McGraw Hill. ISBN: 9789355320940.

Herrero, R., 2022, *Fundamentals of IoT Communication Technologies*, Springer Nature, Cham, Switzerland. ISBN: 9783030700799. DOI: 10.1007/978-3-030-70080-5.

Lee, R.B., 2022, *Security Basics for Computer Architects*, eBook, Springer, Cham, Switzerland. ISBN: 9783031006142. DOI: 10.1007/978-3-031-01742-1.

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Nagahawatta, R., and Warren, M., 2020, Code of ethical practice and cybersecurity of cloud context: a study perspective of IT authorities in SMEs, in *Proceedings of the 9th Conference of the Australasian Institute of Computer Ethics (AiCE 2020)*, Adelaide, Australia, pp. 18-27.

References available from EBSCOhost research databases:

- Journals on Computer Networks
- International Journal of Business Data Communications and Networking
- International Journal of Communication Networks and Distributed Systems
- International Journal of Security and Networks

Open access journals:

1. Journal of Computer Networks and Communications https://www.hindawi.com/journals/jcnc/
2. Journal of Computer and Communications https://www.scirp.org/journal/jcc/
3. International Journal of Computer Networks & Communications (IJCNC). http://airccse.org/journal/ijcnc.html
4. Security and Communication Networks https://www.hindawi.com/journals/scn/

Conference/ Journal Articles:

Students are encouraged to read peer-reviewed journal articles and conference papers. Google Scholar provides a simple way to broadly search for scholarly literature. From one place, you can search across many disciplines and sources: articles, theses, books, abstracts and court opinions, from academic publishers, professional societies, online repositories, universities and other websites.

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