

# MSc Business Analytics

Programme Handbook 2023-24



OLLSCOIL NA  
GAILLIMHÉ

UNIVERSITY  
OF GALWAY

Scoil Ghnó agus  
Eacnamaíochta J.E. Cairnes

J.E. Cairnes School of  
Business and Economics



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## Welcome

We would like to welcome you to the MSc Business Analytics here in the J.E. Cairnes School of Business and Economics at University of Galway and we hope your time here will be enjoyable.

This handbook should cover any queries you may have in regard to issues pertaining to the programme as well as giving guidance on other related issues in the university.

Our contact details are as follows:

Name: Dr Anastasia Griva  
Email: [anastasia.griva@universityofgalway.ie](mailto:anastasia.griva@universityofgalway.ie)

Name: Dr Pierangelo Rosati  
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Name: Ms Melissa O'Hea  
Email: [Melissa.ohea@universityofgalway.ie](mailto:Melissa.ohea@universityofgalway.ie)

Yours sincerely



Dr Anastasia Griva  
Programme Director  
MSc Business Analytics



Dr Pierangelo Rosati  
Programme Director  
MSc Business Analytics



Ms Melissa O'Hea  
Programme Administrator  
MSc Business Analytics

## Programme Objectives

The MSc Business Analytics provides students with the skills and knowledge to manage and develop business analytics within organisations. The programme is designed as a specialist course, which assists students in blending their existing talents with the technological skills and business knowledge needed to use and manage big data and business analytics in modern knowledge-based organisations. The programme is 12 months in duration commencing in September each year.

On successful completion of the programme you will be able to:

- Analyse and solve business problems using applied data analytics tools and techniques
- Transform organisations managing data-driven innovations
- Identify, analyse and solve applied problems in individual and team-based settings
- Apply effective decision-making to global business problems
- Understand how to analyse data, extract insights and transform them into business value
- Acquire proficiency in utilizing relevant Information Technology (IT) for business analytics development

## Programme Structure

The programme is offered on a full-time basis over one academic year. The programme consists of lectures, practical classes, seminars and projects.

## Marks and Standards

To be eligible for the award of the MSc Business Analytics, candidates must successfully complete modules to a total of 90 ECTS (European Credit Transfer and Accumulation System). Students must pass all modules. The pass mark in each module is 40%.

## Award of Honours

Honours are awarded only on completion of the programme according to the following scheme:

- H1 70+% on the aggregate
- H2.1 60-69% on the aggregate
- H2.2 50-59% on the aggregate
- H3 40-49% on the aggregate

Honours are awarded only on the aggregate performance at an Examination as a whole. Honours are not awarded on the basis of results obtained in individual modules.

## List of Modules and Weightings

Semester 1		ECTS
MS805	Database Systems	5
MS5105	Statistical Techniques for Business Analytics	5
MS5107	Business Modelling & Analytics	5
MS5128	Decision Theory, AI and Analytics	5
<b>Elective Modules - Choose two (subject to availability)</b>		
MG557	Strategic Management	5
MS804	Systems Development & Project Management	5
MS806	Business Applications Programming	5

Semester 2		ECTS
MS809	Enterprise Systems	5
MS5106	Data Science and Big Data Analytics	5
MS5114	Advanced Programming for Business	5
MS5126	Philosophy of Information and Information Ethics	5
MS5129	Storytelling Through Data Visualisation	5
MS5130	Applied Analytics in Business and Society	5

Year Long		ECTS
MS5131	Major Business Analytics Project	30

## Semester and Exam Dates 2023-24

Semester 1	Date From	Date To
Teaching	Monday 4 <sup>th</sup> September 2023	Friday 24 <sup>th</sup> November 2023
Study Week	Monday 27 <sup>th</sup> November 2023	Friday 1 <sup>st</sup> December 2023
Semester 1 Exams	Monday 4 <sup>th</sup> December 2023	Friday 15 <sup>th</sup> December 2023
Semester 2	Date From	Date To
Teaching	Monday 8 <sup>th</sup> January 2024	Friday 28 <sup>th</sup> March 2024
Field Trips	Monday 2 <sup>nd</sup> April 2024	Friday 5 <sup>th</sup> April 2024
Study Week	Tuesday 8 <sup>th</sup> April 2024	Friday 12 <sup>th</sup> April 2024
Semester 2 Exams	Monday 15 <sup>th</sup> April 2024	Wednesday 1 <sup>st</sup> May 2024
Autumn Repeat Exams	Tuesday 6 <sup>th</sup> August 2024	Friday 16 <sup>th</sup> August 2024
Holidays		
Easter	Good Friday - 29 <sup>th</sup> March 2024	Easter Monday - 1 <sup>st</sup> April 2024
Bank Holidays	30 <sup>th</sup> October 2023; 5 <sup>th</sup> February 2024; 18 <sup>th</sup> March 2024.	

## Teaching Staff

Please find below, contact details of your lecturers throughout the year (note: this list is subject to change).

Module Code	Module	Lecturer	Email
MG557	Strategic Management	Dr Vanessa Bretas	<a href="mailto:vanessa.bretas@universityofgalway.ie">vanessa.bretas@universityofgalway.ie</a>
MS804	Systems Development and Project Management	Dr Matthew Ajimati Dr Ken Power	<a href="mailto:m.ajimati1@universityofgalway.ie">m.ajimati1@universityofgalway.ie</a>
MS805	Database Systems	Mr Burak Oclu	<a href="mailto:b.oclu@universityofgalway.ie">b.oclu@universityofgalway.ie</a>
MS806	Business Applications Programming	Mr Neil Keane	<a href="mailto:neil.keane@universityofgalway.ie">neil.keane@universityofgalway.ie</a>
MS809	Enterprise Systems	Dr Murray Scott	<a href="mailto:Murray.scott@universityofgalway.ie">Murray.scott@universityofgalway.ie</a>
MS5105	Statistical Techniques for Business Analytics	Prof Tom Acton Mr Burak Oclu	<a href="mailto:thomas.acton@universityofgalway.ie">thomas.acton@universityofgalway.ie</a> <a href="mailto:b.oclu1@nuigalway.ie">b.oclu1@nuigalway.ie</a>
MS5106	Data Science and Big Data Analytics	Dr Anatoli Nachev Dr Anastasia Griva Dr Mahya Ostovar	<a href="mailto:Anatoli.nachev@universityofgalway.ie">Anatoli.nachev@universityofgalway.ie</a> <a href="mailto:Anastasia.griva@universityofgalway.ie">Anastasia.griva@universityofgalway.ie</a> <a href="mailto:Mahya.ostovar@universityofgalway.ie">Mahya.ostovar@universityofgalway.ie</a>
MS5107	Business Modelling and Analytics	Dr Anatoli Nachev	<a href="mailto:Anatoli.nachev@universityofgalway.ie">Anatoli.nachev@universityofgalway.ie</a>
MS5114	Advanced Programming for Business Analytics	Dr Umair ul Hassan	<a href="mailto:Umair.ulhassan@universityofgalway.ie">Umair.ulhassan@universityofgalway.ie</a>
MS5126	Philosophy of Information and Information Ethics	Dr David Kreps	<a href="mailto:david.kreps@universityofgalway.ie">david.kreps@universityofgalway.ie</a>
MS5128	Decision Theory, AI and Analytics	Dr Anastasia Griva	<a href="mailto:Anastasia.griva@universityofgalway.ie">Anastasia.griva@universityofgalway.ie</a>
MS5129	Storytelling Through Data Visualisation	Prof Eoin Whelan	<a href="mailto:Eoin.whelan@universityofgalway.ie">Eoin.whelan@universityofgalway.ie</a>
MS5130	Applied Analytics in Business and Society	Dr Blair Wang	<a href="mailto:Blair.wang@universityofgalway.ie">Blair.wang@universityofgalway.ie</a>
MS5131	Major Business Analytics Project*	Prof Tom Acton Dr Pierangelo Rosati	<a href="mailto:thomas.acton@universityofgalway.ie">thomas.acton@universityofgalway.ie</a> <a href="mailto:Pierangelo.rosati@universityofgalway.ie">Pierangelo.rosati@universityofgalway.ie</a>

\*The Major Project comprises 3 parts:

1. Seminars, by leading industry and academics on topical issues, spanning semesters 1 and 2
2. Research Skills, dealing with how to undertake, write and present research to relevant decision makers, spanning semesters 1 and 2
3. Summer School, a choice of summer schools running onsite for 1 week in May. Details to be provided later."

# Centre for Excellence in Teaching & Learning (CELT) Materials

From the beginning of your program, you should make use of the following materials which are recommended by the University's Centre for Excellence in Learning & Teaching (CELT) <https://www.universityofgalway.ie/celt/>

- A basic introduction to learning online: <https://www.allboardhe.ie>
- Tools for learning (not solely in an online environment):  
[https://www.allboardhe.ie/AAlessons/learningtools/story\\_html5.html?lms=1](https://www.allboardhe.ie/AAlessons/learningtools/story_html5.html?lms=1)
- Virtual learning environments (VLEs) / Learning management systems (LMSs):  
[https://www.allboardhe.ie/AAlessons/VLEstudent/story\\_html5.html](https://www.allboardhe.ie/AAlessons/VLEstudent/story_html5.html)

## Library

The Library provides a variety of study spaces for staff, students, and researchers of the University. These range from individual study spaces for quiet study and group study rooms where students can work together on projects, to our popular reading area aimed at providing a place to take a break from serious study. Information on accessing the library can be found at <https://library.universityofgalway.ie>

The username and password for your Library account is the same as the username and password for your campus account, i.e., what you use to log on to the University network and for your email. For further information on the library, please visit <https://library.universityofgalway.ie>. Training sessions on a variety of topics all designed to help you gain the skills of finding, evaluating, and using information more efficiently are conducted in the library in Semester 1.

Find out how to use the library <https://library.universityofgalway.ie/usingthelibrary/>

Training and resources provided by the library can be found at <https://library.universityofgalway.ie/help/teachinglearning/>

Finding your way around is a very useful information page to help orientate yourself in the library <https://library.universityofgalway.ie/usingthelibrary/findingyourwayaround/>

## Academic Writing Centre (AWC)

The AWC provides virtual one-on-one tutorials and email consultations on essay writing. These are free and available to everyone, regardless of level of experience or grade average. More information is available at <https://library.nuigalway.ie/awc/>

## Computer Facilities (ISS)

The MSc Business Analytics class has access to a shared computer suite located in the Cairnes building (CA244). Access is gained to this suite by swiping your student card and will be given to registered students within the first two weeks of the semester. Further information on how to have your card validated will be shared by email in week 1.

The Information Solutions and Services (ISS) Department provides a comprehensive range of ICT services for students. Please visit <https://www.universityofgalway.ie/information-solutions-services/services-for-students/> for further information on services such as activating your campus account, Wi-Fi, email, software, printing, pc suites, etc.

## Canvas

Canvas is the Virtual Learning Environment (VLE) used in the University of Galway. All course materials, timetables, lectures and tutorials, tutorial groups, course outlines, assignments, announcements and discussion groups will be made available through the VLE. An introduction to Canvas can be found at <https://universityofgalway.instructure.com/courses/27585>

## SAP Certification

Students of the MSc Business Analytics are entitled to participate in SAP certification courses. These certification courses represent a great opportunity for you to gain highly competitive skills. Our strategic alliance with SAP enables us to offer these modules to you as a registered student at the University of Galway. Once you graduate you will no longer be able to avail of them. Full details are provided at <https://www.erp4students.eu>. Please contact Dr Murray Scott for further information [murray.scott@universityofgalway.ie](mailto:murray.scott@universityofgalway.ie).

## Career Development Centre

The [Career Development Centre](#) (CDC) aims to provide students of the University of Galway with a quality career guidance and information service focused on facilitating and empowering you to manage your own career development and make effective career transitions. Support is provided on **Employability, Guidance and Opportunities**.

A large number of [events](#) are held each semester and have many graduate employers on campus. Students and recent graduates can use [Careers Connect](#) to view events, job/internship/funding opportunities and students can also use it to book an appointment with a member of the CDC team at <https://www.universityofgalway.ie/career-development-centre/careersconnect/>.

## J.E. Cairnes School of Business Student Advisor

Ms. Teresa Lydon is the [Student Advisor](#) for J.E. Cairnes School of Business and Economics, and provides support for students during their time at university. The role of the Student Advisor is to provide confidential, non-judgmental support and an empathetic space for students to share their concerns. In addition, a student advisor can offer personal support and advice on topics such as study planning, time management and any personal challenges that may compromise their ability to study.

Teresa is available to students for in person/online meetings and by email ([businessstudentadvisor@universityofgalway.ie](mailto:businessstudentadvisor@universityofgalway.ie)) and telephone (+353860836646) from Monday to Thursday, 9am-1.30pm. This is a confidential service.

## Academic and Wellness Support

Being involved in a society, club or in volunteering programmes is a fun and interesting way to meet new people and build friendships. Having a sense of belonging and connection with others is a proven way to help you mentally and physically in your learning journey. You will find some key University of Galway student support services at the links below:

- Student Services: <https://www.universityofgalway.ie/student-services/>
- The HUB (Wellness, Entertainment, Leisure & Lifestyle): <http://www.hub.nuigstudents.ie/>
- Student's Union: Welfare and Equality Officer, 086 3853659 / [www.su.nuigalway.ie](http://www.su.nuigalway.ie/) / [su.welfare@nuigalway.ie](mailto:su.welfare@nuigalway.ie)

## Parking and Bicycles

If you are driving to campus, it is essential that you get a temporary parking permit and/or permanent student permit before you park in the university grounds. Without the permit you will be clamped, and the release fee is €60.00. **The parking management company makes no exceptions.** A Park and Ride facility is available from the Dangan car park.

You will find all details on parking in the University on this link <https://www.universityofgalway.ie/buildings/service-helpdesk/parking-get-to-around/>.

Bicycle racks are located at the back of the Cairnes Building.

The secure bicycle compound (see the [Cycling Map](#) for location) is located to the west of the Arts Science Building. Anyone with a valid in-date student /staff University ID card can access the compound. You must also swipe out. As part of ongoing improvements to cycle facilities additional covered bicycle racks have been installed in several places around campus.

## International Students - Before you arrive

University of Galway looks forward to welcoming all International Students to Galway. These are the steps to take to ensure that your arrival goes as smoothly as possible:

Pre-Arrival Checklist	
<b>1. Accept your offer</b>	Refer to your offer letter for instructions on how to accept your offer. If you are not sure about how to accept your offer, please email <a href="mailto:internationaladmissions@universityofgalway.ie">internationaladmissions@universityofgalway.ie</a> for postgraduate queries and <a href="mailto:internationalmarketingrecruitment@universityofgalway.ie">internationalmarketingrecruitment@universityofgalway.ie</a> for undergraduate queries.
<b>2. Pay your deposit or tuition fee</b>	Refer to your offer letter for instructions on how to pay any deposit that may be required by the University. The rules regarding payment and deposits may vary depending on the programme you have been accepted to. Your initial deposit will be deducted from your tuition fee, which unless otherwise stated in your letter of offer, is to be paid in full before you can register as a student. Please see <a href="https://www.universityofgalway.ie/student-fees/international/">https://www.universityofgalway.ie/student-fees/international/</a> for more information.
<b>3. Purchase Health Insurance</b>	Proof of medical expenses insurance is required for all non-EU students for immigration purposes. Please refer to the <a href="#">Health Insurance</a> section of our website for more information.
<b>4. Prepare your immigration/travel documents</b>	All non-EU/EEA nationals are subject to immigration control at the point of entry to the Irish State, so please ensure you comply fully with <a href="#">Irish Immigration Regulations</a> and that you have all the required documentation ready for inspection by immigration officials.  Immigration officials at your port of arrival may request documentary evidence from you that you will be attending NUI Galway. You can use your offer letter as proof of this.
<b>5. Review your Pre-Arrival Guide</b>	Download the <a href="#">International Guide here</a> , it has all the information you might need as you transition into life at the University of Galway.
<b>6. Book your accommodation</b>	Please refer to the <a href="#">accommodation section of our website</a> for information on how to book student accommodation.
<b>7. Make travel arrangements</b>	Check the <a href="#">Academic Calendar</a> for your term dates and <a href="#">How to Find Us</a> for information and advice on getting to Galway.
<b>8. Pack your things</b>	Check out the <a href="#">list of useful items to pack</a> for Galway. The most important thing to remember is to pack light. Make a list of things you will actually need to see you through the first few weeks in Galway and discard everything else.
<b>9. Plan your budget</b>	It is important to understand all the costs involved, including <a href="#">tuition fees and day-to-day living costs</a> . Budgeting is one of the key skills you will develop during your time at university and once you learn how to manage your money, you will be able to enjoy university life to the full.
<b>10. What to Expect on Arrival into Ireland</b>	At the port of entry, immigration officers will want to ensure you meet the entry requirements as an international student. Despite being already granted your visa, you need the following documents in your hand luggage <ul style="list-style-type: none"> <li>• Photocopies of your passport.</li> <li>• Plane tickets.</li> <li>• Two copies of your offer and acceptance letters.</li> <li>• Copy of medical insurance policy.</li> </ul>



<b>11. Getting to Galway</b>	<p>Galway city is served by an extensive <b>public transport</b> service from Dublin, Shannon and Knock airports, including the following public transport options</p> <p><b>From Shannon:</b></p> <ul style="list-style-type: none"><li>• <a href="#">Bus Éireann</a> provides a direct service from Knock airport to Galway. Travel time is approximately 2 hours.</li></ul> <p><b>From Dublin:</b></p> <ul style="list-style-type: none"><li>• Regular direct transfers from Dublin Airport operated by <a href="#">Bus Éireann</a>, <a href="#">Go Bus</a> and <a href="#">Citylink</a>, with fully air-conditioned coaches and free Wi-Fi. Travel time is approximately 2 hours, 15 minutes.</li><li>• <a href="#">Irish Rail</a> offers a direct transfer from Dublin City. Travel time is 2 hours, 10 minutes (<b>Note: Irish Rail does not provide a service from Dublin airport</b>)</li></ul> <p><b>From Knock:</b></p> <ul style="list-style-type: none"><li>• <a href="#">Bus Éireann</a> provides a direct service from Knock airport to Galway. Travel time is approximately 2 hours.</li></ul> <p><b>Campus Entrances and Car Parking</b> Click <a href="#">here</a> for a guide to NUI Galway campus entrances and parking.</p> <p><b>Bikeshare</b> Click <a href="#">here</a> for information</p> <p><b>Campus Maps</b></p> <ul style="list-style-type: none"><li>• <a href="#">View Google Map of Campus</a></li><li>• <a href="#">View PDF Campus Map</a></li></ul>
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## 12. Mobile Sim Cards

Please ensure your mobile phone is unlocked and is compatible to accept an international SIM card. Your current network provider can provide you with your unlocking code. Your phone may be unlocked already; you can check this by putting in a different SIM card to your current network to see if it works.

SIM cards are easily purchased in Galway City Centre from different providers. If you are self-isolating, you can order a SIM card to be delivered from Tesco Mobile.

Vodafone is a common option for students to get. The recommended plan is "Vodafone X" as it is the best value for money for International students. You will need to sign up for the plan as follows:

### Set Up:

1. Pop your new Vodafone sim into your unlocked phone.
2. Text UNLIMITED to 50222 to avail of our Vodafone X student plan.

### What do I get?

- Unlimited data (there is no cap on data, it's truly unlimited)
- Unlimited any network texts
- 100 any network minutes & unlimited minutes from 3pm on Fridays until 11.59pm on Sundays
- Includes roaming across Europe

### Cost:

The plan costs €20 for 28 days. To avail of the student offer, you will need to top up by €20 in one go. If you want to add more credit and do not want to reactivate/reset your offer, you will need to top up by €5, €10 or €15.

### How do I top up?

- Online
- On the My Vodafone app available on the Apple App Store or Google Play Store
- In any Vodafone stores
- Most convenience stores and supermarkets also offer top up (Spar, Mace, Londis, Centra, Supervalu, Tesco etc.). You should ask at the till for '€X Vodafone Credit'

### How do I find my number?

- Make a call or send a text to a friend

### International Calls

You can purchase an add on that will give you international minutes to eligible countries to use for 28 days for a flat fee.

### Help?

There are several other mobile phone service providers in Ireland offer a range of monthly plans. By topping up mobile credit each month, students can avail of unlimited data and texts with certain mobile phone companies.

<p><b>13. Banking</b></p>	<p>To open an Irish bank account with one of the main banks in Ireland, you will need to have an address in Ireland and have completed your online registration at University of Galway.</p> <p>Allied Irish Bank (AIB) or Bank of Ireland (BOI) are the two main Irish banks and to open an account with either you will need the following:</p> <ul style="list-style-type: none"> <li>• Valid Passport</li> <li>• Copy of your University of Galway registration statement ( which shows your home address and your term address in Galway.</li> <li>• You may also be asked for your Student ID card</li> </ul> <p><a href="#">Allied Irish Bank</a> <a href="#">Bank of Ireland</a></p> <p>BOI has a student branch on campus, located at the end of the Arts and Science Concourse. They specialise in dealing with student accounts and loans.</p> <p><b>Digital Banking</b></p> <p>You may also consider opening a digital bank account such as <i>Revolut</i>, <i>N26</i> or <i>Money Jar</i> before coming to Ireland.</p> <p>Money Jar is an Irish company whose client funds are held in a tier 1 Irish bank and are fully regulated by the Central Bank of Ireland. It provides you with an Irish IBAN so you can get paid into your Money Jar account plus pay all of your day-to-day bills, make mobile and online payments with your MJ Mastercard.</p> <p>You can sign up from anywhere in the world by downloading the app and all you need to open an account is a valid government issued identification document (from any country) and an Irish postal address. This address is used to receive your card in the post so it doesn't have to be your permanent residential address.</p> <p>University of Galway students can use the sign-up code <b>52441</b> to set up an account. Further details are available here.</p> <p><b>Please note that students can bank free of charge with Irish banks. Online accounts via apps will have transaction fees and possible monthly fees so it is advisable to check this before signing up.</b></p>
<p><b>14. Registering with Immigration (GNIB)</b></p>	<p>All new undergraduate and postgraduate students attending University of Galway for the first time will receive an appointment to attend GNIB from the International Office. <b>The International Office will be contacting you directly by email with your appointment date and time (dates of appointments will be in October).</b> All non-EU/EEA nationals who have entered the State must register with their local Garda National Immigration Bureau office within 90 days of arrival.</p>
<p><b>15. Keep in touch :-)</b></p>	<p>We hope you find this pre-arrival section of our website useful in helping you prepare for your stay at the University of Galway. If you are unsure about anything, please contact the International Office. t: + 353 91 495277 e: <a href="mailto:international@universityofgalway.ie">international@universityofgalway.ie</a></p>

# Module Descriptions

## **MG557 - Strategic Management**

The objective of this module is to provide exposure to the concepts, theories and techniques of strategic management in a business context and application of strategic management concepts across a wide range of business settings. Understand the design, implementation and maintenance of strategic planning systems and strategic thinking. Developing an in-depth understanding of some of the key theoretical standpoints in the literature on strategic management. Developing your ability to critically review research and journal articles Improving your writing, presentational and research skills. Promoting the development of case study-based analysis through the application of seminal strategic management frameworks and theories.

## **MS804 – Systems Development and Project Management**

The objective of this course is to develop in students an understanding of the fundamentals of project management within the context of information systems development. Topics include the systems development life cycle, project integration, requirements analysis and scope management, time management, cost management, risk management, communications management etc. In addition, different IS development methods will be covered (Waterfall, SDLC, RAD, and Agile methods) as well as business process modelling techniques (e.g. DFDs).

## **MS805 - Database Systems**

The objective of this module is to provide students with an understanding of business and technical issues in the development of database systems. Topics may include: database management systems; data modelling techniques e.g. normalisation, entity-relationship modelling, class diagrams; logical and physical database design; data quality and integrity; data definition; Structured Query Language (SQL); transaction management; distributed databases; emerging topics and issues.

## **MS806 - Business Applications Programming**

The objective of the course is to develop your knowledge and competence in object-oriented programming for the business environment using visual C# programming language.

## **MS809 - Enterprise Systems**

The objective of this course is to develop students' understanding of Enterprise Systems in business. Topics include: Information systems in functional areas including information systems to support finance, marketing, human resources and manufacturing; ERP systems; frameworks for deploying ERP; Benefits realisation in the ERP setting; enterprise architecture management; ERP Implementation; Supply Chain Management (SCM); Digital Transformation and emerging directions in Enterprise Systems such as fintech innovation, cryptocurrencies, blockchain, gamification and enterprise personal analytics.

## **MS5105 - Statistical Techniques for Business Analytics**

The objectives of this course are to build the knowledge and skills required to apply quantitative techniques to analyse business data, and interpret and present results from such analyses. Topics may include: descriptive analysis; visualisation and charting; how to work with various data types and how they relate to statistical tests; how to know what analytical tests to run; how to read data output; how to interpret and report results; business data correlations, regression; t-tests and various analyses of variance methods; factor analysis; parametric and non-parametric analyses; other statistical techniques for business analytics.

## **MS5106 - Data Science & Big Data Analytics**

This module aims to provide students with knowledge required to become active contributors to big data analytics projects and develop specific skills needed to use and implement big data analytics technology and tools. Topics may include: big data technology and tools: Hadoop, MapReduce, Yarn; Hadoop ecosystem: HBase, Hive, Pig; Spark; big data analytics project life cycle; creating business value with big data. The module focuses on how technologies can be integrated and used in a business intelligence environment through case studies of big data applications.

## **MS5107 - Business Modelling & Analytics**

The objective of this course is to develop students understanding of the role of business analytics in decision making and equip them with solutions used to create scenarios, understand realities, and predict future states. The course focuses on three types of business analytics: descriptive analytics used to gain insight from historical data; predictive analytics used to forecast future business performance; and prescriptive analytics used to recommend decisions using optimisation, simulation etc. Students are introduced to core concepts and technologies of business analytics, such as modelling, analysis, optimisation; data exploration and data mining; forecasting models; decision trees; neural networks; clustering techniques; etc. The course uses real business cases, to illustrate the application and interpretation of these methods. An important feature of the course is the use of MS Excel, an environment familiar to business analysts. All discussed models are provided by the Excel add-ins Analytic Solver Platform and XLMiner plus illustrative examples.

## **MS5114 - Advanced Programming for Business Analytics**

Understanding key computational models and concepts for business analytics is important in today's data-driven business environment. In this module, learners will be introduced to computational thinking, experimental methodologies,

and empirical methods for training, validation, and testing models within an analytics context. This module will provide learners with a working knowledge of how to prepare datasets, present data visualisations, and support decision-making using data analysis programming.

***MS5126 – Philosophy of Information and Information Ethics***

The objective of this course is to develop in students an introductory understanding of philosophy (especially ethics) underpinning Information Systems (IS) research and practice, theory as it is developed and applied in IS, and Research Methods used in IS practice, all whilst learning how to find, read, cite and reference academic papers. It is thus intended as a primer for scholarly activity throughout the four year degree.

***MS5128 – Decision Theory, AI and Analytics***

The objective of this course is to introduce students to the different aspects of decision theory, artificial intelligence (AI), and analytics for IS, and specifically how these apply to business.

***MS5129 – Storytelling Through Data Visualisation***

We live in a world increasingly dominated by data. Data are used to make important decisions, to shape business and political policy, and to understand the fundamental workings of nature. But data can be complicated, mysterious, and difficult to understand. It is more important than ever to be able to communicate data in a way that is comprehensible and memorable. This is the essence of data storytelling. Data storytelling is a skill, and the goal of this course is to help you improve this skill.

***MS5130 – Applied Analytics in Business and Society***

In today's digitally enabled world, businesses are collecting more data than they know what to do with. Using the R programming language, which has become the industry standard for statistical analytics, this module will focus on turning large datasets into useful insights. The focus is applying statistical techniques to real datasets using R, rather than the mathematical details. Students will explore the R, RStudio, and R packages; learn how to programme basic statistics; create attractive, intuitive statistical graphics; write user-defined functions; combine and reshape multiple datasets; build linear, generalised linear, and nonlinear models; assess the quality of models and variable selection; analyse univariate and multivariate time series data; and learn how to write-up data analyses.

***MS5131 – Major Business Analytics Project***

This project is a capstone for the Masters degree and students will be expected to demonstrate a full depth and breadth of skills, integrating all learning across the whole programme. The project will normally be undertaken in a combination of both individual and group assignments. Projects will be based on significant topic in the field of business analytics.

# What is Plagiarism and how is it defined in the University?

**\*\*A session on plagiarism will be scheduled early in the semester. Attendance is mandatory\*\***

Plagiarism is taking the credit for someone else's ideas and making out that you thought of these ideas yourself. This is a form of intellectual theft. In third level colleges, plagiarism is a serious offence. It merits a severe penalty. In some colleges, the student loses the entire marks for that assignment. In other colleges, the student is brought before the disciplinary committee. You need to be aware of how serious an offence plagiarism is, and take care to avoid it in your assignments, and particularly in a thesis.

**Plagiarism is defined by the Academic Council of the University as follows:**

1. Plagiarism is the act of copying, including or directly quoting from, the work of another without adequate acknowledgement. The submission of plagiarised materials for assessment purposes is fraudulent and all suspected cases will be investigated and dealt with appropriately by the University following the procedures outlined here [University of Galway Academic Integrity Policy located at <https://www.universityofgalway.ie/registrar/policies-forms/#tab2>] and with reference to the Disciplinary Code.
2. All work submitted by students for assessment purposes is accepted on the understanding that it is their own work and written in their own words except where explicitly referenced using the accepted norms and formats of the appropriate academic discipline.
3. Whilst some cases of plagiarism can arise through poor academic practice with no deliberate intent to cheat, this still constitutes a breach of acceptable practice and will be appropriately investigated and acted upon (See University of Galway Code of Practice for Dealing with Plagiarism at <https://www.universityofgalway.ie/registrar/policies-forms/#tab2>).

The J. E. Cairnes School of Business & Economics has two plagiarism advisors, Dr Anatoli Nachev and Ms Mairéad Hogan, who are responsible for dealing with suspected and reported cases of plagiarism and acting in accordance with the University's Code of Practice for Dealing with Plagiarism. Please see <https://www.universityofgalway.ie/registrar/policies-forms/#tab2> for further details.

## Examples of plagiarism

- Submitting work as your own for assessment, which has, in fact, been done in whole or in part by someone else or submitting work which has been created artificially, e.g., by a machine or through artificial intelligence. This may be work completed for a learner by a peer, family member or friend or which has been produced, commercially or otherwise, by a third party for a pre-agreed fee (contracted); it may be work in which the learner has included unreferenced material taken from another source(s) (plagiarism); it may be use of a ghost writer to carry out assessed work which is then submitted as the learner's own work; it may be using a previous assignment as submitted by a peer claiming it to be your work; it may be that references have been falsified to give credibility to the assignment and to show evidence of research; it may be a claim for authorship which is false
- Cheating in exams (e.g., crib notes, copying, using disallowed tools, impersonation)
- Cheating in projects (e.g., collusion; using 'essay mills' to carry out the allocated part of the project)
- Selling or simply providing previously completed assignments to other learners
- Misrepresenting research (e.g., data fabrication, data falsification, misinterpretation)
- Bribery, i.e., the offering, promising, giving, accepting or soliciting of an advantage as an inducement for an action
- Falsification of documents
- Improper use of technology, laboratories, or other equipment
- Helping a peer to do their assignment which develops into the helper doing some or all of the assignment
- Sharing or selling staff or institutional intellectual property (IP) with third parties without permission
- Getting someone else to write your essay, report, assignment or thesis.
- Taking material written by someone else, putting your own name to it, and handing it in as your own work.
- Copying bits and pieces out of the work of another student/author and including them in your own essay, report or thesis without acknowledging the source.
- Taking ideas, theories, direct quotations, diagrams, statistics, tables, photographs, graphs from a published source or the Internet, and including them in your assignment without stating a source.
- Allowing another student to copy your work is also considered to be plagiarism and both students are subject to penalty.
- Plagiarised work in group assignments or projects can be caused by the contribution of a single student, but the group submits and is therefore fully responsible for that. The penalty affects all students in the group.

## Examples of plagiarism from published sources

- Direct quotation: Using the exact words of another person without giving them credit for it. Please note that if you use the exact words, you **MUST** enclose them in quotation marks **AND** cite the source using the appropriate style. Citing the source on its own is not sufficient.
- Paraphrasing: Putting someone else's ideas into your own words without giving them credit by citing the source for the ideas.
- Using statistics, tables or a graphic (diagram, figure, picture and so on) without citing a source.
- Summarising material from a source without acknowledging where the ideas came from.

Fair use: Remember, you cannot base your thesis on chunks of material "borrowed" from your reading materials. Instead, you must form your own opinions about the thesis topic and use your reading materials fairly to support your own ideas, making sure to cite the sources of everything you use.

To avoid plagiarism, you must give credit whenever you use: another person's idea, opinion, or theory; any facts, statistics, graphs, drawings - any pieces of information whatsoever that are not common knowledge; quotations of another person's actual spoken or written words; or paraphrase of another person's spoken or written words

Common Knowledge: A lot of information is considered "common knowledge", so you do not have to quote a source for it. For example, Galileo discovered that the earth goes around the sun. Up until his discovery, everyone thought that the sun circled the earth. Even though this new idea was thought up by Galileo, we do not need to cite him as the source - this information (fact) has become common knowledge, something that "everyone knows". As a rule of thumb, any fact that you would be able to find in ten different books, you do not need to cite a source for it. Such facts are "common knowledge".

You must, however, cite a source for any new facts; say for example recent information about the impact of global warming on the climate of Ireland. It is only facts that have become common knowledge that you can use without citing a source.

You must always cite a source for opinions - someone's personal point of view about a fact.

For example, if you are doing an assignment/report/thesis on a social issue, like equality in the workplace, you will probably draw facts from a range of published works, use ideas drawn from your own experiences, and may carry out some primary research like a survey based on a questionnaire. You will need to cite sources for all the opinions and facts taken from your reading materials and explain clearly what information comes from your survey.

## Citation and Referencing

Remember, everything you write must be verifiable. If you cite no source for content in your assignment/report/thesis, this means you are claiming you thought of the ideas yourself. But, fresh ideas are rare. Most of our ideas have already been thought of by someone else, or they are based on the ideas of someone else. You need to acknowledge that by citing a source for any ideas you find in your reading materials. You do this by in-text citation linked to a List of Works Cited, or a Reference List placed at the end of your thesis, essay or report.

Each academic discipline has its own method for citing sources. You do not have to know all these different styles. Just be aware that they exist.

The following texts are useful for citing and referencing and are available in the University library and the University bookshop:

Pears, R. and Shields, G. (2004) "Cite them right: referencing made easy", Northumbria University, Newcastle upon Tyne, England ISBN: 1-904794-02-5

Pears, R. and Shields, G. (2005) "Cite them right: the essential guide to referencing and plagiarism", Northumbria University, Newcastle upon Tyne, England ISBN: 0-955121-60-4

## Resources

The library has a series of guides on academic integrity, including information on what plagiarism is, how to avoid it and good practice for citing and referencing. You are advised to familiarise yourself with these.

<https://libguides.library.universityofgalway.ie/CitingReferencing>

You can earn a digital badge from All Aboard by completing this short online course on Referencing, citations and Publications.

<https://www.allaboardhe.ie/referencing/>

**MSc Business Analytics**  
**Semester I Timetable 2023/24**

Time	Monday	Tuesday	Wednesday	Thursday	Friday
09.00-10.00					
10.00-11.00					<b>MS5128</b> Decision Theory, AI and Analytics <i>AUC-G002 (1MBY1, 1AY1)</i>
11.00-12.00				<b>MS806</b> Business Applications Programming CA111 <i>(1MBY1 / 1CYB1)</i>	<b>MS5128</b> Decision Theory, AI and Analytics <i>AUC-G002 (1MBY1, 1AY1)</i>
12.00-13.00				<b>MS806</b> Business Applications Programming CA111 <i>(1MBY1 / 1CYB1)</i>	
13.00-14.00					
14.00-15.00		<b>MS5107</b> Business Modelling and Analytics <i>ENG-G017 (1MBY1)</i>			<b>MS5105</b> Statistical Techniques for Business Analytics <i>Fottrell Theatre (1MBY1)</i>
15.00-16.00		<b>MS5107</b> Business Modelling and Analytics <i>ENG-G017 (1MBY1)</i>			<b>MS5105</b> Statistical Techniques for Business Analytics <i>Fottrell Theatre (1MBY1)</i>
16.00-17.00			<b>MG557</b> Strategic Management <i>AMB-1023 Mairtin O Tnuthail Theatre</i>	<b>MS805</b> Database Systems <i>AUC-G002 (1MBY1 / 1CYB1)</i>	
17.00-18.00			<b>MG557</b> Strategic Management <i>AMB-1023 Mairtin O Tnuthail Theatre</i>	<b>MS805</b> Database Systems <i>AUC-G002 (1MBY1 / 1CYB1)</i>	
18.00-19.00	<b>MS804</b> Systems Development and Project Management <i>O'Flaherty Theatre (1MIS1, 1MBY1, 1CYB1)</i>				
19.00-20.00	<b>MS804</b> Systems Development and Project Management <i>O'Flaherty Theatre (1MIS1, 1MBY1, 1CYB1)</i>				

**Additional workshops/labs will be scheduled throughout the semester**



**Room locations**

O'Flaherty Theatre: Concourse (Arts/Science)

ENG-G017: Alice Perry Engineering Building

AMB-1023 Mairtin O Tnuthail Theatre / Fottrell Theatre: Arts Millennium Building

CA111: Aras Cairnes

AUC-G002: Aras Ui Chathail

**Campus Map:** [https://www.universityofgalway.ie/media/buildingsoffice/files/mapsrebranded2023/University-of-Galway-Campus\\_A4-Map\\_26012023.pdf](https://www.universityofgalway.ie/media/buildingsoffice/files/mapsrebranded2023/University-of-Galway-Campus_A4-Map_26012023.pdf)