ACCG8076

Forensic and Data Analytics

Session 2, In person-scheduled-weekday, North Ryde 2023

Department of Accounting and Corporate Governance

Contents

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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.

Assessment Tasks

Name	Weighting	Hurdle	Due
Critical Essay	40%	No	Week 13
Class Test	20%	No	Week 8
Class Presentation	20%	No	Week 7
Participation	20%	No	Week 3, Week 4, Week 6, Week 10

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 8**

Weighting: **20%**

The class test may include one, or a combination of, the following types of assessment: multiple-choice 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 7**
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, Week 4, Week 6, Week 10**
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.

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[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

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	Fraud theories & White-collar crimes *https://researchleap.com/fraud-theories-white-collar-crimes-lessons-nigerian-banking-industry/*
		Types of Fraud	
		Fraud Theories	*Forensic Accounting and Fraud Investigation for Non-Experts*, H. Silverstone and M. Sheetz, Chapter 2, Fraud in Society
		Fraud Detection/ Internal Control	*Financial Investigation and Forensic Accounting*, G. A. Manning, Chapter 24, Audit Programs
		Interpreting Potential Red Flags	*A Guide to Forensic Accounting Investigation*, W. Kenyon and P. D. Tilton, Chapter 13, Potential Red Flags and Fraud Detection Techniques
		Professional Scepticism	
		Risk Factors	
2	LO2: Investigate applications and strategies, including data mining, to enable collection, assessment, review, production and presentation of unstructured data 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	Introduction to Financial Analysis	*Forensic Accounting and Fraud Investigation for Non-Experts*, H. Silverstone and M. Sheetz, Chapter 5 Fundamental Principles of Financial Analysis
		Key Ratios	*A Guide to Forensic Accounting Investigation*, W. Kenyon and P. D. Tilton, Chapter 10, Building a Case: Gathering and Documenting Evidence
		Industry Data	
		Information Gathering	

3	LO2: Investigate applications and strategies, including data mining, to enable collection, assessment, review, production and presentation of unstructured data	Critical Steps in Gathering Evidence Chain of Custody Evidence Created	*A Guide to Forensic Accounting Investigation*, W. Kenyon and P. D. Tilton, Chapter 10, Building a Case: Gathering and Documenting Evidence (continued) Additional reading materials provided
4	LO2: Investigate applications and strategies, including data mining, to enable collection, assessment, review, production and presentation of unstructured data LO4: Examine issues and key principles of professional digital forensic practice, including chain of custody and best practice procedures	Data Mining Routines Understanding the Integrity of the Data Understanding the Norm of the Data Entity Structures and Search Routines Strategies for Data Mining	*The Fraud Audit: Responding to the Risk of Fraud in Core Business Systems*, L. W. Vona, Chapter 7, Data Mining for Fraud

5	LO2: Investigate applications and strategies, including data mining, to enable collection, assessment, review, production and presentation of unstructured data	Revenue Misstatement	*The Fraud Audit: Responding to the Risk of Fraud in Core Business Systems*, L. W. Vona, Chapter 13, Revenue Misstatement
		Inventory fraud	*The Fraud Audit: Responding to the Risk of Fraud in Core Business Systems*, L. W. Vona, Chapter 14, Inventory Fraud
		Fraud risk structure	
		Data analysis	
		Data mining planning	
6	LO1: Evaluate the theory & principles of application of data analytics skills & techniques relevant to forensic accounting	The Need for Analysis Tools	*Forensic Accounting and Fraud Investigation for Non-Experts*, H. Silverstone and M. Sheetz, Chapter 12, Analysis Tools for Investigators
		Matrices	
		Link Diagrams	
		Social Network Analysis	
		Analysing Networks	
		Data Mining as an Analysis Tool	

7	LO1: Evaluate the theory & principles of application of data analytics skills & techniques relevant to forensic accounting	Introduction to Data Mining	*Statistical Techniques for Forensic Accounting*, S. K. Dutta, Chapter 5, Understanding the Theory and Application of Data Analysis
		Data Classification	*Financial Investigation and Forensic Accounting*, G. A. Manning, Chapter 14, Accounting and Audit Techniques
		Association Analysis	
		Cluster Analysis	
		Outlier Analysis	
		Application: Data Mining to Detect Money Laundering	
		Tracing	
MID SEMESTER BREAK			
8	LO2: Investigate applications and strategies, including data mining, to enable collection, assessment, review, production and presentation of unstructured data	Class Test	
		Payroll Fraud	
		Fraud Risk Structure	
		Data Analysis	

9	LO2: Investigate applications and strategies, including data mining, to enable collection, assessment, review, production and presentation of unstructured data	Disbursement Fraud	*The Fraud Audit: Responding to the Risk of Fraud in Core Business Systems*, L. W. Vona, Chapter 12, Payroll Fraud
		Fraud Risk Structure	*The Fraud Audit: Responding to the Risk of Fraud in Core Business Systems*, L. W. Vona, Chapter 10, Disbursement Fraud
		Data Analysis	
		Data mining planning	
10	LO4: Examine issues and key principles of professional digital forensic practice, including chain of custody and best practice procedures	Introduction to Digital Forensics	*Essentials of Forensic Accounting*, M. A. Crain and others, Chapter 11, Digital Forensics
		Forensic Soundness	*Handbook of Digital Forensics and Investigation*, E. Casey, Chapter 1, Introduction
		Forensic Analysis Fundamentals	
		Crime reconstruction	
		Networks & the Internet	
11	LO5: Diagnose and appraise mechanisms to uncover or recover evidence from digital devices to support litigation and investigations	Scientific Method and Digital Forensics	*Handbook of Digital Forensics and Investigation*, E. Casey, Chapter 2, Forensic Analysis
		Digital Forensic Analysis	
		Data Gathering And Observation	
		Conclusions and Reporting	

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	*Forensic Accounting*, R. Rufus, L. Miller and W. Hahn, Chapter 8, Transforming Data into Evidence (Part 1)
		Techniques	*Forensic Accounting*, R. Rufus, L. Miller and W. Hahn, Chapter 9, Transforming Data into Evidence (Part 2)
		Non-statistical Sampling Techniques	
		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://policies.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 Student Policies (https://students.mq.edu.au/support/study/policies). 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 Policy Central (https://policies.mq.edu.au) and use the search tool.

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 eStudent, (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 eStudent. For more information visit ask.mq.edu.au or if you are a Global MBA student contact globalmba.support@mq.edu.au

Academic Integrity

At Macquarie, we believe academic integrity – 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 online writing and 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 Student Support Services 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
- Student Advocacy 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 http://www.mq.edu.au/about_us/offices_and_units/information_technology/help/.

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