ICT373 CLOUD COMPUTING 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)	1 trimester	Level 3	Dr. Nitya Karmakar nitya.karmakar@koi.edu.au P: +61 (2) 9283 3583 L: 7-11, 11 York St. Consultation: via Moodle or by appointment.

1.2 Core / Elective

Elective subject for BIT

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)

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 ICT106 Data Communication and Networks.

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.

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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: Office 365, MS Azure.

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

Cloud Computing is an emerging paradigm for utilising large-scale computing services over the Internet that will affect the computing needs of individuals and small and large organisations. The adoption of cloud computing reduces the need for in-house IT hardware and software and allows enterprises to leverage IT services at a lower cost. This subject will provide students with an in-depth understanding of the fundamental aspects of cloud computing. The key concepts include the business drivers for cloud computing adoption, basic design, delivery and deployment models, and security and management. A range of cases of cloud computing and the variety of infrastructures used for their implementation will be discussed using industry aligned, vendor-neutral terms and descriptions.

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 judgement 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 3 subject.

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

Subject Learning Outcomes	Contribution to Graduate Attributes
a) Identify and analyse the basic goals, costs, benefits, business drivers, risks and challenges for adopting cloud computing.	
b) Identify and describe different enabling technologies for the Cloud.	
c) Design and apply a cloud strategy for a small to medium sized enterprise.	
d) Analyse security and management issues related to cloud computing.	

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	Fundamentals of Cloud Computing and Cloud Migration	Iyer. S, Dr. Nataraj. N Part I: Ch 1	Tutorial tasks on Discussion of Cloud Computing using case studies. Group Formation for the group assessment Discussing Assessment specification of the group assessment for Part A: Proposal Submission Formative weekly tutorial.
Week 2 02 November	Concepts and Models of Cloud Computing	Iyer. S, Dr. Nataraj. N Part I: Ch 1	Tutorial questions on the need for cloud migration Group formation Students needs to select the organisation from the list provided on the subject outline to start working on the group assessment (Business Case Proposal report) Graded
Week 3 09 November	Cloud Enabling Technology	Iyer. S, Dr. Nataraj. N Part 3: Ch 5 and Erl, T., Eric, B, M., 2023 Part I	Tutorial questions on cloud technologies Students will involve in group discussions to address the assessment requirements (Prepare draft the business processes and current system and network) Graded
Week 4 16 November	Cloud Infrastructure	Erl, T., Eric, B, M., 2023 Part I	Tutorial questions on cloud infrastructure Students will involve in group discussions to address the assessment requirements (Prepare draft on the possible reasons to migrate to cloud) Graded
Week 5 23 November	Cloud Architectures: Hybrid Cloud	Iyer. S, Dr. Nataraj. N Part 3: Ch 6 and Part 4: Ch 7 and Part 5: Ch 9. And and Erl, T., Eric, B, M., 2023 Part III	Tutorial questions on cloud architecture Students will involve in group discussions to address the assessment requirements (Prepare draft on the possible reasons to migrate to cloud) Graded

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Week (beginning)	Topic covered in each week's lecture	Reading(s)	Expected work as listed in Moodle
Week 6 30 November	Cloud Native Methods Practices and Technology	Erl, T., Eric, B, M., 2023 Part II Ch 8 and Ch 9	Tutorial questions on cloud practices and technology Students will involve in group discussions to address the assessment requirements (Prepare draft on the cloud implementation model – service and deployment) Graded **Assessment 3 Part A Due (5%)**
Week 7 07 December	Managing Operations in the Cloud	Erl, T., B, M., Eric 2023 Ch 12	Tutorial questions on cloud practices and technology Discuss the assessment specifications of the group assessment for the group report for Part B: Business Case report Discussing on the feedback for the Part A submission done in Week 6 Graded **Assessment 2: In-Class Quiz (20%)**
Week 8 14 December	Cloud Security Mechanisms	Iyer. S, Dr. Nataraj. N Part 1: Ch 1 and Part 4: Ch 7and Erl, T., B, M., Eric 2023 Part I: Ch 7	Tutorial questions on cloud security mechanisms Students involved in group discussion to work on Part B of the group report. Task allocation to the group members to assist in completing the report Graded
Week 9 04 January	Infrastructure Security	Iyer. S, Dr. Nataraj. N Part 3: Ch 5 and Ch 6	Tutorial questions on infrastructure security. Groups will continue to have group discussions for the completion of the report. Parts of assessment specification are completed as in-class activities. Graded

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Week (beginning)	Topic covered in each week's lecture	Reading(s)	Expected work as listed in Moodle
Week 10 11 January	Data and Application Security	Iyer. S, Dr. Nataraj. N Part 4: Ch 7	Tutorial questions on data and application security. Groups will continue to have group discussions for the completion of the report. Parts of assessment specification are completed as in-class activities. Graded
Week 11 18 January	Cost Metrics and Pricing	Erl, T., B, M., Eric 2023 Part IV: Ch 17	Tutorial questions on cost metrics and pricing. Groups will continue to have group discussions for the completion of the report. Parts of assessment specification are completed as in-class activities. Graded **Assessment 3 Part B Due (20%)**
Week 12 25 January	Service Quality Metrics	Erl, T., B, M., Eric 2023 Part IV: Ch 18	Student presentations in class **Assessment 3 Part C Due (10%)**
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	e) Results Released f) Review of Grade Day for T326 – see Sections 2.6 and 3.2 below for relevant information. g) Certification of Grades NOTE: More information about the dates will be provided at a later date through Moodle/KOI email.		
T127 01 March 2027			
Week 1 01 March	Week 1 of classes for T127		

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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.

Assessment Type	When assessed	Weighting	Learning Outcomes Assessed
Assessment 1: Tutorial Exercises	Weeks 2 - 11	10%	a, b, c, d
Assessment 2: In-Class Quiz	Week 7	20 %	a, b, d

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Assessment 3: Group Project	Weeks 6; 11 and 12 Part A – week 6 Part B – week 11 Part C – weeks 12	35% Part A - 5% Part B – 20% Part C – 10%	c, d
Assessment 4: Final examination On-campus: 2 hours + 10 mins reading time	Final exam period	35%	a, b, c, d

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 Texts:

Iyer, S., Dr. Nataraj. N., 2022, *Hybrid Cloud Security Patterns*, Packt Publishing. ISBN: 9781803233970.

Erl, T., Monroy B.E., 2023, *Cloud Computing: Concepts, Technology, Security, and Architecture*, Pearson. ISBN: 9780138052256.

Recommended Readings:

Daswani, R., 2026, *AWS Certified Cloud Practitioner (CLF-C02) Certification Guide: Build Practical AWS Cloud Skills through Real-World Business Scenarios and Prepare with Confidence*, 2nd ed., Packt Publishing. ISBN: 9781835464298.

Habiba, M., Criveti. M., 2022, *Hybrid Cloud Infrastructure and Operations Explained*, Packt Publishing. ISBN: 9781803233673.

Lynn, T., Mooney, J.G., van der Werff, L., and Fox, G. 2021, *Data Privacy and Trust in Cloud Computing*, Springer Nature. ISBN: 9783030546595.

Khan, A.R., and Alnwihel, L.K., 2023, A brief review on cloud computing authentication frameworks. *Engineering, Technology & Applied Science Research*, *13* (1), pp.9997-10004. https://doi.org/10.48084/etasr.5479

Islam, R., Patamsetti, V., Gadhi, A., Gondu, R.M., Bandaru, C.M., Kesani, S.C. and Abiona, O., 2023. The future of cloud computing: benefits and challenges. *International Journal of Communications, Network and System Sciences*, *16* (4), pp.53-65. https://doi.org/10.4236/ijcns.2023.164004

Wufka, M. and Canonico, M., 2026, *Introduction to Cloud Computing*, Springer, Cham. ISBN: 9783032071514.

White papers:

- Dialogic.com
  http://www.dialogic.com/~/media/products/docs/whitepapers/12023-cloud-computing-wp.pdf

Journal Articles:

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Abdulsalam, Y.S., and Hedabou, M., 2022. Security and privacy in cloud computing: technical review. *Future Internet*, *14*(1), p.11. https://ideas.repec.org/a/gam/jftint/v14y2021i1p11-d711594.html

Alghofaili, Y., Albattah, A., Alrajeh, N., Rassam, M.A., and Al-rimy, B.A.S., 2021, Secure Cloud Infrastructure: A Survey on Issues, Current Solutions, and Open Challenges, *Applied sciences*, vol. 11, no. 19, pp. 9005. https://doi.org/10.3390/app11199005

Chhabra, S. and Singh, A.K., 2022. A comprehensive vision on cloud computing environment: Emerging challenges and future research directions. *arXiv preprint arXiv:2207.07955*. https://doi.org/10.48550/arXiv.2207.07955

Jangjou, M., and Sohrabi, M.K., 2022. A comprehensive survey on security challenges in different network layers in cloud computing. *Archives of Computational Methods in Engineering*, *29*(6), pp.3587-3608. https://doi.org/10.1007/s11831-022-09708-9

Omurgonulsen, M., Ibis, M., Kazancoglu, Y., and Singla, P., 2021, Cloud Computing: A Systematic Literature Review and Future Agenda, *Journal of global information managemen*t, vol. 29, no. 6, pp. 1-25. https://doi.org/10.4018/JGIM.20211101.oa40

Parast, F.K., Sindhav, C., Nikam, S., Yekta, H.I., Kent, K.B. and Hakak, S., 2022, Cloud computing security: A survey of service-based models. *Computers & Security*, *114*, p.102580. https://doi.org/10.1016/j.cose.2021.102580

Useful Websites:

The following websites are highly recommended sources covering a range of information useful for this subject. However, most are not considered to be sources of Academic Peer Reviewed theory and research. If your assessments require ***academic peer reviewed journal articles*** as sources, you need to access such sources using the Library database, Ebscohost, or Google Scholar. Please ask in the Library if you are unsure how to access Ebscohost. Instructions can also be found in Moodle.

3. Cloud Security Alliance https://cloudsecurityalliance.org/group/security-guidance/
4. Intel IT Center http://www.intel.com.au/content/www/au/en/cloud-computing/cloud-computing-private-cloud-infrastructure-as-a-serviceguide.
5. http://www.isaca.org Many example case studies. Search for case studies for any particular cloud component.

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