

The Hong Kong University of Science and Technology (Guangzhou)

UG Course Syllabus Template

[Course Title] Data Science Project

[Course Code] DSAA 2044

[No. of Credits] 3

[Any pre-/co-requisites] DSAA 1001 OR AIAA 2205

Introduction to Data Science and Analytics OR Introduction to Artificial Intelligence

Name: Zishuo DING

Email: zishuoding@hkust-gz.edu.cn

Office Hours: Wednesday: 03:20PM-05:20PM, W4-410, 2026-09-01 - 2026-12-07

Course Description

In this course, students will work in teams to design, implement, and deliver a software system that addresses a real-world data science problem. Projects will be sourced from domains such as finance, healthcare, transportation, and manufacturing. Each team will apply data science tools and techniques to develop functional software solutions, integrating data-driven models into real applications. The course also introduces agile project management, teamwork, and communication skills. Students will work from requirements through to implementation and delivery, following a structured process with a focus on collaboration, iteration, and clear reporting.

Intended Learning Outcomes (ILOs)

By the end of this course, students should be able to:

1. Use various data science tools and techniques to solve problems.
2. Master project management, team dynamics, and communication skill.
3. Capable of evaluating various data science methods and be able to use different methods to address different issues.

Weekly Schedule and Weekly ILOs

Week	Topics	Weekly ILOs
1	Course into and intro to software process	ILO 1, ILO2, IL3
2	Software process models	ILO 1, ILO2, IL3
3	Agile in Detail	ILO 1, ILO2, IL3
4	Software planning, DevOps, and Requirements	ILO 1, ILO2, IL3
5	Requirements continued and use cases	ILO 1, ILO2, IL3
6	Project planning	ILO 1, ILO2, IL3
7	Estimation techniques, Architecture and Design	ILO 1, ILO2, IL3

8	In-class quiz + Architecture and Design	ILO 1, ILO2, IL3
9	Implementation &Quality Assurance	ILO 1, ILO2, IL3
10	QA & Release engineering	ILO 1, ILO2, IL3
11	Release Engineering	ILO 1, ILO2, IL3
12	Data Collection & Model Deployment	ILO 1, ILO2, IL3
13	Model Deployment - REST API	ILO 1, ILO2, IL3

Assessment and Grading

This course will be assessed using criterion-referencing and grades will not be assigned using a curve. Detailed rubrics for each assignment are provided below, outlining the criteria used for evaluation.

Assessments:

Assessment Task	Contribution to Overall Course grade (%)	Due date
One Quiz	15%	Around the 8 th week
Written/Programming assignments	5%	TBD
Projects	50%	07/12/2026*
Final examination	30%	TBD

* Assessment marks for individual assessed tasks will be released within two weeks of the due date.

Mapping of Course ILOs to Assessment Tasks

Assessed Task	Mapped ILOs	Explanation
Quiz	ILO1, ILO3	Assesses students' understanding of key data science and software development concepts and their ability to identify appropriate methods and approaches for different problems.
Written / Programming Assignments	ILO1, ILO3	Assess students' ability to apply data science tools and techniques to concrete tasks and make appropriate technical choices.
(Group) Project	ILO1, ILO2, ILO3	Assesses students' ability to develop an end-to-end solution, work effectively as a team, manage a project, select appropriate methods, and evaluate the resulting system.
Final Examination	ILO1, ILO3	Assesses individual understanding of course concepts and students' ability to apply, compare, and evaluate different approaches in new scenarios.

Grading Rubrics

Criteria	A (Excellent)	B (Good)	C (Satisfactory)	D (Marginal Pass)	F (Fail)
Research and Understanding	Comprehensive research, deep understanding.	Good research, clear understanding.	Basic research, some understanding.	Limited research and understanding.	Insufficient research/understanding.
Application of Concepts	Excellent application, demonstrates innovation.	Good application, some insight.	Basic application, limited insight.	Poor application of concepts.	Incorrect or no application.
Presentation and Organization	Clear, well-organized, engaging presentation.	Clear and organized presentation.	Somewhat organized, lacks clarity.	Disorganized and unclear.	Poor presentation.
Teamwork	Excellent collaboration, balanced contributions.	Good collaboration, mostly balanced.	Some collaboration, uneven contributions.	Poor collaboration.	Little to no collaboration.

Final Grade Descriptors:

Grades	Short Description	Elaboration on subject grading description
A	Excellent Performance	Demonstrates a comprehensive grasp of subject matter, expertise in problem-solving, and significant creativity in thinking. Exhibits a high capacity for scholarship and collaboration, going beyond core requirements to achieve learning goals. As a reference, the overall course score in A category (A-, A, A+) is no less than 85.00 (out of 100).
B	Good Performance	Shows good knowledge and understanding of the main subject matter, competence in problem-solving, and the ability to analyze and evaluate issues. Displays high motivation to learn and the ability to work effectively with others. As a reference, the overall course score in B category (B-, B, B+) is between 70.00 and 84.99 (out of 100).
C	Satisfactory Performance	Possesses adequate knowledge of core subject matter, competence in dealing with familiar problems, and some capacity for analysis and critical thinking. Shows persistence and effort to achieve broadly defined learning goals. As a reference, the overall course score in C category (C-, C, C+) is between 55.00 and 69.99 (out of 100).
D	Marginal Pass	Has threshold knowledge of core subject matter, potential to achieve key professional skills, and the ability to make basic judgments. Benefits from the course and has the potential to develop in the discipline. As a reference, the overall course score in D category is between 50.00 and 54.99 (out of 100).

F	Fail	Demonstrates insufficient understanding of the subject matter and lacks the necessary problem-solving skills. Shows limited ability to think critically or analytically and exhibits minimal effort towards achieving learning goals. Does not meet the threshold requirements for professional practice or development in the discipline. As a reference, the overall course score in F category is below 50.00 (out of 100).
---	------	--

Course AI Policy

Students are encouraged to use generative artificial intelligence (GAI) tools (e.g., ChatGPT, Copilot, Gemini) as supportive resources during the course. Appropriate uses include:

- Understanding legacy code and unfamiliar libraries or frameworks.
- Exploring alternative approaches to data science problems.
- Enhancing self-study by clarifying concepts, generating examples, or brainstorming ideas.
- Improving productivity in coding, documentation, and project planning.

However, students must adhere to the following principles:

- Transparency – If AI tools are used in project development (e.g., code suggestions, debugging assistance, or documentation drafting), students must acknowledge and document how these tools were applied in their project report.
- Critical Use – Students should treat AI-generated output as supporting material, and are responsible for verifying correctness, originality, and suitability.
- Ethics & Academic Honesty – Misrepresenting AI-generated work as one's own will be considered a breach of academic integrity.

Communication and Feedback

Assessment marks for individual assessed tasks will be communicated via Canvas within two weeks of submission. Feedback on assignments will include [specific details, e.g., strengths, areas for improvement]. Students who have further questions about the feedback including marks should consult the instructor within five working days after the feedback is received.

Late Submission Policy

1-3 Days Late: 10% of the total possible points will be deducted from the score.

4-7 Days Late: 20% of the total possible points will be deducted.

More than 7 Days Late: The submission will not be accepted and will receive a score of zero.

Required Texts and Materials

The textbooks are recommended but NOT REQUIRED.

- (Main textbook) Software Engineering 10th Edition by Ian Sommerville
- (Supporting textbooks)
 - Agile Software Requirements: Lean Requirements Practices for Teams, Programs, and the Enterprise

- Agile Estimating and Planning

Academic Integrity

Students are expected to adhere to the university's academic integrity policy. Students are expected to uphold HKUST(GZ)'s Academic Honor Code and to maintain the highest standards of academic integrity. The University has zero tolerance of academic misconduct. Please refer to Regulations for Academic Integrity and Student Conduct for the University's definition of plagiarism and ways to avoid cheating and plagiarism.

[Optional] Additional Resources

[List any additional resources, such as online platforms, library resources, etc.]