SYLLABUS FOR THE DEGREE OF BACHELOR OF ENGINEERING IN COMPUTER SCIENCE [BEng(CompSc)]

The syllabus applies to students admitted in the academic year 2025-26 and thereafter under the four-year curriculum.

Definition and Terminology

1. Each course offered shall be classified as either an introductory level course or an advanced level course.

2. "Foundation Course" / "Disciplinary Core Course" are compulsory courses in the professional core which a candidate must pass in the manner provided for in the Regulations.

3. "Disciplinary Elective" course refers to any course offered in the professional core other than compulsory courses which can be taken by candidates to fulfil the curriculum requirements as specified in the syllabuses of the degree curriculum.

4. "Capstone Experience" course is an integral part of the degree programme which focuses on the integration and application of knowledge and skills gained in the early years of study. It is normally taken in the senior years (year 3 or 4) of study and students must complete this for fulfilment of the graduation requirements.

5. "Elective" course means any course offered within the same or another curriculum, other than compulsory courses in the candidate's degree curriculum, that can be taken by the candidate in order to complete the credit requirements of the degree curriculum.

Curriculum

The Curriculum comprises 240 credits of courses as follows:

Professional Core:

Foundation Courses
Students are required to complete at least 36 credits of Foundation Courses.

Disciplinary Core Courses
Students are required to complete ALL disciplinary core courses (54 credits), comprising 24 credits of introductory core courses and 30 credits of advanced core courses.

Disciplinary Elective Courses
Students are required to complete at least 42 credits of disciplinary elective courses offered for the curriculum.

Capstone Experience
Students are required to complete the 12-credit "COMP4801 Final year project" and the non-credit-bearing internship "COMP3410 Internship" to fulfill the capstone experience requirement for the degree of BEng in Computer Science.

Elective:
Students are required to complete 42 credits of elective course(s) offered by any department, except Common Core Courses.

University Requirements:
Students are required to complete 54 credits of courses and non-credit-bearing courses as required by the University.

The details of the distribution of the above course categories are as follows:

The curriculum of BEng(CompSc) comprises 240 credits of courses with the following structure:

UG 5 Requirements (54 credits)

Course code	Course	No. of credits
CAES1001	Academic Communication in English[1]	0
CAES9542	Technical English for Computer Science	6
	Chinese language enhancement course specified for the degree curriculum[2]	6
	Common Core[3]	36
	Digital Literacy courses	6
	Non-credit bearing course in national education and national security education, and any other non-credit bearing courses as may be required from time to time	0
	Total	**54**

[1]Unless otherwise exempted through having achieved Level 5 or above in English Language in the Hong Kong Diploma of Secondary Education Examination, or equivalent.

[2]Candidates should check with the School of Computing and Data Science for the course code and course title of the Chinese language enhancement course to satisfy the programme and graduation requirements. For those who did not study Chinese language during their secondary education and have not reached the required proficiency level for the Chinese language enhancement course specified for the degree curriculum, they are required to take a course in either Chinese language or Chinese culture offered by the Chinese Language Centre of the School of Chinese in lieu.

[3]Candidates have to complete 36 credits in the Common Core Curriculum, comprising at least 6 credits and not more than 12 credits from each Area of Inquiry with not more than 24 credits being selected within one academic year except where candidates are required to make up for failed credits.

Foundation Courses (36 credits)

Course Code	Course	No. of credits
COMP1110	Computing and data science in everyday life	6
COMP1117	Computer programming	6
COMP2113	Programming technologies	6
MATH1013	University mathematics II	6
MATH2012	Fundamental concepts of mathematics*	6
MATH2014	Multivariable calculus and linear algebra*	6

*Students who are passionate and would like to explore more about mathematics can opt for the combination of MATH2101 Linear algebra I and MATH2211 Multivariable calculus in replacement of the combination of MATH2012 and MATH2014. Students are advised to check the course details of these MATH courses and consult the academic advisors of the Department of Mathematics in advance.

Disciplinary Core Courses (54 credits)

Introductory Courses (24 credits)

Course Code	Course	No. of credits
COMP2119	Introduction to data structures and algorithms	6
COMP2120	Computer organization	6
COMP2121	Discrete mathematics	6
SDST2601	Probability and statistics I	6

Advanced Courses (30 credits)

Course Code	Course	No. of credits
COMP3230	Principles of operating systems	6
COMP3251 / COMP3252	Algorithm design / Algorithm design and analysis	6
COMP3278 / COMP3234	Introduction to database management systems / Computer and communication networks	6
COMP3297	Software engineering	6
COMP3314	Introduction to machine learning	6

Capstone Experience (12 credits)

Course Code	Course	No. of credits
COMP3410	Internship*	0
COMP4801	Final year project	12

*Students who are selected to participate in the Undergraduate Research Fellowship Programme are required to complete COMP3413 Research internship and are not required to complete COMP3410 Internship.

Disciplinary Elective Courses (42 credits, to be chosen from the following list)

Course Code	Course	No. of credits
COMP2396	Object-oriented programming and Java	6
COMP2501	Introduction to data science	6
COMP3231	Computer architecture	6
COMP3234	Computer and communication networks #	6
COMP3235	Compiling techniques	6
COMP3258	Functional programming	6
COMP3259	Principles of programming languages	6
COMP3270	Introduction to artificial intelligence	6
COMP3271	Computer graphics	6
COMP3278	Introduction to database management systems #	6
COMP3311	Legal aspects of computing	6
COMP3316	Quantum information and computation	6
COMP3317	Introduction to computer vision	6
COMP3320	Electronic commerce technology	6
COMP3322	Modern technologies on World Wide Web	6
COMP3323	Advanced database systems	6
COMP3329	Computer game design and programming	6
COMP3330	Interactive mobile application design and programming	6
COMP3340	Introduction to deep learning	6
COMP3351	Advanced algorithm analysis	6
COMP3352	Algorithmic game theory	6

COMP3353	Bioinformatics	6
COMP3354	Statistical learning	6
COMP3355	Cyber security	6
COMP3356	Robotics	6
COMP3357	Cryptography	6
COMP3358	Distributed and parallel computing	6
COMP3360	Data-driven computer animation	6
COMP3361	Natural language processing	6
COMP3362	Hands-on AI: experimentation and applications	6
COMP3364	Digital forensics	6
COMP3365	Cyber attack and defense	6
COMP3366	Quantum algorithms and computer architecture	6
COMP3405	Engineering quality software	6
COMP3407	Scientific computing	6
COMP3413	Research internship	6
COMP3414	Experiential learning on artificial intelligence and robotics	6
COMP3516	Data analytics for IoT	6
COMP4510	Principles of machine learning	6
COMP4511	Principles of deep learning	6
COMP4512	Advanced computer vision	6
IMSE3137	Virtual reality for systems engineering	6
IMSE3139	Cyber-physical systems	6

If students choose to complete COMP3234 to fulfil the requirement of Disciplinary Core Courses, COMP3234 will not be counted towards the category of Disciplinary Elective Courses. If students choose to complete COMP3278 to fulfil the requirement of Disciplinary Core Courses, COMP3278 will not be counted towards the category of Disciplinary Elective Courses.

Elective Courses (42 credits)

At least 42 credits of courses offered by any department, except Common Core Courses.

Focus

Students may choose to claim any of the following six Focuses, provided that they must have fulfilled the requirements specified under the corresponding Focus.

[AI & Robotics]
Students are required to complete FOUR courses in the below list to claim this Focus.

- COMP3270 Introduction to artificial intelligence
- COMP3317 Introduction to computer vision
- COMP3340 Introduction to deep learning
- COMP3356 Robotics
- COMP3360 Data-driven computer animation
- COMP3361 Natural language processing
- COMP3362 Hands-on AI: experimentation and applications
- COMP3414 Experiential learning on artificial intelligence and robotics
- COMP4510 Principles of machine learning
- COMP4511 Principles of deep learning
- COMP4512 Advanced computer vision

[Big Data Analytics]

Students are required to complete FOUR courses in the below list to claim this Focus.

- COMP2501 Introduction to data science
- COMP3270 Introduction to artificial intelligence
- COMP3323 Advanced database systems / FITE3010 Big data and data mining
- COMP3353 Bioinformatics
- COMP3361 Natural language processing
- COMP3516 Data analytics for IoT

[Cyber Security]
Students are required to complete ALL the courses from List (a) and ONE course from List (b) to claim this Focus.

List (a)
- COMP3355 Cyber security
- COMP3357 Cryptography
- COMP3365 Cyber attack and defense

List (b)
- COMP3316 Quantum information and computation
- COMP3364 Digital forensics
- FITE2010 Distributed ledger and blockchain
- FITE3012 E-payment and crypto-currency

[Financial Computing]
Students are required to complete FOUR courses in the below list to claim this Focus.

- COMP3320 Electronic commerce technology
- COMP3322 Modern technologies on World Wide Web
- COMP3355 Cyber security
- FITE2010 Distributed ledger and blockchain
- FITE3010 Big data and data mining
- FITE3012 E-payment and crypto-currency

[Systems & Networking]
Students are required to complete FOUR courses in the below list to claim this Focus.

- COMP3231 Computer architecture
- COMP3234 Computer and communication networks
- COMP3322 Modern technologies on World Wide Web
- COMP3323 Advanced database systems
- COMP3330 Interactive mobile application design and programming
- COMP3358 Distributed and parallel computing
- COMP3405 Engineering quality software
- COMP3407 Scientific computing
- COMP3516 Data analytics for IoT

[Theoretical Computer Science]
Students are required to complete FOUR courses in the below list to claim this Focus.

- COMP3235 Compiling techniques
- COMP3258 Functional programming
- COMP3259 Principles of programming languages
- COMP3316 Quantum information and computation

- COMP3351 Advanced algorithm analysis
- COMP3352 Algorithmic game theory
- COMP3357 Cryptography
- COMP3366 Quantum algorithms and computer architecture

Remarks: In principle, double counting is not permissible. A particular elective course shall be counted towards one Focus only.

Impermissible Combinations:
Major in Computer Science
Minor in Computer Science
Minor in Artificial Intelligence and Data Science
Major in Decision Analytics

Elective postgraduate courses

Students may take up to three 6-credit postgraduate courses as elective courses, subject to the approval of the Programme Director of BEng(CompSc).

Summary of curriculum structure of BEng(CompSc)

Course Categories	No. of credits
UG 5 Requirements	54
Foundation Courses	36
Disciplinary Core Courses (Introductory)	24
Disciplinary Core Courses (Advanced)	30
Capstone Experience and Internship	12
Disciplinary Elective Courses	42
Elective Courses	42
Total	**240**

MAJOR IN COMPUTER SCIENCE

Impermissible Combinations:
Bachelor of Engineering in Artificial Intelligence and Data Science [BEng(AI&DataSc)]
Bachelor of Engineering in Computer Engineering [BEng(CE)]
Bachelor of Engineering in Computer Science [BEng(CompSc)]
Bachelor of Statistics (Professional Core in Decision Analytics) [BStat(DA)]
Major in Decision Analytics
Minor in Computer Science

The curriculum comprises 96 credits of courses with the following structure, in which students are required to complete 60 credits of Core Courses, 24 credits of Elective Courses and 12 credits of Capstone Experience.

Prerequisite: Level 3 or above in Mathematics in the Hong Kong Diploma of Secondary Education (HKDSE) Examination, or equivalent

Core Courses (60 credits)

Introductory Courses (48 credits)

Course Code	Course	No. of credits
COMP1117	Computer programming	6
COMP2113	Programming technologies	6
COMP2119	Introduction to data structures and algorithms	6
COMP2120	Computer organization	6
COMP2121	Discrete mathematics	6
MATH2012	Fundamental concepts of mathematics*	6
MATH2014	Multivariable calculus and linear algebra*	6
SDST2601	Probability and statistics I	6

*Students who are passionate and would like to explore more about mathematics can opt for the combination of MATH2101 Linear algebra I and MATH2211 Multivariable calculus in replacement of the combination of MATH2012 and MATH2014. Students are advised to check the course details of these MATH courses and consult the academic advisors of the Department of Mathematics in advance.

Advanced Courses (12 credits)

Course Code	Course	No. of credits
COMP3230	Principles of operating systems	6
COMP3314	Introduction to machine learning	6

Elective courses (24 credits)

12 credits of courses to be chosen from the following list:

Course Code	Course	No. of credits
COMP3234	Computer and communication networks	6
COMP3278	Introduction to database management systems	6
COMP3251 / COMP3252	Algorithm design / Algorithm design and analysis	6
COMP3297	Software engineering	6

12 credits of courses to be chosen from the following lists:

Introductory Courses

Course Code	Course	No. of credits
COMP2396	Object-oriented programming and Java	6
COMP2501	Introduction to data science	6

Advanced Courses

Course Code	Course	No. of credits
COMP3230	Principles of operating systems	6
COMP3234	Computer and communication networks	6
COMP3278	Introduction to database management systems	6
COMP3297	Software engineering	6
COMP3231	Computer architecture	6

COMP3235	Compiling techniques	6
COMP3251 / COMP3252	Algorithm design / Algorithm design and analysis	6
COMP3258	Functional programming	6
COMP3259	Principles of programming languages	6
COMP3270	Introduction to artificial intelligence	6
COMP3271	Computer graphics	6
COMP3311	Legal aspects of computing	6
COMP3316	Quantum information and computation	6
COMP3317	Introduction to computer vision	6
COMP3320	Electronic commerce technology	6
COMP3322	Modern technologies on World Wide Web	6
COMP3323	Advanced database systems	6
COMP3329	Computer game design and programming	6
COMP3330	Interactive mobile application design and programming	6
COMP3340	Introduction to deep learning	6
COMP3351	Advanced algorithm analysis	6
COMP3352	Algorithmic game theory	6
COMP3353	Bioinformatics	6
COMP3354	Statistical learning	6
COMP3355	Cyber security	6
COMP3356	Robotics	6
COMP3357	Cryptography	6
COMP3358	Distributed and parallel computing	6
COMP3360	Data-driven computer animation	6
COMP3361	Natural language processing	6
COMP3362	Hands-on AI: experimentation and applications	6
COMP3364	Digital forensics	6
COMP3365	Cyber attack and defense	6
COMP3366	Quantum algorithms and computer architecture	6
COMP3405	Engineering quality software	6
COMP3407	Scientific computing	6
COMP3516	Data analytics for IoT	6
COMP4510	Principles of machine learning	6
COMP4511	Principles of deep learning	6
COMP4512	Advanced computer vision	6
IMSE3137	Virtual reality for systems engineering	6
IMSE3139	Cyber-physical systems	6

Capstone Experience (12 credits)

Course Code	Course	No. of credits
COMP4801	Final year project	12

Notes:

1. In principle, double counting is not permissible.

   1.1 Students who have completed COMP1117 to fulfil the requirement of their primary major are required to complete one more elective from the list of elective courses.

   1.2 Students who have completed ENGG1330 to fulfil the requirement of their primary major are deemed to have completed COMP1117, they are not permitted to take COMP1117 and are required to complete one more elective from the list of elective

courses as a replacement.

1.3 Students who have completed ENGG1340 to fulfil the requirement of their primary major are deemed to have completed COMP2113, they are not permitted to take COMP2113 and are required to complete one more elective in Computer Science as a replacement.

1.4 Students who have completed MATH2012/MATH2014/SDST2601 to fulfil the requirement of their primary major are required to complete one more elective from the list of elective courses as a replacement.

1.5 Students who have completed COMP2118 to fulfil the requirement of their primary major are deemed to have completed COMP2119, they are not permitted to take COMP2119 and are required to complete one more elective from the list of elective courses as a replacement.

1.6 Students who have completed MATH3600 Discrete mathematics are deemed to have completed COMP2121, they are not permitted to take COMP2121 and are required to complete one more elective from the list of elective courses as a replacement.

2. BASc(FinTech) students who have completed FITE4801 are deemed to have completed COMP4801 and are required to complete two more electives from the list of elective courses as replacement..

3. Course enrollment in elective courses is subject to the approval of the School of Computing and Data Science, in consideration of class quota and other academic issues.

MINOR IN COMPUTER SCIENCE

Impermissible Combinations:
Bachelor of Engineering in Artificial Intelligence and Data Science [BEng(AI&DataSc)]
Bachelor of Engineering in Computer Engineering [BEng(CE)]
Bachelor of Engineering in Computer Science [BEng(CompSc)]
Bachelor of Statistics (Professional Core in Decision Analytics) [BStat(DA)]
Major in Computer Science
Major in Decision Analytics

The curriculum comprises 42 credits of courses with the following structure, in which students are required to complete 18 credits of Core Courses and 24 credits of Elective Courses.

Prerequisite: Level 3 or above in Mathematics in the Hong Kong Diploma of Secondary Education (HKDSE) Examination, or equivalent

Core Courses (18 credits)

Introductory Courses

Course Code	Course	No. of credits
COMP1117	Computer programming	6
COMP2113	Programming technologies	6
COMP2118	Data structures and algorithms essentials	6

Elective Courses (24 credits)

24 credits to be chosen from the following lists of Introductory Courses or Advanced Courses, of which at least 12 credits are chosen from the list of Advanced Courses

Introductory Courses

Course Code	Course	No. of credits
COMP2120	Computer organization	6
COMP2121	Discrete mathematics	6
COMP2396	Object-oriented programming and Java	6
COMP2501	Introduction to data science	6

Advanced Courses

Course Code	Course	No. of credits
COMP3230	Principles of operating systems	6
COMP3231	Computer architecture	6
COMP3234	Computer and communication networks	6
COMP3235	Compiling techniques	6
COMP3251 / COMP3252	Algorithm design / Algorithm design and analysis	6
COMP3258	Functional programming	6
COMP3259	Principles of programming languages	6
COMP3270	Introduction to artificial intelligence	6
COMP3271	Computer graphics	6
COMP3278	Introduction to database management systems	6
COMP3297	Software engineering	6
COMP3311	Legal aspects of computing	6
COMP3314	Introduction to machine learning	6
COMP3316	Quantum information and computation	6
COMP3317	Introduction to computer vision	6
COMP3320	Electronic commerce technology	6
COMP3322	Modern technologies on World Wide Web	6
COMP3323	Advanced database systems	6
COMP3329	Computer game design and programming	6
COMP3330	Interactive mobile application design and programming	6
COMP3340	Introduction to deep learning	6
COMP3351	Advanced algorithm analysis	6
COMP3352	Algorithmic game theory	6
COMP3353	Bioinformatics	6
COMP3354	Statistical learning	6
COMP3355	Cyber security	6
COMP3356	Robotics	6
COMP3357	Cryptography	6
COMP3358	Distributed and parallel computing	6
COMP3360	Data-driven computer animation	6
COMP3361	Natural language processing	6
COMP3362	Hands-on AI: experimentation and applications	6
COMP3364	Digital forensics	6

COMP3365	Cyber attack and defense	6
COMP3366	Quantum algorithms and computer architecture	6
COMP3405	Engineering quality software	6
COMP3407	Scientific computing	6
COMP3516	Data analytics for IoT	6
COMP4510	Principles of machine learning	6
COMP4511	Principles of deep learning	6
COMP4512	Advanced computer vision	6
IMSE3137	Virtual reality for systems engineering	6
IMSE3139	Cyber-physical systems	6

Notes:

1. In principle, double counting is not permissible.

   1.1 Students who have completed ENGG1330 are deemed to have completed COMP1117, they are not permitted to take COMP1117 and are required to complete one more elective from the list of elective courses as a replacement.

   1.2 Students who have completed ENGG1340 are deemed to have completed COMP2113, they are not permitted to take COMP2113 and are required to complete one more elective from the list of elective courses as a replacement.

   1.3 Students who have completed COMP1117 to fulfil the requirement of their primary major are required to complete one more elective from the list of elective courses.

   1.4 Students who have completed COMP2118 to fulfil the requirement of their primary major are required to complete one more elective from the list of elective courses as a replacement.

2. Course enrollment in elective courses is subject to the approval of the School of Computing and Data Science, in consideration of class quota and other academic issues.

DESCRIPTION FOR UNDERGRADUATE COURSES OFFERED BY THE SCHOOL OF COMPUTING AND DATA SCIENCE

The courses listed below may not be offered every year. The content and assessment of individual courses may be subject to adjustment upon review each academic year. Students should refer to the most up-to-date course outlines as distributed by individual course coordinators.

For the description of courses offered outside the School of Computing and Data Science, please refer to the syllabuses of the respective programmes in the corresponding teaching departments.

COMP1110. Computing and data science in everyday life (6 credits)

In this course, students will dive into the dynamic world of computing and data science, focusing on real-world problem-solving skills. The course will explore the latest advancements and innovations in computing, big data analytics and artificial intelligence technologies, and examine how they shape our daily lives. Students will also recognize the challenges and opportunities faced by computing and data science professionals. Through hands-on projects and teamwork, students will gain firsthand experience in creating data-driven solutions to solve practical challenges in computing and data science.

Assessment: 100% continuous assessment

COMP1117. Computer programming (6 credits)

This is an introductory course in computer programming. Students will acquire basic Python programming skills, including syntax, identifiers, control statements, functions, recursions, strings, lists, dictionaries, tuples and files. Searching and sorting algorithms, such as sequential search, binary search, bubble sort, insertion sort and selection sort, will also be covered.

Mutually exclusive with: ENGG1111 or ENGG1330 or IIMT2602
Assessment: 50% continuous assessment, 50% examination

COMP2113. Programming technologies (6 credits)

This course covers intermediate to advanced computer programming topics on various technologies and tools that are useful for software development. Topics include Linux shell commands, shell scripts, C/C++ programming, and separate compilation techniques and version control. This is a self-learning course; there will be no lecture and students will be provided with self-study materials. Students are required to complete milestone-based self-assessment tasks during the course. This course is designed for students who are interested in Computer Science / Computer Engineering.

Prerequisite: COMP1117 or ENGG1330
Mutually exclusive with: ENGG1340 or COMP2123
Assessment: 70% continuous assessment, 30% examination

COMP2118. Data structures and algorithms essentials (6 credits)

This course covers essential concepts in data structures and algorithms including arrays, linked lists, trees and graphs, stacks and queues, priority queues, balanced trees, sorting algorithms and basic complexity analysis. This course is designed for students interested in pursuing a minor in Computer Science or those from different disciplines seeking prerequisite knowledge for other CS courses. (Note: This course is not for students majoring in Computer Science/Artificial Intelligence and Data Science/Applied AI.)

Prerequisite: COMP2113 or COMP2123 or ENGG1340
Mutually exclusive with: COMP2119
Assessment: 40% continuous assessment, 60% examination

COMP2119. Introduction to data structures and algorithms (6 credits)

Arrays, linked lists, trees and graphs; stacks and queues; symbol tables; priority queues, balanced trees; sorting algorithms; complexity analysis.

Prerequisite: COMP2113 or COMP2123 or ENGG1340
Mutually exclusive with: COMP2118
Assessment: 40% continuous assessment, 60% examination

COMP2120. Computer organization (6 credits)

Introduction to computer organization and architecture; data representations; instruction sets; machine and assembly languages; basic logic design and integrated devices; the central processing unit and its control; memory and caches; I/O and storage systems; computer arithmetic.

Prerequisite: COMP1117 or ENGG1330
Mutually exclusive with: ELEC2441
Assessment: 50% continuous assessment, 50% examination

COMP2121. Discrete mathematics (6 credits)

This course provides students a solid background on discrete mathematics and structures pertinent to computer science. Topics include logic; set theory; mathematical reasoning; counting techniques; discrete probability; trees, graphs, and related algorithms; modeling computation.

Mutually exclusive with: MATH3600
Assessment: 50% continuous assessment, 50% examination

COMP2396. Object-oriented programming and Java (6 credits)

Introduction to object-oriented programming; abstract data types and classes; inheritance and polymorphism; object-oriented program design; Java language and its program development environment; user interfaces and GUI programming; collection class and iteration protocol; program documentation.

Prerequisite: COMP2113 or COMP2123 or ENGG1340
Mutually exclusive with: ELEC2543 or FITE2000
Assessment: 50% continuous assessment, 50% examination

COMP2501. Introduction to data science (6 credits)

The course introduces basic concepts and methodology of data science. The goal of this course is to provide students with an overview and practical experience of the entire data analysis process. Topics include: data source and data acquisition, data preparation and manipulation, exploratory data analysis, statistical and predictive analysis, data visualization and communication.

Prerequisite: COMP1117 or ENGG1330
Mutually exclusive with: SDST1005 or SDST1015 or SDST1018
Assessment: 50% continuous assessment, 50% examination

COMP3230. Principles of operating systems (6 credits)

Operating system structures, process and thread, CPU scheduling, process synchronization, deadlocks, memory management, file systems, I/O systems and device driver, mass-storage structure and disk scheduling, case studies.

Prerequisites: COMP2113 or COMP2123 or ENGG1340; and COMP2120 or ELEC2441
Mutually exclusive with: ELEC3541
Assessment: 50% continuous assessment, 50% examination

COMP3231. Computer architecture (6 credits)

Introduction to computer design process; performance and cost analysis; instruction set design; data-path and controller design; pipelining; memory system; I/O design; GPU architecture and programming; introduction to advanced topics.

Prerequisite: COMP2120
Assessment: 40% continuous assessment, 60% examination

COMP3234. Computer and communication networks (6 credits)

Network structure and architecture; reference models; stop and wait protocol; sliding window protocols; virtual circuits and datagrams; IP addressing and routing; flow control; congestion control; local area networks; transport protocols and application layer; and examples of network protocols.

Prerequisites: COMP2113 or COMP2123 or ELEC2543 or ENGG1340; and COMP2120 or ELEC2441
Mutually exclusive with: ELEC3443
Assessment: 50% continuous assessment, 50% examination

COMP3235. Compiling techniques (6 credits)

Lexical analysis; symbol table management; parsing techniques; error detection; error recovery; error diagnostics; run-time memory management; optimization; code generation.

Prerequisite: COMP2119 or COMP2118 or FITE2000
Assessment: 50% continuous assessment, 50% examination

COMP3251. Algorithm design (6 credits)

The course introduces various algorithm design techniques, including divide and conquer, greedy, and dynamic programming, and studies selected topics on graph algorithms. These techniques can be used to design better algorithms in various areas of computer science. The course also gives an overview of NP-complete problems.

Prerequisite: COMP2119 or COMP2118
Mutually exclusive with: COMP3250 or COMP3252
Assessment: 50% continuous assessment, 50% examination

COMP3252. Algorithm design and analysis (6 credits)

The course studies principles of algorithm design and the analysis of sophisticated algorithms (regarding proof of correctness and time complexity). Topics include divide-and-conquer, dynamic programming, greedy algorithms, graph algorithms, network flow, geometric algorithms, and NP-completeness. The course puts emphasis on mathematical rigor; it expects students to figure out the mathematics and logic that make algorithms work. Students can form pairs to discuss the assignments and are required to write rigorous proofs of correctness and analysis independently.

Prerequisite: COMP2119 or COMP2118 (Grade B or above) or special approval by instructor
Mutually exclusive with: COMP3250 or COMP3251

Assessment: 50% continuous assessment, 50% examination

COMP3258. Functional programming (6 credits)

The course teaches the basics of functional programming using the language Haskell. The main goal is introduce students to fundamental programming concepts such as recursion, abstraction, lambda expressions and higher-order functions and data types. The course will also study the mathematical reasoning involved in the design of functional programs and techniques for proving properties about functions so defined. With the adoption of lambda expressions recent versions of Java, C++ or C#, functional programming and related programming techniques are becoming increasingly more relevant even for programmers of languages that are not traditionally viewed as functional. This course is important to introduce students to such techniques.

Prerequisite: COMP2121
Assessment: 50% continuous assessment, 50% examination

COMP3259. Principles of programming languages (6 credits)

Syntax and semantics specification; data types; data control and memory management; expressions, precedence and associativity of operators; control structures; comparative study of existing programming languages; advanced topics such as polymorphism, programming paradigms, exception handling and concurrency.

Prerequisite: COMP2119 or COMP2118 or FITE2000
Assessment: 40% continuous assessment, 60% examination

COMP3270. Introduction to artificial intelligence (6 credits)

This course provides an introduction to the fundamental concepts and techniques of artificial intelligence (AI). Students will learn about intelligent agents, problem solving, uncertain knowledge, and logical agents. The course combines theoretical foundations with practical applications to equip students with the tools needed to understand and develop intelligent systems.

Prerequisite: COMP2119 or COMP2118 or FITE2000 or COMP2502
Mutually exclusive with: ELEC4544 or IIMT3688
Assessment: 50% continuous assessment, 50% examination

COMP3271. Computer graphics (6 credits)

Overview of graphics hardware, basic drawing algorithms, 2-D transformations, windowing and clipping, interactive input devices, curves and surfaces, 3-D transformations and viewing, hidden-surface and hidden-line removal, shading and colour models, modelling, illumination models, image synthesis, computer animation.

Prerequisite: COMP2119 or COMP2118
Assessment: 50% continuous assessment, 50% examination

COMP3278. Introduction to database management systems (6 credits)

This course studies the principles, design, administration, and implementation of database management systems. Topics include: entity-relationship model, relational model, relational algebra, database design and normalization, database query languages, indexing schemes, integrity and concurrency control.

Prerequisite: COMP2119 or COMP2118 or COMP2502 or ELEC2543 or FITE2000
Mutually exclusive with: IIMT3601
Assessment: 50% continuous assessment, 50% examination

COMP3297. Software engineering (6 credits)

This course introduces the fundamental principles and methodologies of modern software engineering. It covers the software process and activities, including requirements engineering, system modelling, software design, testing, and evolution. It highlights the use of contemporary tools, frameworks and techniques. It features an object-oriented software design project in which students work in teams to satisfy their clients' needs.
Prerequisite: COMP2113 or COMP2123 or ENGG1340
Mutually exclusive with: IIMT3602
Assessment: 50% continuous assessment, 50% examination

COMP3311. Legal aspects of computing (6 credits)

To introduce students to the laws affecting computing and the legal issues arising from the technology. Contents include: the legal system of Hong Kong; copyright protection for computer programs; intellectual property issues on the Internet; data privacy; computer-related crimes; codes of professional conduct for computer professionals.

Prerequisite: COMP2113 or COMP2123 or ENGG1340
Assessment: 30% continuous assessment, 70% examination

COMP3314. Introduction to machine learning (6 credits)

This course introduces basic concepts, algorithms, practices, tools, and applications of machine learning. Topics include classical methods in supervised learning (classification and regression), such as perceptrons, linear regression, decision trees, logistic regression, support vector machines, and KNN; classical methods in unsupervised learning, such as K-means clustering and principal component analysis; common practices in data pre-processing, feature selection, hyper-parameter tuning, and model evaluation; tools/libraries/APIs such as scikit-learn and multi/many-core CPU/GPU programming; applications such as flower species prediction, tumor cell classification, and handwritten digit recognition.

Prerequisites: MATH1853 or MATH2014 or MATH1013; and COMP2119 or COMP2118 or COMP2502 or ELEC2543 or FITE2000
Assessment: 50% continuous assessment, 50% examination

COMP3316. Quantum information and computation (6 credits)

This course offers an introduction to the interdisciplinary field of quantum information and

computation. We will start from the basic rules of quantum theory and become familiar with the counterintuitive notions of quantum superposition and entanglement. In particular, we will see how quantum systems could be used to detect an object without directly interacting with it (Elitzur-Vaidman bomb tester), to increase the amount of bits that can be sent through a transmission line (dense coding), and to increase the chance to win certain games (CHSH game and GHZ game). Once the basics have been covered, we will provide an overview of quantum computation and of major quantum algorithms such as Grover's search algorithm and Shor's factoring algorithm for prime factorization. Finally, we will introduce the upgraded framework of quantum theory, and use it to explore applications to quantum error correction, quantum state discrimination, quantum cryptography, and quantum teleportation.

Prerequisite: MATH1853 or MATH2014 or MATH2101 or MATH1013 or equivalent (e.g., PHYS2155)
Assessment: 50% continuous assignment, 50% examination

COMP3317. Introduction to computer vision (6 credits)

This course introduces the basic concepts, mathematical models, and methods of computer vision. In the first half of this course, we will focus on 2D computer vision tasks and cover topics in image formation and representation, digital image processing, feature extraction, and image recognition. In the second half of this course, we will look into 3D computer vision tasks and cover topics in camera models, camera calibration, stereo vision, and motion analysis.

Prerequisites: COMP2119 or COMP2118; and MATH1853 or MATH2014 or MATH2101 or MATH1013
Assessment: 50% continuous assessment, 50% examination

COMP3320. Electronic commerce technology (6 credits)

This course aims to help students to understand the technical and managerial challenges they will face as electronic commerce becomes a new locus of economics activities. Topics include Internet and WWW technology, information security technologies, public-key crypto-systems, public-key infrastructure, electronic payment systems, and electronic commerce activities in different sectors.

Prerequisite: COMP3278
Assessment: 50% continuous assessment, 50% examination

COMP3322. Modern technologies on World Wide Web (6 credits)

Selected network protocols relevant to the World Wide Web (e.g., HTTP, DNS, IP); World Wide Web; technologies for programming the Web (e.g, HTML, style sheets, PHP, JavaScript, Node.js.; other topics of current interest (AJAX, HTML5, web services, cloud computing).

Prerequisite: COMP1117 or ENGG1330
Mutually exclusive with: IIMT3663
Assessment: 60% continuous assessment, 40% examination

COMP3323. Advanced database systems (6 credits)

The course will study some advanced topics and techniques in database systems, with a focus on the

system and algorithmic aspects. It will also survey the recent development and progress in selected areas. Topics include: query optimization, spatial-spatiotemporal data management, multimedia and time-series data management, information retrieval and XML, data mining.

Prerequisite: COMP3278
Mutually exclusive with: FITE3010
Assessment: 50% continuous assessment, 50% examination

COMP3329. Computer game design and programming (6 credits)

This course introduces the concepts and techniques for computer game design and development. Topics include: game history and genres, game design process, game engine, audio and visual design, 2D and 3D graphics, physics, optimization, camera, network, artificial intelligence and user interface design. Students participate in group projects to gain hands-on experience in using common game engine in the market.

Prerequisite: COMP2113 or COMP2123 or ENGG1340
Assessment: 70% continuous assessment, 30% examination

COMP3330. Interactive mobile application design and programming (6 credits)

This course aims at introducing the design and development issues of mobile apps. Students will learn the basic principles, constraints and lifecycle of mobile apps. Then they will learn how to use modern object-oriented languages for the development and different design patterns. Next they will learn various development issues such as graphics, touch events, handling of concurrency, sensors, location services and server connection. Students will also participate in both individual assignments and group project to practice ideation, reading, writing, coding and presentation throughout this course.

Prerequisite: COMP2396 or FITE2000
Assessment: 70% continuous assessment, 30% examination

COMP3340. Introduction to deep learning (6 credits)

This course provides practical skills and foundational knowledge in deep learning, emphasizing hands-on experience and computational principles. Students will explore key models, including Convolutional Neural Networks (CNNs), Transformer Networks, Generative Adversarial Networks (GANs), and Diffusion Models. They will apply these models to real-world challenges like object detection, language tasks, and reinforcement learning. The course also covers cutting-edge applications, such as autonomous driving and AI in scientific research. By working directly with source code, students will understand model implementation and optimization deeply. The course culminates in a project where students apply their skills to a practical problem, showcasing their ability to utilize deep learning technologies.

Prerequisites: COMP2119 or COMP2118 or COMP2502 or ELEC2543 or FITE2000; and MATH1853 or MATH2014 or MATH1013
Mutually exclusive with: ELEC4544
Assessment: 50% continuous assessment, 50% examination

COMP3351. Advanced algorithm analysis (6 credits)

This class introduces advanced mathematical techniques for analyzing the complexity and correctness of algorithms. NP-complete problems are believed to be not solvable in polynomial time and we study how approximation algorithms could give near optimal solutions. In particular, we will see that probability theory gives us a very powerful tool to tackle problems that are otherwise hard to solve.

Prerequisite: COMP3250 or COMP3251 or COMP3252; or basic knowledge in probability and algorithms
Assessment: 50% continuous assessment, 50% examination

COMP3352. Algorithmic game theory (6 credits)

Strategic behaviors of users are of increasingly importance in today's computational problems, from data analysis (where a user may manipulate his data) to routing (where a user may strategically choose a path instead of the one that the algorithm specifies). This is an undergraduate advanced algorithm course that covers various topics at the interface of theoretical computer science and economics, seeking to provide the basic concepts and techniques, both economic and algorithmic ones, that would allow to students to design algorithms that achieve the desirable outcomes in the presence of strategic behaviors of users.

This course focuses on three topics: 1) mechanism design, a study on incentivizing users to truthfully report their data for a given computational task; 2) price of anarchy in games, a systematic approach to quantify the inefficiency caused by users' strategic behaviors; and 3) algorithms and complexity theory for learning and computing Nash and market equilibria. The course will also cover some selected advanced topics such as the use of data of past user behaviors in auction design, and case studies of some important applications including online advertisement auctions and kidney exchange market.

Prerequisites: MATH1853 or MATH2014 or MATH2101 or MATH1013; and COMP2119 or COMP2118 (Grade B or above)
Assessment: 50% continuous assessment, 50% examination

COMP3353. Bioinformatics (6 credits)

The goal of the course is for students to be grounded in basic bioinformatics concepts, algorithms, tools, and databases. Students will be leaving the course with hands-on bioinformatics analysis experience and empowered to conduct independent bioinformatics analyses. We will study: 1) algorithms, especially those for sequence alignment and assembly, which comprise the foundation of the rapid development of bioinformatics and DNA sequencing; 2) the leading bioinformatics tools for comparing and analyzing genomes starting from raw sequencing data; 3) the functions and organization of a few essential bioinformatics databases and learn how they support various types of bioinformatics analysis.

Prerequisite: COMP1117 or ENGG1330
Assessment: 70% continuous assessment, 30% examination

COMP3354. Statistical learning (6 credits)

The challenges in learning from big and complicated data have led to significant advancements in the statistical sciences. This course introduces supervised and unsupervised learning, with emphases on the theoretical underpinnings and on applications in the statistical programming environment R. Topics include linear methods for regression and classification, model selection, model averaging,

basic expansions and regularization, kernel smoothing methods, additive models and tree-based methods. We will also provide an overview of neural networks and random forests.

Prerequisite: MATH1853 or MATH2101 or SDST1602 or SDST1603 or MATH1013
Assessment: 50% continuous assessment, 50% examination

COMP3355. Cyber security (6 credits)

This course introduces the principles, mechanisms and implementation of cyber security and data protection. Knowledge about the attack and defense are included. Topics include notion and terms of cyber security; network and Internet security, introduction to encryption: classic and modern encryption technologies; authentication methods; access control methods; cyber attacks and defenses (e.g. malware, DDoS).

Prerequisite: COMP2119 or COMP2118 or ELEC2543 or FITE2000
Mutually exclusive with: ELEC4641
Assessment: 50% continuous assessment, 50% examination

COMP3356. Robotics (6 credits)

This course provides an introduction to mathematics and algorithms underneath state-of-the-art robotic systems. The majority of these techniques are heavily based on probabilistic reasoning and optimization – two areas with wide applicability in modern AI. We will also cover some basic knowledge about robotics, namely geometry, kinematics, dynamics, control of a robot, as well as the mathematical tools required to describe the spatial motion of a robot will be presented. In addition, we will cover perception, planning, and learning for a robotic system, with the obstacle avoidance and robotic arm manipulation as typical examples.

Prerequisites: MATH1853 or MATH2014 or MATH1013; and COMP2121 or SDST2601; and COMP2119 or COMP2118 or FITE2000
Assessment: 50% continuous assessment, 50% examination

COMP3357. Cryptography (6 credits)

This course offers a gentle introduction to the field of cryptography. We will start from the basic principles of confidentiality, integrity and authentication. After that, we will go through some fundamental cryptographic primitives like hash function, symmetric key encryption, public key encryption and digital signatures. Finally, we will introduce the basics of quantum cryptography including quantum key distribution and random number generation.

Prerequisite: MATH1853 or MATH2014 or MATH2101 or MATH1013 or equivalent (e.g., PHYS2155)
Assessment: 50% continuous assessment, 50% examination

COMP3358. Distributed and parallel computing (6 credits)

This course introduces the basic concepts and modern software architectures on distributed and parallel computing. Topics include: computer network primitives, distributed transactions and two-phase commits, webservices, parallelism and scalability models, distributed consistency models, distributed fault-tolerance, actor and monads, Facebook photo cache, Amazon key-value stores, Google Map-reduce, Spark, and TensorFlow.

Prerequisite: COMP3230 or COMP3234
Assessment: 50% continuous assessment, 50% examination

COMP3360. Data-driven computer animation (6 credits)

Basics of character animation, keyframe animation, motion capture, inverse kinematics, physically based character animation, Basics of physically-based animation, rigid body dynamics, point-based dynamics, hair animation, cloth simulation, facial animation, crowd simulation, mesh-shape editing, performance capture, skinning, data-driven character control, data-driven cloth animation, data-driven facial animation, data-driven skinning.

Prerequisite: COMP2119 or COMP2118
Assessment: 50% continuous assessment, 50% examination

COMP3361. Natural language processing (6 credits)

Natural language processing (NLP) is the study of human language from a computational perspective. The course will be focusing on machine learning and corpus-based methods and algorithms. We will cover syntactic, semantic and discourse processing models. We will describe the use of these methods and models in applications including syntactic parsing, information extraction, statistical machine translation, dialogue systems, and summarization. This course starts with language models (LMs), which are both front and center in natural language processing (NLP), and then introduces key machine learning (ML) ideas that students should grasp (e.g. feature-based models, log-linear models and then the neural models). We will land on modern generic meaning representation methods (e.g. BERT/GPT-3) and the idea of pretraining / finetuning.

Prerequisites: COMP3314 or COMP3340; and MATH1853 or MATH1013
Assessment: 50% continuous assessment, 50% examination

COMP3362. Hands-on AI: experimentation and applications (6 credits)

This course comprises two main components: students first acquire the basic know-how of the state-of-the-art AI technologies, platforms and tools (e.g., TensorFlow, PyTorch, scikit-learn) via example-based modules in a self-paced learning mode. Students will then identify a creative or practical data-driven application and implement an AI-powered solution for the application as the course project. Students will be able to experience a complete AI experimentation and evaluation cycle throughout the project.

Prerequisite: COMP3314
Mutually exclusive with: COMP3359
Assessment: 100% continuous assessment

COMP3364. Digital forensics (6 credits)

This course first provides an overview on common cyber crime with examples, then introduces digital evidence, and the fundamental principles of digital investigation and forensics. Topics include basic forensic science principles (e.g. Locard's exchange principle), the process of collecting and preserving digital evidence, analyzing digital evidence, and prepare forensic examination reports. In the course, students will learn proper process, techniques and tools for digital investigation and forensic examination.

Prerequisites: COMP3230 and COMP3355
Assessment: 50% continuous assessment, 50% examination

COMP3365. Cyber attack and defense (6 credits)

This course teaches students some basic hands-on cyber defense skills such as how to configure a firewall, install intrusion detection tools, use existing tools (e.g. Metasploit) for penetration test, monitor a system for possible attacks, and how to handle cyber incidents. On the other hand, we also teach students how to conduct certain ethical hacking such as password cracking, network hacking, and operating system hacking, so as to better protect a system. Students are expected to do a lot of practical exercises.

Prerequisites: COMP3230, COMP3234 and COMP3355
Assessment: 50% continuous assessment, 50% examination

COMP3366. Quantum algorithms and computer architecture (6 credits)

Quantum computing can perform hard computational tasks that are far beyond the reach of conventional computers. This course will focus on quantum computing and its realization, offering a tour through the most important concepts and the most recent progresses. The course consists of four major parts: basics of quantum computing, quantum algorithms, quantum machine learning, and quantum error correction. The course starts with an introduction to the essential ingredients of quantum circuits. We will get familiar with quantum computing by going through representative quantum algorithms and visiting more advanced topics in quantum machine learning. We will then discuss how to build a quantum computer: various ways of implementing quantum computations and coping with noises will be discussed. Finally, we will conclude the course with an overview of recent progresses and with a perspective on the future of quantum computing. Tutorials will also be offered on quantum programming, where we will design our own quantum algorithms that address practical problems.

Prerequisites: MATH1853 or MATH1013
Assessment: 50% continuous assessment, 50% examination

COMP3405. Engineering quality software (6 credits)

This course examines current engineering techniques, practices and processes underlying the development, evolution, and operation of quality software. Topics include: software quality models and metrics; architecture and design patterns for quality; code quality and its assessment; software refactoring and evolution; functional testing at unit, feature and system levels; acceptance testing; performance testing; security testing; test automation; DevOps measurement and quality; and process quality and improvement.

Prerequisite: COMP3297
Assessment: 50% continuous assessment, 50% examination

COMP3407. Scientific computing (6 credits)

This course provides an overview and covers the fundamentals of scientific and numerical computing. It focuses on topics in numerical analysis and computation, with discussions on applications of scientific computing.

Prerequisites: COMP1117 or ENGG1330; and COMP2121
Assessment: 50% continuous assessment, 50% examination

COMP3410. Internship (0 credit) *[for intakes of 2018 and thereafter]*

The course consists of two components: internship and professionalism. Internship requires students to spend a minimum of four weeks employed, full-time, as IT interns or trainees. During this period, they are engaged in work of direct relevance to their programme of study. The Internship provides students with practical, real-world experience and represents a valuable complement to their academic training. Professionalism exposes students to social and professional issues in computing. Students need to understand their professional roles when working as computer professionals as well as the responsibility that they will bear. They also need to develop the ability to ask serious questions about the social impact of computing and to evaluate proposed answers to those questions. Topics include: intellectual property, privacy, social context of computing, risks, safety and security concerns for computer professionals, professional and ethical responsibilities, and continuing professional development.

Assessment: 100% continuous assessment

COMP3413. Research internship (6 credits)

The student will participate in a research project under the guidance and supervision of a teacher over a prescribed period of time; the results will be presented in an oral and a written report.

Assessment: 100% continuous assessment

COMP3414. Experiential learning on artificial intelligence and robotics (6 credits)

This is a multidisciplinary experiential learning course designed for engineering students to learn about artificial intelligence (AI) and robotics. Students will learn AI and robot related technical disciplines (such as machine vision, embedded system design, mechanical control, inertial navigation, human-computer interaction, etc.) through designing and building intelligent robots, and forming teams to participate in robotics competitions such as RoboMaster Robotics Competition and AI Driving Olympics (AI-DO), etc.

Assessment: 100% continuous assessment

COMP3516. Data analytics for IoT (6 credits)

This course introduces basic concepts, technologies, and applications of the Internet of Things (IoT). The course covers a range of enabling techniques in sensing, computing, communication, and learning for IoT and connects them to exciting applications in smart homes, healthcare, security, etc. The course will center around intelligent perception via innovative sensing technologies, with various topics from the fundamentals (e.g., signal processing, statistical analysis, machine learning) to real-world systems.

Billions of things are connected today, and this course helps students understand how IoT will evolve into AIoT (Artificial Intelligence of Things) with sensing and data intelligence.

Prerequisite: MATH1853 or MATH2014 or MATH1013; and COMP2119 or COMP2118 or COMP2502
Assessment: 60% continuous assessment, 40% examination

COMP4510. Principles of machine learning (6 credits)

This course is for students who are familiar with machine learning methods and would like to dive deep into the mathematical foundations of machine learning. This course aims to provide students with the mathematical foundations of machine learning and prepare them for more advanced study and research in machine learning and AI. The course focuses on the design principles of machine learning methods (where they come from) and the analysis principles (how they end up). Topics include statistical machine learning framework, Bayes' rule, MLE/MAP, generative and discriminative learning, regularization, generalization, kernel methods, clustering and mixture models, factor analysis and representation learning, reinforcement learning, and applications.

Prerequisite: COMP3314 or SDST3612
Assessment: 50% continuous assessment, 50% examination

COMP4511. Principles of deep learning (6 credits)

This course aims to provide a rigorous and systematic introduction to the mathematical and computational principles of deep learning. We focus on a common fundamental problem behind almost all modern practices of artificial intelligence: how to effectively and efficiently learn a low-dimensional distribution of data in a high-dimensional space and then transform the distribution to a compact and structured representation. To this end, we will show how to derive all popular neural network architectures from the first principle of data compression. This course aims to truly bridge the theory to practice for the students by providing both written and programming exercises and hands-on projects aiming at applying the learned methods to real-world problems and tasks such as classification, completion, segmentation, generation for both image and text data.

Prerequisite: COMP3340
Assessment: 100% continuous assessment

COMP4512. Advanced computer vision (6 credits)

This course is an advanced course in computer vision, and it covers three fundamental tasks that modern computer vision strives to achieve: image understanding, image generation, and 3D reconstruction. Hence, it consists of three parts and each part consists of a coherent set of topics and methods. For image understanding, we will cover image classification, image segmentation and object detection. For image generation, we cover the typical image generation methods, including Variational Auto-Encoder, Generative Adversarial Networks, Diffusion Models, as well as their typical applications. For 3D reconstruction and generation part, we may cover multiple-view geometry that enables reconstructing 3D geometry from feature points, lines, and planes, as well as from regular textural patterns. We will also introduce how to represent a 3D scene, both implicit and explicit representations. Other than introducing basic theory and methods, this course emphasizes hands-on implementation and problem-solving skills of the students. The target students are year 4 undergraduate students or year 1 graduate students.

Prerequisite: COMP3340, COMP3317
Assessment: 50% continuous assessment, 50% examination

COMP4801. Final year project (12 credits)

In this final year capstone project, students are required to initiate project ideas, develop feasible and effective solutions, and produce a comprehensive final deliverable. Project topics may cover diverse areas, including applied software development, practical and innovative solutions to everyday challenges, and basic research. The deliverables must demonstrate a thorough integration of the students' computing expertise and skills. Each project team member must make significant contributions, and individual assessments will be conducted for all students.

Assessment: 100% continuous assessment

SDST2601. Probability and statistics I (6 credits)

The discipline of statistics is concerned with situations in which uncertainty and variability play an essential role and forms an important descriptive and analytical tool in many practical problems. Against a background of motivating problems this course develops relevant probability models for the description of such uncertainty and variability.

Prerequisite/Co-requisite: MATH2014, or (MATH2101 and MATH2211)
Mutually exclusive with: ELEC2844 or MATH3603 or SDST1603 or SDST2901
Assessment: 40% continuous assessment, 60% examination