ICT370 DATA ANALYTICS 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 Nasim Ahmad nasim.ahmad@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

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 BUS105 Business Statistics

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: MS Imagine, MS Azure, Office 365, R-3.4.4 for windows.

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

Data is everywhere. The amount of digital data that exists is growing at a rapid rate, doubling every two years, and is thus drastically changing the way we live. Massive amounts of data and information are collected every second by the internet, social media, sensors and networks all over the world. Business Intelligence (BI) frameworks must handle this data. Business intelligence requires data science that deals with data cleansing, preparing, integrating and analysing data sets in order to draw conclusions about the information they contain. This subject focuses on the analysis and reporting of data and its applications to business intelligence. The subject helps you to combine technical and statistical skills, analytical thinking, and business acumen.

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

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	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
	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

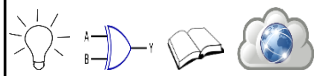
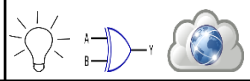
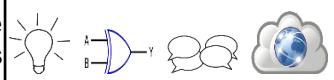
Across the course, these skills are developed progressively at three levels:

- **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) Justify the business demand for data collection, decision support and data analytics	
b) Analyse and evaluate data using different data analytics layers and techniques	
c) Evaluate modelling techniques in the context of analytics and Big Data	
d) Develop and select data hypotheses and methods and evaluate analytics models. Furthermore, apply these models to business intelligence scenarios.	
e) Demonstrate in-depth analytical, data mining and machine learning domain knowledge that is based on well-founded principles	

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f) Develop, evaluate and justify appropriate visualisation approaches from a range of applicable options for stakeholders.	

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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.

Weekly Planner:

Week (beginning)	Topic covered in each week's lecture	Reading(s)	Expected work as listed in Moodle
Week 1 26 October	An Overview of Business Intelligence and Analytics	Ch 1	Tutorial 1 Discussion questions and exercises to explore resources in Business context. Formative weekly tutorial
Week 2 02 November	Analytics Ecosystem and Big Data introduction	Ch 1	Tutorial 2 Discussion questions and exercises to review Case Studies and Data sets and prepare summaries Biweekly activity 0%
Week 3 09 November	Nature of Data and Statistical Modeling	Ch 2	Tutorial 3 Discussion questions and exercises to do basic statistical analysis and modelling
Week 4 16 November	Business Reporting and Data Visualization	Ch 2	Tutorial 4 Discussion questions and exercises to build basic reports and visualizations using tools Biweekly activity 5%
Week 5 23 November	Business Intelligence and Data Warehousing	Ch 3	Tutorial 5 Discussion questions and exercises to understand data warehousing latest trends and developments. Learn to use AI to investigate data and research data analysis techniques.
Week 6 30 November	Data Mining Concepts and Applications	Ch 4	Tutorial 6 Discussion questions and exercises to practice some applications of data mining. Incorporate AI prompting for identifying and validating descriptive analytical steps. Biweekly activity 5%
Week 7 07 December	Text Analytics and Text Mining	Ch 5	Tutorial 7 Discussion questions and exercises related to using Text Analytics tools and establishing findings
Week 8 14 December	Web Mining and Social Analytics	Ch 5	Tutorial 8 Discussion questions and exercises related to using Web Analytics tools and establishing findings. Learn AI prompting for researching predictive analytics on selected data. Biweekly activity 5%.

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Week (beginning)	Topic covered in each week's lecture	Reading(s)	Expected work as listed in Moodle
Week 9 04 January	Manage legal, ethical, privacy and security issues related to the use of data	Ch 8	Tutorial 9 Discussion questions and exercises related to legality, privacy, ethics and security **In-Class Practical Exam 35%**
Week 10 11 January	Prescriptive Analytics: Optimization and Simulation	Ch. 6	Tutorial 10 Discussion questions and exercises for decision modelling Biweekly activity 5%
Week 11 18 January	Big Data Concepts and Tools	Ch. 7	Tutorial 11 Discussion questions and exercises related to researching the Big Data concepts and Tools **Assignment 3 - Report 25%** **Assignment 3 - Demonstration 10%**
Week 12 25 January	Future Trends in Analytics	Ch. 8	Tutorial 12 Discussion questions and exercises related to future trends in Analytics **Assignment 3 - Viva 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	• 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.		
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.

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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
Assignment 1 – Biweekly (4,6,8 and 10) Individual Progress Reports and Reflection - Individual Assignment	Week 4- 5% Week 6- 5% Week 8 - 5% Week 10 - 5%	20%	a, b, c, d, e, f
Assignment 2: Practical Exam	Week 9	35%	a, b, c ,d
Assignment 3: Group Assignment - Report, Demonstration, and Viva (Oral Examination)	**Report:** Week 11; **Demonstration:** Week 11 **Viva:** Week 12	Report: 25% Demonstration: 10% Viva: 10% **Total: 45%**	b, c, d, e, f

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.

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Prescribed Text:

Sharda, R., Delen, D., Turban, E. 2024, *Business intelligence, analytics, and data science: a managerial perspective*, 5th Global edn, Pearson, Harlow, UK. Available from: ProQuest Ebook Central. ISBN: 9781292459295.

Recommended Texts:

Chen, C.-C. and Takamura, H. 2025, *Agent AI for finance: From Financial Argument Mining to agent-based modeling*. Cham: Springer Nature Switzerland : Imprint: Springer. ISBN: 978-3-031-94687-5

Sarker, I.H., 2021, Data science and analytics: An overview from data-driven smart computing, decision-making and applications perspective, *SN Computer Science*, vol. 2, no. 5, p. 377. doi:10.1007/s42979-021-00765-8.

Teng, Y., Zhang, J., and Sun, T., 2022, Data-driven decision-making model based on artificial intelligence in higher education systems of colleges and universities, *Expert Systems*. Vol. 40, no. 4, doi:10.1111/exsy.12820.

Tayeb, K.M., 2023, Decision-making and data science: How large businesses can use analytics to shape decisions, *Business & IT*, vol. 13, no. 2, pp. 55–64. doi:10.14311/bit.2023.02.06.

Sarker, I.H., Kayes, A.S.M., Badsha, S., Alqahtani, H., Watters, P., and Ng, A., 2020, Cybersecurity data science: An overview from machine learning perspective, *Journal of Big Data*, vol. 7, no. 1, pp. 1–29. https://doi.org/10.1186/s40537-020-00318-5

Sulova, S., 2021, Text mining approach for identifying research trends, *Proceedings of the International Conference on Computer Systems and Technologies 21*. doi:10.1145/3472410.3472433.

Yan, H., Ma, M., Wu, Y., Fan, H., and Dong, C., 2022, Overview and analysis of the text mining applications in the construction industry, *Heliyon*, vol. 8, no. 12, e12088. doi:10.1016/j.heliyon.2022.e12088.

The state of AI in 2023: Generative AI's breakout year August 1, 2023 | Survey https://www.mckinsey.com/capabilities/quantumblack/our-insights/the-state-of-ai-in-2023-generative-ais-breakout-year

Recommended Journal Articles:

Solano, M.C. and Cruz, J.C. 2024, Integrating analytics in enterprise systems: A systematic literature review of impacts and innovations, *Administrative Sciences*, 14(7), p. 138. doi:10.3390/admsci14070138.

Bauskar, S., 2024. Business analytics in enterprise system based on application of artificial intelligence. *International Research Journal of Modernization in Engineering Technology and Science*. doi:10.56726/IRJMETS18127.

Calof, J., Richards, G., and Santilli, P., 2024, Integration of business intelligence with corporate strategic management, *Journal of Intelligence Studies in Business*, vol. 7, no. 3, pp. 62–73. doi:10.37380/jisib.v7i3.280.

Charkaoui, A., and Jabraoui, S., 2024, 20 years of scientific study on business intelligence and decision-making performance: A bibliometric analysis, *Journal of Information Systems Engineering and Business Intelligence*, vol. 10, no. 3, pp. 408–421. doi:10.20473/jisebi.10.3.408-421.

Kasneci, E., Seßler, K., Küchemann, S., Bannert, M., Dementieva, D., Fischer, F., and Kasneci, G., 2023, ChatGPT for good? On opportunities and challenges of large language models for education, *Learning and Individual Differences*, vol. 103, p. 102274. https://doi.org/10.1016/j.lindif.2023.102274.

Szukits, Á., 2022, The illusion of data-driven decision making - The mediating effect of digital orientation and controllers' added value in explaining organizational implications of advanced analytics, *Journal of Management Control*, vol. 33, no. 3, pp. 403–446. https://doi.org/10.1007/s00187-022-00343-w.

Ozaydin, B., Zengul, F., Oner, N., and Feldman, S.S., 2020, Healthcare Research and Analytics Data Infrastructure Solution: A Data Warehouse for Health Services Research, *Journal of Medical Internet Research*, vol. 22, no. 6, pp. e18579–e18579. https://doi.org/10.2196/18579.

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Sarker, I.H., 2021, Data science and analytics: An overview from data-driven smart computing, decision-making and applications perspective, *SN Computer Science*, vol. 2, no. 5, p. 377. doi:10.1007/s42979-021-00765-8.

Pohl, M., Staegemann, D.G., and Turowski, K., 2022, The performance benefit of data analytics applications, *Procedia Computer Science*, vol. 201, pp. 679–683. https://doi.org/10.1016/j.procs.2022.03.090.

Online Resources:

Analytics Magazine(Digital Edition) http://analytics-magazine.org/digital-editions/
Several Reading at https://learning-academics.teradata.com/ requires student registration using KOI email https://www.linkedin.com/learning/the-essential-elements-of-predictive-analytics-and-data-mining/
https://www.ibm.com/products/cognos-analytics
https://www.tableau.com/learn/articles/what-is-predictive-analytics
https://learn.microsoft.com/en-us/power-bi/connect-data/service-tutorial-build-machine-learning-model

Journals:

- Analytics Magazine (Digital Edition) http://analytics-magazine.org/digital-editions/
- Journal of Data Science
- Journal of Emerging Technologies in Web Intelligence

Conference/ Journal Articles:

Razmerita, L. 2024, Human-AI collaboration: A student-centered perspective of generative AI use in higher education, *European Conference on e-Learning*, vol. 23, no. 1, pp. 320–329. doi:10.34190/ecel.23.1.3008.

Lin, C.Y., Lobo Marques, J.A. & Chan, L.K. 2024, Artificial intelligence and deep learning in stock prediction: A bibliometric review, *European Conference on Management Leadership and Governance*, vol. 20, no. 1, pp. 297–306. doi:10.34190/ecmlg.20.1.3003.

Basha, M.J., Murthy, T.S., Valarmathy, A.S., Abbas, A.R., Gavhar, D., Rajavarman, R. & Parkunam, N. 2023, Privacy-preserving data mining and analytics in big data, *E3S Web of Conferences*, vol. 399, p. 04033. https://doi.org/10.1051/e3sconf/202339904033

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 web sites.

Useful Websites:

The following websites are useful 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.

- TeraData University Network https://learning-academics.teradata.com/
- Analytics, Big Data, and IT Research https://tdwi.org/research/list/research-and-resources.aspx
- Data Science Central https://www.datasciencecentral.com/
- Open Source Intelligence Australia https://osint.net.au
- *https://www.datacenterdynamics.com/en/*
- *https://www.datasciencecentral.com/*

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