

Unit of Study Guide

Unit Code and Title	BUS6008 Advanced Analytics and Data Management
Course(s)	Master of Business Administration
Core or Elective	Elective: Master of Business Administration
Credit Points	8 credit points
Duration	12 weeks
AQF Level	9
Student Workload	Students should expect to spend 156 hours on learning activities across the study period. This includes time spent attending scheduled classes, undertaking private study, preparing assessments, and completing examinations.
Essential Requirements	N/A
Mode(s) of Delivery	On campus / Online
Pre-Requisite/Co-Requisite	Pre-Requisite BUS5001 Ethical, Legal and Industrial Frameworks BUS5003 Information Systems and Data Analysis
Unit Coordinator	
Contact Information	✉: ☎: +61 02 9318 8111 Consultation: By appointment

Unit Description

In the contemporary organisational environment, decisions are best made on evidence derived from the widest data sources available. *BUS6008 Advanced Analytics and Data Management* considers the creation, manipulation and interpretation of big data, how to organise it, and how to optimally manage it to enable rapid and accurate decision-making. Aspects of platform design, systems integration, systems security and compatibility are examined, along with statistical analysis for big data. Students are also equipped with skills for identifying “fake data”. On completion of this unit students will have an integrated knowledge of organisational data collation, analysis and interpretation that they can apply to real world organisational problems.

Unit Learning Outcomes (ULOs)

On successful completion of this unit, students will be able to:

- ULO1** Articulate the interconnectedness between the creation, manipulation and interpretation of big data
- ULO2** Analyse complex data in optimum problem solving and decision making
- ULO3** Evaluate alternative platform designs and optimum system integration methods
- ULO4** Evaluate the integrity of business data

Course Learning Outcomes (CLOs)

Successful completion of this unit will contribute to the following Course Learning Outcomes (CLOs):

- CLO1** Using appropriate technologies and methodologies, review, critically analyse and apply theoretical and practical knowledge, complex information and concepts, and research findings to support and justify enterprise decisions
- CLO2** Generate innovative, sustainable solutions to complex real world, contemporary enterprise problems
- CLO3** Interact effectively in diverse teams to deliver outcomes, both as team members and as team leaders, as appropriate to the context
- CLO4** Effectively communicate complex concepts, relating to the analysis, planning, design and evaluation of responses to enterprise problems to both specialist and non-specialist team members, clients and collaborators using a range of communication modalities as appropriate.
- CLO5** Demonstrate responsible, accountable and ethical behaviour
- CLO6** Objectively reflect on and evaluate outcomes and feedback for continuous improvement

Graduate Attributes (GAs)

Successful completion of this unit will contribute to the following APIC Graduate Attributes (GAs):

GA1. Analytical and Scholarly: APIC graduates will be able to locate, select and evaluate information from a range of sources to ensure currency of their knowledge base.

GA 2. Ethical and Inclusive Professionals: APIC graduates will respect multiple perspectives, human rights, and ethical principles. They will also be capable of autonomy and self- directed practice.

GA 3. Innovative Problem Solvers and Decision Makers: APIC graduates will be curious, enquiring and adaptable, embracing and creating change. They will be able to find novel and effective solutions for anticipated and unexpected challenges and make appropriate, timely and justified decisions.

GA 4. Excellent Communicators: APIC graduates will be able to communicate effectively in oral and written English and collaborate with others to achieve outcomes. They will be able to adapt their communication style to context.

GA 5. Critical and Reflective Thinkers: APIC graduates will actively reflect on and critique information, decisions, and strategies for continuous improvement.

GA 6. Leaders and Collaborators: APIC graduates will be able to work effectively in diverse teams that require leadership, collaboration and teamwork skills to achieve outcomes.

Learning and Teaching Approach

Learning and teaching in this unit applies the APIC model of providing transformational learning experiences that are student-centered, collaborative, active, reflective and applied. Key themes embedded into the resources, challenges and assessments are ethical practice, sustainability, evidence-based decision making and real-world applications. Completion of the learning activities for each week will give students the discipline knowledge and skills required to complete the assessments. Successful completion of all assessments demonstrates that the unit learning outcomes have been achieved. Additional support to further enhance students' academic skills is available from the Academic Enhancement team.

Expectations of Students

Students are expected to:

- Prepare for scheduled classes by completing assigned activities
- Attend at least 80% of scheduled classes
- Actively participate in class activities
- Seek clarification and advice from teaching staff as needed
- Attempt all assessments
- Submit assessments on time
- Review and reflect on feedback on assessments and seek clarification about feedback where needed
- Notify the lecturer and / or unit coordinator if unable to attend classes and/or submit assessments

Completion of the learning activities for each week will give students the discipline knowledge and skills required to complete the assessments. Successful completion of all assessments demonstrates that the unit learning outcomes have been achieved.

Schedule of Learning and Teaching Activities

Week	Topic	Learning Activities	Readings
Week 1	Introduction	Concepts • Introduction to unit aims, objectives, learning strategies, resources available, timetable, assessment methods and related briefings • Different types and sources of data • Overview of big data • Opportunities of big data • Characteristics of big data (volume, velocity, variety and veracity) • Using big data in different sectors Activities • Group discussion: big data applications, benefits and challenges	Readings provided in LMS

Week 2	Managing big data	Concepts - Acquiring big data - Storing big data - Analysing big data - Security and privacy considerations - Ethical considerations - Ethical frameworks Activities - Group discussion: security, privacy and ethical issues	Readings provided in LMS
Week 3	Organisational Analytics	Concepts - Organisational analytics - Quality measurement, quality information and quality decisions - Transaction processing Systems, Management Information Systems and Executive Information Systems, Dashboards Activities - Group discussion: organizational analytics and application to different sectors	Readings provided in LMS
Week 4	Data Warehousing	Concepts - The ETL (extraction, transformation and Loading) Process - Types of data warehouses in organizations - OLTP vs OLAP - Query Processing - Data cubes - Data warehousing tools Activities - Practical exercises: data warehousing design	Readings provided in LMS
Week 5	Data Mining 1	Concepts - Data mining process - Data pre-processing - Data transformation and integration, different techniques - Dealing with incomplete, noisy and inconsistent data Activities - Practical exercises: data pre-processing	Readings provided in LMS
Week 6	Data Mining 2	Concepts - Correlational Analysis - Frequent patterns - Association rules - Applications Activities - Practical exercises: correlational analysis, frequent patterns and association rules	Readings provided in LMS

Week 7	Classification	Concepts • Classification overview • Decision trees • Other techniques, applications and examples Activities Practical exercises with supervised learning methods and applications	Readings provided in LMS
Week 8	Clustering	Concepts • Clustering overview • Similarity • Neighborhood • Clustering • Other techniques, applications and examples Activities • Practical exercises: Clustering methods and applications	Readings provided in LMS
Week 9	Visualization	Concepts • Visualization techniques • Tables • Cross tables • Bar charts • Histograms • Pie charts • Boxplots Activities • Practical exercises: data analytics software • Creating reports	Readings provided in LMS
Week 10	Web and Social Data Analytics	Concepts • Mapping organisational needs to Web analytics • Computational advertisement: Display and search advertising • Targeted Advertisement • Recommender Systems • Content-based and collaborative filtering • Conclusion and wrap up Activities • Planning for final assessment	Readings provided in LMS
Week 11	Presentations and Debate		
Week 12	Presentations and Debate		

Assessment Information

Assessment	Weight	Due Week	Duration	ULO
1. Data Management (Group) Students will be presented with a complex set of data. In this assessment from which they will create a data management schema to allow effective interrogation and analysis	35%	4	Data model 2500 words eq	ULO1 ULO2
2. Data Analytics (Individual) Student will use the data schema prepared in Assessment 1 to analyse the data and draw key conclusions. Scenario analysis will be used to demonstrate the robustness of the schema and to consider alternatives.	40%	10	3000 words	ULO2 ULO3 ULO4
3. Debate/Defense (Individual) Students will defend their analysis and conclusions and debate with other students	25%	12	15 minutes 1500 words eq	ULO3 ULO4

Resources

Prescribed Text(s):

No prescribed texts

Recommended Readings:

- Ahmed, E, Yaqoob, I, Hashem, IAT, Khan, I, Ahmed, AIA, Imran, M & Vasilakos, AV 2017, 'The role of big data analytics in Internet of Things', *Computer Networks*, vol. 129, no. 2, pp. 459–471
doi:10.1016/j.comnet.2017.06.013.
- Amado, A, Cortez, P, Rita, P & Moro, S 2018, 'Research trends on Big Data in Marketing: A text mining and topic modeling based literature analysis', *European Research on Management and Business Economics*, vol. 241, no. 1, pp 1–7, doi:10.1016/j.jedeen.2017.06.002.
- Baruh, L & Popescu, M 2017, 'Big data analytics and the limits of privacy self-management', *New Media & Society*, vol. 19, no. 4, pp. 579–596, doi:10.1177/1461444815614001.
- Hazen, BT, Skipper, JB, Boone, CA & Hill, RR 2018, 'Back in business: Operations research in support of big data analytics for operations and supply chain management', *Annals of Operations Research*, vol. 270, no. 1-2, pp. 201-211, doi:10.1007/s10479-016-2226-0.
- Kokina, J, Pachamanova, D & Corbett, A 2017, 'The role of data visualization and analytics in performance management: Guiding entrepreneurial growth decisions', *Journal of Accounting Education*, vol. 38, no. 3, pp. 50–62, doi:10.1016/j.jaccedu.2016.12.005.
- Lam, SK, Sleep, S, Hennig-Thurau, T, Sridhar, S & Saboo, AR 2017, 'Leveraging frontline employees' small data and firm-level big data in frontline management: An absorptive capacity perspective', *Journal of Service Research*, vol. 20, no. 1, pp. 12–28, doi:10.1177/1094670516679271.
- Nguyen, T, Zhou, L, Spiegler, V, Leromonachou, P & Lin, Y 2018, 'Big data analytics in supply chain management: A state-of-the-art literature review', *Computers & Operations Research*, vol. 98, no. 10, pp. 254–264, doi:10.1016/j.cor.2017.07.004.
- O'Halloran, KL, Tan, S, Pham, DS, Bateman, J & Vande Moere, A 2018, 'A digital mixed methods research design: Integrating multimodal analysis with data mining and information visualization for big data analytics', *Journal of Mixed Methods Research*, vol. 12, no. 1, pp. 11–30, doi:10.1177/1558689816651015.

Sheng, J, Amankwah-Amoah, J & Wang, X 2017, 'A multidisciplinary perspective of big data in management research', *International Journal of Production Economics*, vol. 191, no. C, pp. 97–112, doi:101016/jijpe201706006.

Tonidandel, S, King, EB & Cortina, JM 2018, 'Big data methods: Leveraging modern data analytic techniques to build organizational science', *Organizational Research Methods*, vol. 21, no. 3, pp. 525–547, doi:101177/1094428116677299.

Other Recommended Resources:

Big Data Analytics

International Journal of Data Science

Journal of Big Data

Participation

Students are required to participate in all collaborative work, group work and work integrated activities, such as study tours, industry lead activities and open forums, (a actively, fully and positively; and (b in a timely manner. Student contributions to collaborative, group, and work integrated activities must be meaningful, of value to peers, and follow the specifications of the Unit Study Guide.

Academic Misconduct

Ethical conduct and academic integrity and honesty are fundamental to the mission of APIC and academic misconduct will not be tolerated by the College. It is the responsibility of every student to make sure that they understand what constitutes academic misconduct and to refrain from engaging in it. Please refer to APIC's [Academic Integrity Policy](#) for further details.

Attendance

APIC has a responsibility to ensure that all students enrolled at the College are able to make satisfactory progress through their course, and attending scheduled classes is essential for course progression. For onshore international students maintaining satisfactory attendance in the course and making satisfactory progress with the course are also conditions of the student Visa. APIC therefore monitors the attendance of all students at all scheduled classes and students are required to attend at least 80% of scheduled for units in which they are enrolled, where attendance means that the student is present for the whole duration of the scheduled lecture, tutorial or seminar class. Students are advised that decisions about the award of supplementary assessments will take into account student attendance.

Disclaimer

This unit study guide may be updated and amended from time to time. Any changes to the unit will be notified to students through the Online Learning System (OLS) for the unit.