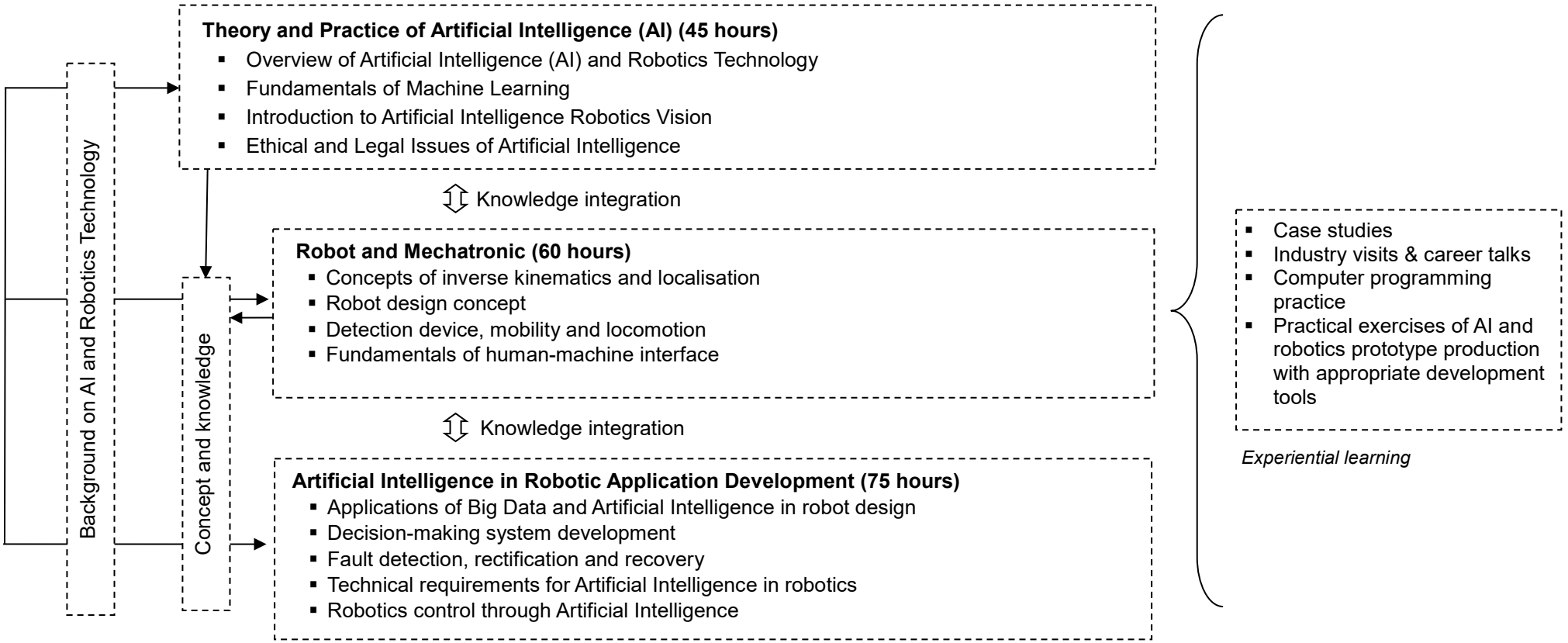
Applied Learning

2024-26 Cohort; 2026 HKDSE

Item	Description
1. Course Title	AI and Robotics
2. Course Provider	School of Professional and Continuing Education, The University of Hong Kong
3. Area of Studies/ Course Cluster	Engineering and Production/ Information Engineering
4. Medium of Instruction	Chinese or English
5. Learning Outcomes	Upon completion of the course, students should be able to: (i) describe the key concept of Artificial Intelligence (AI) and robotics technology, and appraise the value created by Artificial Intelligence and robotic applications; (ii) demonstrate basic programming knowledge and skills on modern and popular Artificial Intelligence and robotics development platforms; (iii) implement Artificial Intelligence and robotics solutions by selecting and applying appropriate development tools; (iv) develop problem-solving skills through tackling Artificial Intelligence and robotics related issues with multi-disciplinary knowledge; and (v) enhance self-understanding and explore directions on further studies and career pursuits.

6. Curriculum Map – Organisation and Structure



7. The Context

- The information on possible further study and career pathways is provided to enhance students' understanding of the wider context of the specific Applied Learning course.
- The recognition of Applied Learning courses for admission to further studies and career opportunities is at the discretion of relevant institutions. Students who have successfully completed Applied Learning courses have to meet other entry requirements as specified by the institutions.

Possible further study and career pathways

Further studies

- e.g. courses related to engineering, information technology, computer science

Career development

- e.g. junior software engineer (robotics system), junior engineering officer (Artificial Intelligence and robotics technology) and junior product engineer

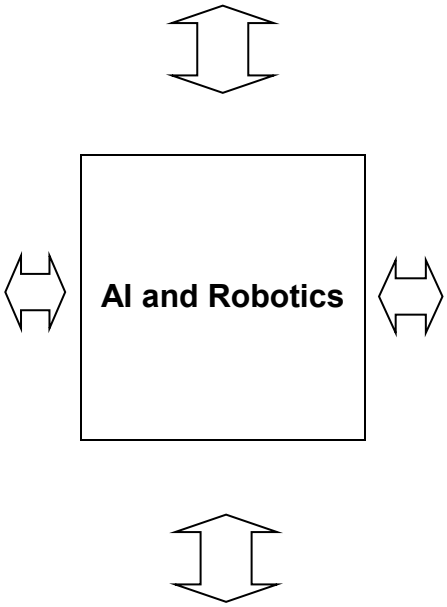
Complementarity with core subjects and other elective subjects

Enhancing and enriching**,** e.g.

- **Information and Communication Technology,** and **Design and Applied Technology:** the knowledge and skills in developing AI and robotics prototypes could be related to the contents of information technology, and design and applied technology areas

Expanding horizons**,** e.g.

- **Physics**: expand students' horizon about the trend and application of the Artificial Intelligence and robotics engineering in various industries



Relations with other areas of studies/ courses of Applied Learning

e.g.

Business, Management and Law

- enhance students' understandings on the business requirements of Artificial Intelligence and robotic applications

Foundation knowledge developed in junior secondary education

The course is built upon the foundation knowledge students acquired in, e.g.

- **Chinese Language Education** and **English Language Education** – verbal and written communication
- **Mathematics Education** – data handling, measures and calculations
- **Technology Education** – use of information technology
- **Science Education** – force and motion

8. Learning and Teaching

In this course, student-centred learning and teaching activities are designed to enable students to understand fundamental theories and concepts, develop their generic skills, and address their career aspirations in artificial intelligence and robotics technology.

Different modes of activities are employed to provide students with a systematic understanding about the context (e.g. lectures on the theory and practice of artificial intelligence, robot and mechatronic, and artificial intelligence in robotic application development) and eye-opening opportunities to experience the complexity of the context (e.g. visits to technology organisations, practical exercises at industry standard and sharing sessions and career talks by the artificial intelligence and robotics industry practitioners).

Students acquire an understanding of the requirements, fundamental knowledge and skills essential for further learning within the area through learning-by-practising opportunities in an authentic or near-authentic environment (e.g. practical exercises under simulated working environment with industry grade production software and hardware).

Students are also encouraged to develop and apply conceptual, practical and reflective skills to demonstrate entrepreneurship and innovation. Students are given opportunities to integrate the knowledge and skills acquired and consolidate their learning (e.g. case studies to learn about the new business applications of artificial intelligence and robotics systems, and the global development trend of the emerging technology industry. In the projects, students created the prototypes of artificial intelligence and robotic applications. Students are expected to make use of the knowledge acquired and present their works in a systematic way. In the process, students apply practical skills at industry standard, apply problem-solving skills to tackle artificial intelligence and robotics related issues with multi-disciplinary knowledge, and prepare reports and group presentation. During the project, students are also expected to demonstrate the proper values and attitudes required in the industry).

9. Curriculum Pillars of Applied Learning

Through related contexts, students have different learning opportunities, for example:

(i) Career-related Competencies

- apply simple computing programming and engineering skills in the production of artificial intelligence and robotics prototypes;
- outline the development trend of the artificial intelligence and robotics engineering industries;
- describe the career pathways and the functions of major job positions of the artificial intelligence and robotics engineering industries;
- integrate and apply technical skills for robotics development with reference to industry practice and/or standards; and
- demonstrate the understanding of competency requirements of the artificial intelligence and robotics engineering industries.

(ii) Foundation Skills

- strengthen communication skills both in verbal and written forms through working on site visit and project reports, and presentation;
- apply mathematical ideas and techniques on artificial intelligence and robotics development tasks; and
- apply information technology skills through doing research and information collection for assignments and projects.

(iii) Thinking Skills

- integrate knowledge from different aspects including science, technology, engineering, mathematics in tackling artificial intelligence and robotics technology related problems;
- apply critical thinking skills through discussions on business cases in artificial intelligence and engineering industries;
- enhance creativity in artificial intelligence and robotics technology development and applications; and
- develop skills in problem-solving and decision-making through practical and project works which require information search and filtering, and results analysis and consolidation.

(iv) People Skills

- apply interpersonal communication and team building skills through group projects; and
- appreciate the importance of division of work and develop time management skills under simulated working environment.

(v) Values and Attitudes

- develop the sense of responsibility through understanding the ethical requirements in the artificial intelligence and engineering industries; and
- strengthen the concept of rights and respect for intellectual property through experience sharing by practitioners from the artificial intelligence and engineering industry practitioners.