Applied Learning (Senior Secondary Level)

2020-22 Cohort

Item	Description
1. Subject Title	Tech Basics
2. Course Provider	School of Continuing Education, Hong Kong Baptist University
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 subject, students should be able to: (1) write simple computer programmes and applications by using a range of modern programming languages and software; (2) describe the latest emerging technologies in the information technology industry; (3) explain the basic concepts and functions of information technology; (4) describe technical and business knowledge in computer science, focusing on data analytics, cybersecurity and artificial intelligence; (5) demonstrate communication, collaboration and interpersonal skills in the technology field; and (6) develop self-understanding for further studies and career development in the related field.

6. Curriculum Map – Organisation and Structure

Module 1
Fundamentals of Information Technology (IT) (30 hours)

- Introduction to Emerging Technology (Data Analytics, Cybersecurity and Artificial Intelligence)
- Computer Hardware Components and Architectures
- Concepts of Software and Applications
- Computer Ethics and Social Issues
- Basic IT Security and Threats

Module 2
Programming (39 hours)

- Data Structures and Basic Algorithm Design
- Introduction of Programming Languages (Python)
- Introduction to Data Science Programming

Module 3
Database (24 hours)

- Data Processing with Spreadsheet Software (Excel)
- Data Processing with Relational Database Management System (RDBMS)

Module 4
IT Project Management Skills (24 hours)

- Project Management
- Collaboration
- Leadership
- Effective Communication

Module 5
Application Development (39 hours)

- Object Oriented Programming (JavaScript)
- Fundamentals of Web Development using "HTML5"
- Fundamentals of Mobile App Development using "Swift"

Module 6
Data Communications and Networking (24 hours)

- Network Fundamentals
- Switching and Routing Technology
- Infrastructure Services, Security and Management

7. The Context

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

Possible further study and career pathways

Further studies
- e.g. data analytics, cybersecurity and artificial intelligence

Career development
- e.g. data analyst, security analyst, AI software developer

Relations with core subjects and other elective subjects

Enhancing and enriching, e.g.
- enhance students' learning in **Mathematics** through mathematical knowledge application in programming
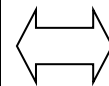
Cross-fertilisation, e.g.
- the application of knowledge (e.g. basic programming concepts) acquired in **Information Communication and Technology** enhances students' learning in both subjects

Expanding horizons, e.g.
- students taking **Personal, Social and Humanities Education** subjects can broaden their knowledge in information technology

Consolidating and synergising students' studies, e.g.
- students undertake in-depth IT-related project by integrating the knowledge and skills acquired in their prior learning

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Cluster of professions/trades/industries related to the course

- e.g. information technology, computer science, data analytics, cybersecurity, artificial intelligence

Future global and local outlook

- the world is disrupted by the emergence of new technologies
- data analytics, cybersecurity and artificial intelligence are widely perceived as new technologies that unleash disruptive change to the society in the next decade
- researches shown that the demand for talents in these areas far exceeds the available talent pool across the world
- Hong Kong is one of the leading cites which embraces the adoption of technology and innovation hub around the globe

Beginners' skill set to facilitate entry to further studies and/or work

- basic concepts of emerging computer technologies and future trends
- basic understanding on information systems, common hardware components, system design and cloud architecture
- database design, maintenance and data manipulation with practical SQL skills
- knowledge in software development methodology and practical programming skills
- knowledge in common cybersecurity threats and mitigating measures
- importance of computer ethics and their application in the workplace

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Relations with other areas of studies/ courses of Applied Learning

Business, Management and Law
- enhance students' understanding of technology application in different business sectors
- strengthen students' concept related to business ethics

Services
- develop and apply conceptual and practical skills of artificial intelligence, data analytics, and cybersecurity applications in service industry

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Foundation knowledge developed in junior secondary education and Secondary 4

The subject is built upon the foundation knowledge students acquired in, e.g.
- **Technology Education** – use of information technology
- **Mathematics Education** – solving quantitative problems
- **Science Education** – analytical thinking and complex reasoning skills
- **Chinese Language Education and English Language Education** – verbal and written communication