

Course Outline

Course Code : DAO2702
Course Title : Programming for Business Analytics and AI
Class Date : From 10/8/2026 To 13/11/2026
Semester : Semester 1, Academic Year 2026/2027
Faculty : Xiong Peng
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Overview

This course prepares students for the evolving intersection of business analytics and artificial intelligence through Python programming. Moving beyond traditional statistics, the curriculum focuses on robust programming foundations, advanced data visualization, and real-world problem-solving. Students learn to navigate modern workflows by using Python to process data and integrate diverse AI capabilities into business scenarios. By focusing on how to coordinate data with AI services, the course prepares students to implement modern, scalable solutions that evolve alongside new technical breakthroughs. Participants will apply these skills to practical projects, gaining the technical confidence to implement AI-driven solutions in dynamic business environments.

Course Objectives

By the end of this course, students will be able to use computational thinking and AI-assisted Python to translate business questions into structured analytics tasks, prepare and analyse business data, generate and refine code through effective prompting, and produce descriptive statistics and visualisations. Students will also critically evaluate AI-generated outputs for accuracy and validity, and communicate data-driven insights through concise reports and presentations that support actionable business decisions.

Assessment

Assessment Components	Weightage
Class Participation	15 %
Discussion Board Participation	10 %
Individual Presentation on Project	30 %
Group Project Report	30 %
Group assignment	15 %

Schedule and Outline

Lesson/ Week	Date	Session (lesson summary or outline / learning objectives / preparation / cases & assignments / follow-up readings & resources)
1	10/Aug/2026	Course overview and introduction to programming
2	17/Aug/2026	Computational thinking and vibe coding
3	24/Aug/2026	Data types and data structures

4	31/Aug/2026	Functions and Packages
5	07/Sep/2026	Descriptive Analytics – Part I
6	14/Sep/2026	Descriptive Analytics – Part II
Recess		
7	28/Sep/2026	Storytelling with Data
8	05/Oct/2026	APIs and basic automation
9	12/Oct/2026	AI techniques for analytics and business solutions
10	19/Oct/2026	Integrating AI services
11	26/Oct/2026	Project preparation and consultation
12	02/Nov/2026	Project presentation
13	09/Nov/2026	Project presentation

General Guide & Reading (e.g. Case preparation guide, project report guide, main textbook & supplementary materials, etc)

- Python data science handbook, by Jake VanderPlas
- Storytelling with data, by Cole Nussbaumer Knaflic
- Python Tutor: <https://pythontutor.com/>
- PandaShifu: <https://github.com/XiongPengNUS/PandaShifu>

Academic Honesty & Plagiarism

Academic integrity and honesty is essential for the pursuit and acquisition of knowledge. The University and School expect every student to uphold academic integrity & honesty at all times. Academic dishonesty is any misrepresentation with the intent to deceive, or failure to acknowledge the source, or falsification of information, or inaccuracy of statements, or cheating at examinations/tests, or inappropriate use of resources.

Plagiarism is 'the practice of taking someone else's work or ideas and passing them off as one's own' (The New Oxford Dictionary of English). The University and School will not condone plagiarism. Students should adopt this rule - You have the obligation to make clear to the assessor which is your own work, and which is the work of others. Otherwise, your assessor is entitled to assume that everything being presented for assessment is being presented as entirely your own work. This is a minimum standard. In case of any doubts, you should consult your instructor.

Additional guidance is available at:

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- <http://www.nus.edu.sg/registrar/administrative-policies-procedures/acceptance-record#NUSCodeofStudentConduct>
- <http://nus.edu.sg/osa/resources/code-of-student-conduct>