



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

Unit convenor and teaching staff

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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.

Assessment Tasks

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

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: 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 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	<p>Introduction to Fraud</p> <p>Types of Fraud</p> <p>The Need for Analysis Tools</p> <p>Matrices</p> <p>Link Diagrams</p> <p>Social Network Analysis</p> <p>Analysing Networks</p>	<p><i>Forensic Accounting and Fraud Investigation for Non-Experts</i>, H. Silverstone and M. Sheetz, Chapter 2, Fraud in Society</p> <p><i>Forensic Accounting and Fraud Investigation for Non-Experts</i>, H. Silverstone and M. Sheetz, Chapter 12, Analysis Tools for Investigators</p>

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

<p>4</p>	<p>LO2: Investigate applications and strategies, including data mining, to enable collection, assessment, review, production and presentation of unstructured data</p>	<p>Data Mining Routines</p> <p>Understanding the Integrity of the Data</p> <p>Understanding the Norm of the Data Entity</p> <p>Structures and Search Routines</p> <p>Strategies for Data Mining</p>	<p><i>The Fraud Audit: Responding to the Risk of Fraud in Core Business Systems</i>, L. W. Vona, Chapter 7, Data Mining for Fraud</p>
<p>5</p>	<p>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</p>	<p>Industry Data</p> <p>Financial Analysis</p> <p>Types of Fraud Revisited</p> <p>Fraud Detection</p> <p>Interpreting Potential Red Flags</p> <p>Professional Scepticism</p> <p>Risk Factors</p> <p>Information Gathering</p>	<p><i>Financial Investigation and Forensic Accounting</i>, G. A. Manning, Chapter 24, Audit Programs</p> <p><i>A Guide to Forensic Accounting Investigation</i>, W. Kenyon and P. D. Tilton, Chapter 13, Potential Red Flags and Fraud Detection Techniques</p>

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

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

12	LO5: Diagnose and appraise mechanisms to uncover or recover evidence from digital devices to support litigation and investigations	<p>Introduction to electronic discovery</p> <p>Case management</p> <p>Identification of electronic data</p> <p>Forensic Preservation of data</p> <p>Data Processing</p> <p>Production of Electronic Data</p>	<p><i>Handbook of Digital Forensics and Investigation</i>, E. Casey, Chapter 3, Electronic Discovery</p>
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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	<p>Analytical Procedures And Techniques</p> <p>Sampling Theory</p> <p>Statistical Sampling Techniques</p> <p>Non-statistical Sampling Techniques</p> <p>Probability Schematic</p> <p>Representation of Evidence</p> <p>Probative Value of Evidence Constraints and Limitations of Data Analysis</p> <p>Collection of Data</p> <p>Data Analysis Tools Descriptive Statistics Models for Displaying Data</p> <p>Data Analysis Software</p>	<p><i>Statistical Techniques for Forensic Accounting</i>, S. K. Dutta, Chapter 9, Sampling Theory and Techniques</p> <p><i>Statistical Techniques for Forensic Accounting</i>, S. K. Dutta, Chapter 6, Transitioning to Evidence</p> <p><i>Forensic Accounting</i>, R. Rufus, L. Miller and W. Hahn, Chapter 8, Transforming Data into Evidence (Part 1)</p> <p><i>Forensic Accounting</i>, R. Rufus, L. Miller and W. Hahn, Chapter 9, Transforming Data into Evidence (Part 2)</p>
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Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central \(https://policies.mq.edu.au\)](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 \(https://students.mq.edu.au/support/study/policies\)](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 \(https://policies.mq.edu.au\)](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://students.mq.edu.au>

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.