

ACCG8076

Forensic and Data Analytics

Session 1, In person-scheduled-weekday, North Ryde 2023

Department of Accounting and Corporate Governance

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General Information

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Credit points 10

Prerequisites ACCG6011 or ACCG611 or (admission to MActPrac or MBkgFin or MBusAnalytics or GradCertForAccg or GradDipForAccg or MForAccgFinCri)

Corequisites

Co-badged status

Unit description

In this unit students will be exposed to the theory and application of data analytics skills and techniques in relation to fraud detection and identifying business risks. The unit will introduce students to mechanisms and principles relevant to tracing assets, investigating flow of funds and reconstructing accounting information. Visual and location analytic capabilities that use a variety of tools and techniques, along with external data sets, will be explored. The unit will also equip students with the capacity to appraise applications and strategies to enable collection, assessment, review, production and presentation of unstructured data.

Important Academic Dates

Information about important academic dates including deadlines for withdrawing from units are available at https://www.mq.edu.au/study/calendar-of-dates

Learning Outcomes

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

ULO1: Evaluate the theory, and principles of application, of data analytics skills and techniques relevant to forensic accounting.

ULO2: Investigate applications and strategies, including data mining, to enable

collection, assessment, review, production and presentation of unstructured data.

ULO3: Manage and interpret complex or disparate sets of data to underpin business

development, interpret risk, understand behavioural patterns, and detect suspicious or irregular behaviour.

ULO4: Examine issues and key principles of professional digital forensic practice,

including chain of custody and best practice procedures.

ULO5: Diagnose and appraise mechanisms to uncover or recover evidence from digital devices to support litigation and investigations.

General Assessment Information

Unless a Special Consideration request has been submitted and approved, a 5% penalty (of the total possible mark) will be applied each day a written assessment is not submitted, up until the 7th day (including weekends). After the 7th day, a grade of '0' will be awarded even if the assessment is submitted. The above penalties do not apply to class assessments assigned for 'Participation', which will receive a grade of '0' unless submitted in the assigned class.

For any late submissions of time-sensitive tasks, such as scheduled tests/exams, performance assessments/presentations, and/or scheduled practical assessments/labs, students need to submit an application for Special Consideration.

Name	Weighting	Hurdle	Due
Critical Essay	40%	No	Week 13
Class Test	20%	No	Week 7
Class Presentation	20%	No	Week 9
Participation	20%	No	Week 3,4,10 & 11 and class participation in all other weeks

Assessment Tasks

Critical Essay

Assessment Type 1: Essay Indicative Time on Task 2: 34 hours Due: **Week 13** Weighting: **40%**

In this assessment students will be required to critically reflect on the key issues and principles of professional digital forensic practice in the recovery of digital evidence to support an

investigation. The submission should not exceed 2500 words.

On successful completion you will be able to:

- Examine issues and key principles of professional digital forensic practice, including chain of custody and best practice procedures.
- Diagnose and appraise mechanisms to uncover or recover evidence from digital devices to support litigation and investigations.

Class Test

Assessment Type ¹: Quiz/Test Indicative Time on Task ²: 18 hours Due: **Week 7** Weighting: **20%**

The class test may include one, or a combination of, the following types of assessment: multiplechoice questions, true/false questions, short answer style questions, problem scenario or evidence- based questions.

On successful completion you will be able to:

- Evaluate the theory, and principles of application, of data analytics skills and techniques relevant to forensic accounting.
- Investigate applications and strategies, including data mining, to enable collection, assessment, review, production and presentation of unstructured data.
- Manage and interpret complex or disparate sets of data to underpin business development, interpret risk, understand behavioural patterns, and detect suspicious or irregular behaviour.
- Examine issues and key principles of professional digital forensic practice, including chain of custody and best practice procedures.
- Diagnose and appraise mechanisms to uncover or recover evidence from digital devices to support litigation and investigations.

Class Presentation

Assessment Type 1: Presentation Indicative Time on Task 2: 18 hours Due: **Week 9** Weighting: **20%** In this assessment students will deliver a 10-minute presentation that requires a consolidation of the theory, and application of data analytics skills and techniques to enable the assessment, review, and presentation of unstructured data relevant to advance a forensic accounting investigation. A summary report will be required to accompany the presentation.

On successful completion you will be able to:

- Evaluate the theory, and principles of application, of data analytics skills and techniques relevant to forensic accounting.
- Investigate applications and strategies, including data mining, to enable collection, assessment, review, production and presentation of unstructured data.
- Manage and interpret complex or disparate sets of data to underpin business development, interpret risk, understand behavioural patterns, and detect suspicious or irregular behaviour.

Participation

Assessment Type 1: Participatory task Indicative Time on Task 2: 20 hours Due: Week 3,4,10 & 11 and class participation in all other weeks Weighting: 20%

This assessment involves evidence of preparation for, participation in, and contribution to seminars and online discussion forums.

On successful completion you will be able to:

- Evaluate the theory, and principles of application, of data analytics skills and techniques relevant to forensic accounting.
- Investigate applications and strategies, including data mining, to enable collection, assessment, review, production and presentation of unstructured data.
- Manage and interpret complex or disparate sets of data to underpin business development, interpret risk, understand behavioural patterns, and detect suspicious or irregular behaviour.
- Examine issues and key principles of professional digital forensic practice, including chain of custody and best practice procedures.
- Diagnose and appraise mechanisms to uncover or recover evidence from digital devices

to support litigation and investigations.

¹ If you need help with your assignment, please contact:

- the academic teaching staff in your unit for guidance in understanding or completing this type of assessment
- the Writing Centre for academic skills support.

² Indicative time-on-task is an estimate of the time required for completion of the assessment task and is subject to individual variation

Delivery and Resources

Please refer to the information on iLearn.

Unit Schedule

Week	Learning Objective	Content	Reading
1	LO1: Evaluate the theory & principles of application of data analytics skills & techniques relevant to forensic accounting	Introduction to Fraud	Forensic Accounting and Fraud Investigation for Non-Experts, H. Silverstone and M. Sheetz, Chapter 2, Fraud in Society
		Types of Fraud	Forensic Accounting and Fraud Investigation
		The Need for Analysis Tools	for Non-Experts, H. Silverstone and M. Sheetz, Chapter 12, Analysis Tools for Investigators
		Matrices	
		Link Diagrams	
		Social Network Analysis	
		Analysing Networks	

2	LO1: Evaluate the theory & principles of application of data analytics skills & techniques relevant to forensic accounting	Fraud Theories Introduction to Financial Analysis Key Ratios Data Mining as an Analysis Tool	Fraud theories & White-collar crimes https://researchleap.com/fraud-theories-white-c ollar-crimes-lessons-nigerian-banking-industry/ Forensic Accounting and Fraud Investigation for Non-Experts, H. Silverstone and M. Sheetz, Chapter 5 Fundamental Principles of Financial Analysis
3	LO1: Evaluate the theory & principles of application of data analytics skills & techniques relevant to forensic accounting	Introduction to Data Mining Data Classification Association Analysis Cluster Analysis Outlier Analysis Application: Data Mining to Detect Money Laundering Tracing	Statistical Techniques for Forensic Accounting, S. K. Dutta, Chapter 5, Understanding the Theory and Application of Data Analysis Financial Investigation and Forensic Accounting, G. A. Manning, Chapter 14, Accounting and Audit Techniques

4	LO2: Investigate applications and strategies, including data mining, to enable collection, assessment, review, production and presentation of unstructured data	Data Mining Routines	The Fraud Audit: Responding to the Risk of Fraud in Core Business Systems, L. W. Vona, Chapter 7, Data Mining for Fraud
		Understanding the Integrity of	
		the Data	
		Understanding the Norm of the Data Entity	
		Structures and Search	
		Routines	
		Strategies for Data Mining	
5	LO3: Manage and interpret complex or disparate sets of data to underpin business development, interpret risk, understand behavioural patterns, and detect suspicious or irregular	Industry Data	Financial Investigation and Forensic Accounting, G. A. Manning, Chapter 24, Audit Programs
	behaviour	Financial Analysis	A Guide to Forensic Accounting Investigation,
		Types of Fraud Revisited	W. Kenyon and P. D. Tilton, Chapter 13, Potential Red Flags and Fraud Detection Techniques
		Fraud Detection	
		Interpreting Potential Red Flags	
		Professional Scepticism	
		Risk Factors	
		Information Gathering	

6	LO4: Examine issues and key principles of professional digital forensic practice, including chain of custody and best practice procedures	Critical Steps in Gathering Evidence Chain of Custody Evidence Created Introduction to Digital Forensics	A Guide to Forensic Accounting Investigation, W. Kenyon and P. D. Tilton, Chapter 10, Building a Case: Gathering and Documenting Evidence Essentials of Forensic Accounting, M. A. Crain and others, Chapter 11, Digital Forensics
7	LO2: Investigate applications and strategies, including data mining, to enable collection, assessment, review, production and presentation of unstructured data	Payroll Fraud Fraud risk structure Data Analysis Data mining planning	The Fraud Audit: Responding to the Risk of Fraud in Core Business Systems, L. W. Vona, Chapter 12, Payroll Fraud
8	LO2: Investigate applications and strategies, including data mining, to enable collection, assessment, review, production and presentation of unstructured data	Revenue Misstatement Inventory fraud Fraud risk structure Data analysis Data mining planning	The Fraud Audit: Responding to the Risk of Fraud in Core Business Systems, L. W. Vona, Chapter 13, Revenue Misstatement The Fraud Audit: Responding to the Risk of Fraud in Core Business Systems, L. W. Vona, Chapter 14, Inventory Fraud

9	LO2: Investigate applications and strategies, including data mining, to enable collection, assessment, review, production and presentation of unstructured data	Fraud Risk Structure Disbursement Fraud Data Analysis Data mining planning	The Fraud Audit: Responding to the Risk of Fraud in Core Business Systems, L. W. Vona, Chapter 10, Disbursement Fraud
10	LO4: Examine issues and key principles of professional digital forensic practice, including chain of custody and best practice procedures	Forensic Soundness Forensic Analysis Fundamentals Crime reconstruction Networks & the Internet	Handbook of Digital Forensics and Investigation, E. Casey, Chapter 1, Introduction
11	LO5: Diagnose and appraise mechanisms to uncover or recover evidence from digital devices to support litigation and investigations	Scientific Method and Digital Forensics Digital Forensic Analysis Data Gathering And Observation Conclusions and Reporting	Handbook of Digital Forensics and Investigation, E. Casey, Chapter 2, Forensic Analysis

12	LO5: Diagnose and appraise mechanisms to uncover or recover evidence from digital devices to support litigation and investigations	Introduction to electronic discovery	Handbook of Digital Forensics and Investigation, E. Casey, Chapter 3, Electronic Discovery
		Case management	
		Identification of electronic data	
		Forensic Preservation of data	
		Data Processing	
		Production of Electronic Data	

13	LO3: Manage and interpret complex or disparate sets of data to underpin business development, interpret risk, understand behavioural patterns, and detect suspicious or irregular behaviour	Analytical Procedures And Techniques	Statistical Techniques for Forensic Accounting, S. K. Dutta, Chapter 9, Sampling Theory and Techniques
		Sampling Theory	Statistical Techniques for Forensic Accounting, S. K. Dutta, Chapter 6, Transitioning to Evidence
		Statistical Sampling	<i>Forensic Accounting</i> , R. Rufus, L. Miller and W. Hahn, Chapter 8, Transforming Data into Evidence (Part 1)
		Techniques	<i>Forensic Accounting</i> , R. Rufus, L. Miller and W. Hahn, Chapter 9, Transforming Data into
		Non-statistical Sampling Techniques	Evidence (Part 2)
		Probability Schematic	
		Representation of Evidence	
		Probative Value of	
		Evidence Constraints	
		and Limitations of Data Analysis	
		Collection of	
		Data	
		Data Analysis	
		Tools Descriptive	
		Statistics Models for	
		Displaying Data	
		Data Analysis Software	

Benford's Law

Policies and Procedures

Macquarie University policies and procedures are accessible from Policy Central (https://policie s.mq.edu.au). Students should be aware of the following policies in particular with regard to Learning and Teaching:

- Academic Appeals Policy
- Academic Integrity Policy
- Academic Progression Policy
- Assessment Policy
- Fitness to Practice Procedure
- Assessment Procedure
- Complaints Resolution Procedure for Students and Members of the Public
- Special Consideration Policy

Students seeking more policy resources can visit <u>Student Policies</u> (<u>https://students.mq.edu.au/su</u> <u>pport/study/policies</u>). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

To find other policies relating to Teaching and Learning, visit <u>Policy Central</u> (<u>https://policies.mq.e</u> <u>du.au</u>) and use the <u>search tool</u>.

Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: https://students.mq.edu.au/admin/other-resources/student-conduct

Results

Results published on platform other than <u>eStudent</u>, (eg. iLearn, Coursera etc.) or released directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Once approved, final results will be sent to your student email address and will be made available in <u>eStudent</u>. For more information visit <u>ask.mq.edu.au</u> or if you are a Global MBA student contact globalmba.support@mq.edu.au

Academic Integrity

At Macquarie, we believe <u>academic integrity</u> – honesty, respect, trust, responsibility, fairness and courage – is at the core of learning, teaching and research. We recognise that meeting the expectations required to complete your assessments can be challenging. So, we offer you a range of resources and services to help you reach your potential, including free <u>online writing an</u> d maths support, academic skills development and wellbeing consultations.

Student Support

Macquarie University provides a range of support services for students. For details, visit http://stu

dents.mq.edu.au/support/

The Writing Centre

The Writing Centre provides resources to develop your English language proficiency, academic writing, and communication skills.

- Workshops
- Chat with a WriteWISE peer writing leader
- Access StudyWISE
- · Upload an assignment to Studiosity
- Complete the Academic Integrity Module

The Library provides online and face to face support to help you find and use relevant information resources.

- Subject and Research Guides
- Ask a Librarian

Student Services and Support

Macquarie University offers a range of <u>Student Support Services</u> including:

- IT Support
- Accessibility and disability support with study
- Mental health support
- Safety support to respond to bullying, harassment, sexual harassment and sexual assault
- Social support including information about finances, tenancy and legal issues
- <u>Student Advocacy</u> provides independent advice on MQ policies, procedures, and processes

Student Enquiries

Got a question? Ask us via AskMQ, or contact Service Connect.

IT Help

For help with University computer systems and technology, visit <u>http://www.mq.edu.au/about_us/</u>offices_and_units/information_technology/help/.

When using the University's IT, you must adhere to the <u>Acceptable Use of IT Resources Policy</u>. The policy applies to all who connect to the MQ network including students.