UNSW Course Outline

INFS5705 Artificial Intelligence for Business Analytics in Practice - 2024

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General Course Information

Course Code : INFS5705
Year : 2024
Term : Term 2
Teaching Period : T2
Is a multi-term course? : No
Faculty : UNSW Business School
Academic Unit : School of Information Systems and Technology Management
Delivery Mode : In Person
Delivery Format : Standard
Delivery Location : Kensington
Campus : Sydney
Study Level : Postgraduate
Units of Credit : 6

Useful Links

Handbook Class Timetable

Course Details & Outcomes

Course Description

Artificial intelligence (AI) and Machine learning (ML) have transformed how businesses and

organisations operate in an increasingly competitive environment. Although AI provides organisations with opportunities to convert data into actionable insights to address business problems and make better and more efficient data-driven decisions, there is still a talent gap regarding this critical skillset. In response to the growing need for AI-related skills in organisations, INFS5705 course is designed to equip students with the necessary knowledge and competencies in AI-driven analytics.

This course adopts an active learning and Problem-Based Learning (PBL) approach, and places students' learning experience at the forefront. Through extensive hands-on experience using state-of-the-art AI techniques (e.g., natural language processing, pattern recognition and machine learning algorithms) to analyse structured and unstructured data in business contexts, this course engages students in extensive hands-on exercises on AI-driven analytics to address real-world business problems.

Building on the foundational knowledge acquired in NFS5730, or COMM5007, students will consolidate their analytical competencies and critical thinking on how to apply AI and ML techniques using a variety of software such as R, Python, and SAS Viya for automated ML, to conduct analytics applied to real world business problems.

On successful completion of this course, students will gain highly demanded skillsets to tackle challenges and solve complex business problems when they enter the workplace.

Course Aims

The focus of this proposed course lies in harnessing AI-driven analytics through active learning and a Problem-Based Learning to engage students in extensive hands-on exercises on AI-driven analytics to address real-world business problems and make informed business decisions.

The course places students' learning experience at the forefront. Through extensive hands-on experience using state-of-the-art AI techniques (e.g., natural language processing, pattern recognition and machine learning algorithms) to analyse structured and unstructured data in business contexts, this course engages students in extensive hands-on exercises on AI-driven analytics to address real-world business problems.

In this course, students will discuss and apply ethical implications aligned with SDGs (Sustainable Development Goals) principles and objectives when implementing AI-driven analytics and articulate their impacts on individuals, organisations and society at large.

Relationship to Other Courses

This course complements many majors and courses across the university, given AI's growing role and consideration in business, society and organisations. The course will provide students with a solid understanding of the fundamental concepts of AI and key technologies commonly used in industry. This course further develops students' data analytic skills, building on the content taught in INFS5730 (Social Media Analytics in Practice) or COMM5007 (Coding for Business), and consolidates their critical thinking to apply these technologies to tackle & solve real-world business problems.

Course Learning Outcomes

Course Learning Outcomes	Program learning outcomes
CLO1 : Identify and apply AI-driven business analytics technologies, their underlying concepts and business applications.	• PLO1 : Business Knowledge • PLO2 : Problem Solving • PLO4 : Teamwork
CLO2 : Consolidate analytical and critical thinking skills to solve real-world business problems using AI-driven solutions.	• PLO1 : Business Knowledge • PLO2 : Problem Solving • PLO4 : Teamwork
CLO3 : Apply Machine Learning algorithms to analyse structured and unstructured data, solve real-world organisational problems to make data-driven decisions.	• PLO1 : Business Knowledge • PLO2 : Problem Solving • PLO4 : Teamwork
CLO4 : Discuss ethical implications aligned with SDGs (Sustainable Development Goals) principles/objectives when implementing AI-driven business analytics and articulate their impacts on individuals, organisations and society at large.	• PLO1 : Business Knowledge • PLO5 : Responsible Business Practice • PLO7 : Leadership Development
CLO5 : Develop collaborative teamwork skills for solving AI-driven business problems.	• PLO2 : Problem Solving • PLO3 : Business Communication • PLO4 : Teamwork • PLO7 : Leadership Development

Course Learning Outcomes	Assessment Item
CLO1 : Identify and apply AI-driven business analytics technologies, their underlying concepts and business applications.	• Individual Assignment I • Individual Assessment II • Team Project (Report + Pitch) • Self-Reflection on the Team Project
CLO2 : Consolidate analytical and critical thinking skills to solve real-world business problems using AI-driven solutions.	• Individual Assignment I • Individual Assessment II • Team Project (Report + Pitch) • Self-Reflection on the Team Project
CLO3 : Apply Machine Learning algorithms to analyse structured and unstructured data, solve real-world organisational problems to make data-driven decisions.	• Individual Assignment I • Individual Assessment II • Team Project (Report + Pitch)
CLO4 : Discuss ethical implications aligned with SDGs (Sustainable Development Goals) principles/objectives when implementing AI-driven business analytics and articulate their impacts on individuals, organisations and society at large.	• Self-Reflection on the Team Project • Individual Assignment I • Individual Assessment II • Team Project (Report + Pitch)
CLO5 : Develop collaborative teamwork skills for solving AI-driven business problems.	• Team Project (Report + Pitch)

Learning and Teaching Technologies

Moodle - Learning Management System | Microsoft Teams

Assessments

Assessment Structure

Assessment Item	Weight	Relevant Dates	Program learning outcomes
Individual Assignment I Assessment Format: Individual	30%	Start Date: Not Applicable Due Date: 01/07/2024 05:00 PM	• PLO1 : Business Knowledge • PLO2 : Problem Solving • PLO3 : Business Communication • PLO5 : Responsible Business Practice
Individual Assessment II Assessment Format: Individual	30%	Start Date: Not Applicable Due Date: 08/07/2024 05:00 PM	• PLO1 : Business Knowledge • PLO2 : Problem Solving • PLO3 : Business Communication • PLO5 : Responsible Business Practice
Team Project (Report + Pitch) Assessment Format: Group	30%	Start Date: Not Applicable Due Date: 29/07/2024 05:00 PM	• PLO1 : Business Knowledge • PLO2 : Problem Solving • PLO3 : Business Communication • PLO4 : Teamwork • PLO5 : Responsible Business Practice • PLO6 : Global and Cultural Competence • PLO7 : Leadership Development
Self-Reflection on the Team Project Assessment Format: Individual	10%	Start Date: Not Applicable Due Date: 05/08/2024 05:00 PM	• PLO3 : Business Communication • PLO1 : Business Knowledge

Assessment Details

Individual Assignment I

Assessment Overview

Hands-On Assignment using Python or R to apply AI techniques to conduct business analytics. In this Hands-On Assignment, students are required to conduct AI-driven analytics on both structured and unstructured data to solve a real-world business problem. It also includes data preparation/cleaning as a pre-processing step. Datasets include structured data such as

purchase transactions on an e-commerce website, and unstructured data such as text, images or videos from social media. Students are required to use TWO (2) Machine Learning Algorithms suitable to achieve a given business objective, one supervised learning approach and one unsupervised learning approach.

Course Learning Outcomes

- CLO1 : Identify and apply AI-driven business analytics technologies, their underlying concepts and business applications.
- CLO2 : Consolidate analytical and critical thinking skills to solve real-world business problems using AI-driven solutions.
- CLO3 : Apply Machine Learning algorithms to analyse structured and unstructured data, solve real-world organisational problems to make data-driven decisions.
- CLO4 : Discuss ethical implications aligned with SDGs (Sustainable Development Goals) principles/objectives when implementing AI-driven business analytics and articulate their impacts on individuals, organisations and society at large.

Detailed Assessment Description

Detailed requirements of the Individual Assignment I will be communicated on Moodle and discussed in the Week 1 Seminar.

Assessment Length

3000 words

Assignment submission Turnitin type

This assignment is submitted through Turnitin and students can see Turnitin similarity reports.

Individual Assessment II

Assessment Overview

Problem formulation, discussion of data analysis challenges and proposed solutions to a real-world business problem.

In this assignment students are required to clearly define and explain the business problem faced by the company to demonstrate a good understanding of the business context and explore how companies harness AI to solve similar business problems. This includes conducting background research to explain how AI has been applied in industry to conduct analytics to solve similar business problems, along with justifications with reference papers and examples from industry. Then explain the rationale behind the selection of the AI/ML techniques for the analysis and how these methods will be applied, discuss the methodology they will implement in the project, and discuss the design frameworks. Another component in this assignment is to explain

the challenges they might encounter during the data analysis and how they will perform data cleaning and pre-processing. Then, they articulate the proposed solutions and the expected outcomes.

Course Learning Outcomes

- CLO1 : Identify and apply AI-driven business analytics technologies, their underlying concepts and business applications.
- CLO2 : Consolidate analytical and critical thinking skills to solve real-world business problems using AI-driven solutions.
- CLO3 : Apply Machine Learning algorithms to analyse structured and unstructured data, solve real-world organisational problems to make data-driven decisions.
- CLO4 : Discuss ethical implications aligned with SDGs (Sustainable Development Goals) principles/objectives when implementing AI-driven business analytics and articulate their impacts on individuals, organisations and society at large.

Detailed Assessment Description

Detailed requirements of the Individual Assignment II will be communicated on Moodle and discussed in the Week 1 Seminar.

Assessment Length

2000 words

Assignment submission Turnitin type

This assignment is submitted through Turnitin and students can see Turnitin similarity reports.

Team Project (Report + Pitch)

Assessment Overview

Problem-solving based project, including the submission of a report and a pitch.

A problem-solving based project written in 3000 words that requires students to demonstrate their technical proficiency to conduct AI-driven analytics to solve real world problem by using SAS Viya for AutoML. Students are expected to conduct the data analysis on a dataset provided and generate actionable insights from the key findings, compare and discuss the outcomes and the accuracy of different ML models, along with justifications. The case would be described as a real-world scenario with real data.

In this project, students are also required to discuss the ethical implications of the proposed solution. This includes a discussion of the concerns related to data privacy, potential biases in data and/or ML algorithms and communication. In this task, students are required to suggest recommendations on how to address/mitigate these ethical risks to demonstrate their ability to

implement a responsible application of ethical AI in the business context.

Course Learning Outcomes

- CLO1 : Identify and apply AI-driven business analytics technologies, their underlying concepts and business applications.
- CLO2 : Consolidate analytical and critical thinking skills to solve real-world business problems using AI-driven solutions.
- CLO3 : Apply Machine Learning algorithms to analyse structured and unstructured data, solve real-world organisational problems to make data-driven decisions.
- CLO4 : Discuss ethical implications aligned with SDGs (Sustainable Development Goals) principles/objectives when implementing AI-driven business analytics and articulate their impacts on individuals, organisations and society at large.
- CLO5 : Develop collaborative teamwork skills for solving AI-driven business problems.

Detailed Assessment Description

Detailed requirements of the Team Project assignment will be communicated on Moodle and discussed in the Week 1 Seminar.

Assessment Length

3000 words

Assignment submission Turnitin type

This assignment is submitted through Turnitin and students can see Turnitin similarity reports.

Self-Reflection on the Team Project

Assessment Overview

In this assignment, students are required to submit a 700 words reflective essay that delves into their learning journey throughout the course to articulate their growth story, lessons learned, and how they envision applying the skills gained in this course at the workplace. This reflective exercise showcases the significant role that collaborative project work has played in advancing their critical thinking, sharpening their technical skills in AI analytics, and preparing them for real-world business challenges. Students are also required to reflect on the challenges and difficulties encountered throughout the team project. This includes technical hurdles during the analysis, conceptual misunderstandings, or collaborative conflicts, and articulate how they addressed these challenges, and the lessons learned.

Course Learning Outcomes

- CLO1 : Identify and apply AI-driven business analytics technologies, their underlying concepts and business applications.
- CLO2 : Consolidate analytical and critical thinking skills to solve real-world business problems using AI-driven solutions.

- CLO4 : Discuss ethical implications aligned with SDGs (Sustainable Development Goals) principles/objectives when implementing AI-driven business analytics and articulate their impacts on individuals, organisations and society at large.

Detailed Assessment Description

Detailed requirements of the Self-Reflection assignment will be communicated on Moodle and discussed in the Week 1 Seminar.

Assessment Length

700 words

Assignment submission Turnitin type

This assignment is submitted through Turnitin and students can see Turnitin similarity reports.

General Assessment Information

As a student at UNSW you are expected to display academic integrity in your work and interactions. Where a student breaches the UNSW Student Code with respect to academic integrity, the University may take disciplinary action under the Student Misconduct Procedure. To assure academic integrity, you may be required to demonstrate reasoning, research and the process of constructing work submitted for assessment.

To assist you in understanding what academic integrity means, and how to ensure that you do comply with the UNSW Student Code, it is strongly recommended that you complete the Working with Academic Integrity module before submitting your first assessment task. It is a free, online self-paced Moodle module that should take about one hour to complete.

You are expected to complete all assessment tasks for your courses in the School of Information Systems and Technology Management. Classes are highly practical and relevant to your assessments, so you are expected to attend at least 80% of all scheduled classes.

Where group assignments are used, team members are expected to work in a harmonious and professional fashion, which includes adequate management of non-performing members. You should inform your lecturer as soon as possible if you experience problems within a project team. You may be required to evaluate the contribution of each team member (including yourself) in group work and marks for individual students may be adjusted based on peer assessment.

Grading Basis

Standard

Requirements to pass course

To pass this course, you must achieve a composite mark of at least 50 out of 100;

You are expected to attempt all assessment requirements in the course.

Course Schedule

Teaching Week/Module	Activity Type	Content
Week 1 : 27 May - 2 June	Seminar	Week 1 Seminar: Introduction to Artificial Intelligence - Fundamental Concepts and Applications
Week 2 : 3 June - 9 June	Seminar	Week 2 Seminar: AI-Driven Business Analytics
Week 3 : 10 June - 16 June	Seminar	Week 3 Seminar: Artificial Intelligence for Structured Data Analysis
Week 4 : 17 June - 23 June	Seminar	Week 4 Seminar: Artificial Intelligence for Unstructured Data Analysis
Week 5 : 24 June - 30 June	Seminar	Week 5 Seminar: Automated Machine Learning Part 1 Using SAS Viya
Week 6 : 1 July - 7 July	Other	Flex week
Week 7 : 8 July - 14 July	Seminar	Week 7 Seminar: Automated Machine Learning Part 2 Using SAS Viya
Week 8 : 15 July - 21 July	Seminar	Week 8 Seminar: Generative AI for Business Analytics
Week 9 : 22 July - 28 July	Seminar	Week 9 Seminar: Ethical Implications of AI-driven Business Analytics
Week 10 : 29 July - 4 August	Seminar	Week 10 Seminar: Digital Transformation enabled by AI + Team Project Pitch Presentations

Attendance Requirements

Students are strongly encouraged to attend all classes and review lecture recordings.

Course Resources

Prescribed Resources

The following textbook is used in this course:

Applied Artificial Intelligence in Business: Concepts and Cases

Full text (PDF) is available via UNSW Library Website at https://primoa.library.unsw.edu.au/permalink/f/jhud33/UNSW_ALMA51331715730001731

Course Evaluation and Development

Feedback is regularly sought from students and continual improvements are made based on this feedback. At the end of this course, you will be asked to complete the myExperience survey, which provides a key source of student evaluative feedback. Your input into this quality enhancement process is extremely valuable in assisting us to meet the needs of our students and provide an effective and enriching learning experience. The results of all surveys are

carefully considered and do lead to action towards enhancing educational quality.

If at any time you have any concerns with your progress or any aspects of the course, please feel free to contact the LIC to discuss your concerns.

Staff Details

Position	Name	Email	Location	Phone	Availability	Equitable Learning Services Contact	Primary Contact
Convenor	Chedia Dhaoui		Room 2110, Level 2, West Wing, Quadrangle Building (E15)	Microsoft Teams	Wednesdays from 4pm to 5pm (by appointment on Teams)	No	Yes
Lecturer	Jason Xianghua Wu		Room 2117, Level 2, West Wing, Quadrangle Building (E15)			No	No

Other Useful Information

Academic Information

COURSE POLICIES AND SUPPORT

The Business School expects that you are familiar with the contents of this course outline and the UNSW and Business School learning expectations, rules, policies and support services as listed below:

- Program Learning Outcomes
- Academic Integrity and Plagiarism
- Student Responsibilities and Conduct
- Special Consideration
- Protocol for Viewing Final Exam Scripts
- Student Learning Support Services

Further information is provided on the key policies and support page.

Students may not circulate or post online any course materials such as handouts, exams, syllabi or similar resources from their courses without the written permission of their instructor.

STUDENT LEARNING OUTCOMES

The Course Learning Outcomes (CLOs) – under the Outcomes tab – are what you should be able to demonstrate by the end of this course, if you participate fully in learning activities and

successfully complete the assessment items.

CLOs also contribute to your achievement of the Program Learning Outcomes (PLOs), which are developed across the duration of a program. PLOs are, in turn, directly linked to UNSW graduate capabilities. More information on Coursework PLOs is available on the key policies and support page. For PG Research PLOs, including MPDBS, please refer to the UNSW HDR Learning Outcomes.

Academic Honesty and Plagarism

As a student at UNSW you are expected to display academic integrity in your work and interactions. Where a student breaches the UNSW Student Code with respect to academic integrity, the University may take disciplinary action under the Student Misconduct Procedure. To assure academic integrity, you may be required to demonstrate reasoning, research and the process of constructing work submitted for assessment.

To assist you in understanding what academic integrity means, and how to ensure that you do comply with the UNSW Student Code, it is strongly recommended that you complete the Working with Academic Integrity module before submitting your first assessment task. It is a free, online self-paced Moodle module that should take about one hour to complete.

Submission of Assessment Tasks

SPECIAL CONSIDERATION

You can apply for special consideration when illness or other circumstances beyond your control interfere with your performance in a specific assessment task or tasks, including online exams. Students studying remotely who have exams scheduled between 10pm and 7am local time, are also able to apply for special consideration to sit a supplementary exam at a time outside of these hours.

Special consideration is primarily intended to provide you with an extra opportunity to demonstrate the level of performance of which you are capable. To apply, and for further information, see Special Consideration on the UNSW Current Students page.

Special consideration applications will be assessed centrally by the Case Review Team, who will update the online application with the outcome and add any relevant comments. The change to the status of the application immediately sends an email to the student and to the assessor with

the outcome of the application.

Please note the following:

1. Applications can only be made through Online Services in myUNSW (see the UNSW Current Students page). Applications will not be accepted by teaching staff. The lecturer-in-charge/ course coordinator will be automatically notified when your application is processed.
2. Applying for special consideration does not automatically mean that you will be granted a supplementary exam or other concession.
3. If you experience illness or misadventure in the lead up to an exam or assessment, you must submit an application for special consideration, either prior to the examination taking place, or prior to the assessment submission deadline, except where illness or misadventure prevent you from doing so.
4. If your circumstances stop you from applying before your exam or assessment due date, you must apply within 3 working days of the assessment or the period covered by your supporting documentation.
5. Under the UNSW Fit To Sit/Submit rule, if you sit the exam/submit an assignment, you are declaring yourself well enough to do so and are cannot subsequently apply for special consideration.
6. If you become unwell on the day of – or during – an exam, you must stop working on your exam, advise your course coordinator or tutor and provide a medical certificate dated within 24 hours of the exam, with your special consideration application. For online exams, you must contact your course coordinator or tutor immediately via email, Moodle or chat and advise them you are unwell and submit screenshots of your conversation along with your medical certificate and application.
7. Special consideration requests do not allow the awarding of additional marks to students.

Further information on Business School policy and procedure can be found under “Special Consideration” on the key policies and support page.

LATE SUBMISSION PENALTIES

For assessments other than examinations, late submission will incur a penalty of 5% per day or part thereof (including weekends) from the due date and time. An assessment will not be accepted after 5 days (120 hours) of the original deadline unless special consideration has been approved. An assignment is considered late if the requested format, such as hard copy or electronic copy, has not been submitted on time or where the ‘wrong’ assignment has been submitted.

For assessments which account for 10% or less of the overall course grade, and where answers are immediately discussed or debriefed, the LIC may stipulate a different penalty. Details of such

late penalties will be available on the course Moodle page.

FEEDBACK ON YOUR ASSESSMENT TASK PERFORMANCE

Feedback on student performance from formative and summative assessment tasks will be provided to students in a timely manner. Assessment tasks completed within the teaching period of a course, other than a final assessment, will be assessed and students provided with feedback, with or without a provisional result, within 10 working days of submission, under normal circumstances. Feedback on continuous assessment tasks (e.g. laboratory and studio-based, workplace-based, weekly quizzes) will be provided prior to the midpoint of the course.

Faculty-specific Information

PROTOCOL FOR VIEWING FINAL EXAM SCRIPTS

UNSW students have the right to view their final exam scripts, subject to a small number of very specific exemptions. The UNSW Business School has set a protocol under which students may view their final exam script. Individual schools within the Faculty may also set up additional local processes for viewing final exam scripts, so it is important that you check with your School.

If you are completing courses from the following schools, please note the additional school-specific information:

- Students in the **School of Accounting, Auditing & Taxation** who wish to view their final examination script should also refer to this page.
- Students in the **School of Banking & Finance** should also refer to this page.
- Students in the **School of Information Systems & Technology Management** should also refer to this page.

COURSE EVALUATION AND DEVELOPMENT

Feedback is regularly sought from students and continual improvements are made based on this feedback. At the end of this course, you will be asked to complete the myExperience survey, which provides a key source of student evaluative feedback. Your input into this quality enhancement process is extremely valuable in assisting us to meet the needs of our students and provide an effective and enriching learning experience. The results of all surveys are carefully considered and do lead to action towards enhancing educational quality.

QUALITY ASSURANCE

The Business School is actively monitoring student learning and quality of the student experience in all its programs. A random selection of completed assessment tasks may be used for quality assurance, such as to determine the extent to which program learning goals are being achieved. The information is required for accreditation purposes, and aggregated findings will be used to inform changes aimed at improving the quality of Business School programs. All material used for such processes will be treated as confidential.

TEACHING TIMES AND LOCATIONS

Please note that teaching times and locations are subject to change. Students are strongly advised to refer to the Class Timetable website for the most up-to-date teaching times and locations.