

THE UNIVERSITY OF HONG KONG

BSc Chemistry Intensive Major - Curriculum Progression Plan

1. Programme Information

This curriculum progression plan is for the BSc Chemistry Intensive Major at The University of Hong Kong. The curriculum is organised by year level and includes core courses, disciplinary courses, free electives, advanced chemistry courses, capstone courses, and university graduation requirements.

Most HKU courses carry 6 credits, except CHEM4999 Chemistry Project, which carries 12 credits.

2. Course Categories

<u>Category</u>	<u>Description</u>
Core Courses	Courses required for the BSc Chemistry Intensive Major.
Free Electives	Courses open to students of any degree curriculum to fulfil the graduation credit requirement.
Disciplinary Electives	Courses offered for students to gain a deeper understanding in a more specialised area of chemistry.
Capstone Courses	Courses designed to integrate knowledge and skills acquired in the BSc Chemistry Intensive curriculum.

3. Mathematics Requirement

Students are required to take one course to fulfil the mathematics requirement. The available options are:

- CHEM1044
- COMP1117
- MATH1011
- MATH1013
- STAT1600 / STAT1061 / STAT1603

*CHEM1044 Mathematics for Chemistry is offered by the HKU Chemistry Department.

4. Science Foundation Requirement

Students are required to take the following Science Foundation courses:

- SCNC1111
- SCNC1112

*SCNC1111 and SCNC1112 are offered by the Faculty of Science and are core courses for all BSc Science students.

5. Foundation Chemistry Requirement

Students who do not have a high school chemistry background are required to take CHEM1041 Foundations of Chemistry before taking CHEM1042 General Chemistry I.

6. Suggested Year-by-Year Progression Plan

Level 1

<u>Course Code</u>	<u>Disciplinary Core Course Title</u>	<u>Course Type</u>	<u>Prerequisite</u>	<u>Offering Semester</u>
CHEM1042	General Chemistry I	Core Course with Lab	Level 3 or above in HKDSE Chemistry or equivalent or a pass in CHEM1041. Not for students having taken any level 1 Chemistry course (except for CHEM1041) or above or any equivalent Chemistry course.	1 st & 2 nd Sem
CHEM1043	General Chemistry II	Core Course	Pass in CHEM1042	1 st & 2 nd Sem
CHEM1044	Mathematics in Chemistry	Mathematics Requirement	Pass in CHEM1042 or already enrolled in this course; and Level 2 or above in Module 1 or Module 2 of HKDSE Mathematics or equivalent, or Pass in MATH1011 or SCNC1111	2 nd Sem
SCNC1111	Scientific method and reasoning	Faculty Core	Not for students who have taken STAT1016/STAT1018 from taking SCNC1111 (unless they have declared a Science major). (This course is compulsory for all students taking a Science major offered by the Faculty of Science, except those who are eligible for exemption. Students should take this course in their first year.)	1 st & 2 nd Sem
SCNC1112	Fundamentals of Modern Science	Faculty Core	NIL	1 st & 2 nd Sem

*For students who do not have a high school chemistry background, they need to take **CHEM1041** Foundations of Chemistry before taking CHEM1042.

Level 2

<u>Course Code</u>	<u>Disciplinary Core Course Title</u>	<u>Course Type</u>	<u>Prerequisite</u>	<u>Offering Semester</u>
CHEM2241	Analytical Chemistry I	Core Course with Lab	Pass in CHEM1042; and Pass in CHEM1043, or already enrolled in this course	1 st & 2 nd Sem
CHEM2341	Inorganic Chemistry I	Core Course with Lab	Pass in CHEM1042; and Pass in CHEM1043, or already enrolled in this course	1 st & 2 nd Sem
CHEM2441	Organic Chemistry I	Core Course	Pass in CHEM1042; and Pass in CHEM1043, or already enrolled in this course	1 st & 2 nd Sem
CHEM2541	Introductory Physical Chemistry	Core Course	Pass in CHEM1042 and CHEM1043 Student are recommended (but not required) to take CHEM1044 before (or along with) taking this course.	2 nd Sem

Level 3

<u>Course Code</u>	<u>Disciplinary Core Course Title</u>	<u>Course Type</u>	<u>Prerequisite</u>	<u>Offering Semester</u>
CHEM3143	Introduction to Materials Chemistry	Core Course	Pass in CHEM2441; and Pass in CHEM2541 or CHEM2341	1 st Sem
CHEM3241	Analytical Chemistry II	Core Course with Lab	Pass in CHEM2241	1 st Sem
CHEM3341	Inorganic Chemistry II	Core Course with Lab	Pass in CHEM2341	1 st Sem
CHEM3441	Organic Chemistry II	Core Course	Pass in CHEM2441	1 st & 2 nd Sem
CHEM3443	Organic Chemistry Laboratory	Core Course (Lab-Based Course)	Pass in CHEM2441; and pass in CHEM3441, or already enrolled in this course;	1 st & 2 nd Sem
CHEM3445	Integrated Laboratory	Core Course (Lab-Based Course)	Pass in CHEM3443 or already enrolled in this course	Summer Sem
CHEM3541	Physical Chemistry: Introduction to Quantum Chemistry	Core Course with Lab	Pass in CHEM2541	1 st Sem
CHEM3542	Physical Chemistry: Statistical Thermodynamics and Kinetics Theory	Core Course with Lab	Pass in CHEM2541 and CHEM3541	2 nd Sem

Level 3

<u>Course Code</u>	<u>Disciplinary Courses Title</u>	<u>Course Type</u>	<u>Prerequisite</u>	<u>Offering Semester</u>
CHEM3141	Environmental Chemistry	Disciplinary Course	Pass in CHEM2241 or CHEM2341 or CHEM2441 or CHEM2442 or CHEM2541	2 nd Sem
CHEM3144	Fundamentals of Nuclear Magnetic Resonance	Disciplinary Course with Lab	Pass in CHEM2241 or CHEM2341 or CHEM2441 or CHEM2541	2 nd Sem
CHEM3242	Food and Water Analysis	Disciplinary Course with Lab	Pass in CHEM2241 or CHEM2341 or CHEM2441 or CHEM2541	2 nd Sem
CHEM3342	Organic Chemistry of Biomolecules	Disciplinary Course	Pass in CHEM2341	2 nd Sem
CHEM3442	Bioinorganic Chemistry	Disciplinary Course	Pass in CHEM2442 or CHEM3441	1 st Sem

Level 4

<u>Course Code</u>	<u>Disciplinary Core Course Title</u>	<u>Course Type</u>	<u>Prerequisite</u>	<u>Offering Semester</u>
CHEM4142	Symmetry, Group Theory and Applications	Core Course	Pass in CHEM3341	1 st Sem
CHEM4144	Modern Chemical Instrumentation and Applications	Core Course with Lab	Pass in CHEM3143	2 nd Sem
CHEM4241	Advanced Materials	Core Course	Pass in CHEM3241	1 st Sem

Level 4

Students are required to take at least 12 credits selected from the following courses, with at least one course containing a laboratory component.

<u>Course Code</u>	<u>Disciplinary Course Title</u>	<u>Course Type</u>	<u>Prerequisite</u>	<u>Offering Semester</u>
CHEM4145	Medicinal Chemistry	Disciplinary Course	Pass in CHEM3441 or CHEM3442; and not for students who have passed in BPHM3133, or already enrolled in this course.	2 nd Sem
CHEM4147	Supramolecular Chemistry	Disciplinary Course	Pass in CHEM3341 and CHEM3441	2 nd Sem
CHEM4148	Frontiers in Modern Chemical Science	Disciplinary Course	Pass in CHEM3341 and CHEM3441	2 nd Sem
CHEM4242	Advanced Analytical Chemistry	Disciplinary Course with Lab	Pass in CHEM3241 or CHEM3242	2 nd Sem
CHEM4341	Advanced Inorganic Chemistry	Disciplinary Course	Pass in CHEM3341	1 st Sem
CHEM4342	Organometallic Chemistry	Disciplinary Course with Lab	Pass in CHEM3341	1 st Sem
CHEM4441	Advanced Organic Chemistry	Disciplinary Course with Lab	Pass in CHEM3441	1 st Sem
CHEM4443	Integrated Organic Synthesis	Disciplinary Course with Lab	Pass in CHEM3441; or Pass in CHEM3441 (without lab component) and CHEM3443	2 nd Sem
CHEM4444	Chemical Biology	Disciplinary Course	Pass in BIOC3601 or CHEM3441	2 nd Sem
CHEM4542	Computational Chemistry	Disciplinary Course with Lab	Pass in CHEM3541 and CHEM1044	1 st Sem
CHEM4543	Advanced Physical Chemistry	Disciplinary Course	Pass in CHEM3541	2 nd Sem

Capstone Courses

BSc Chemistry Intensive Major students are required to take **12 credits of capstone courses**.

<u>Course Code</u>	<u>Capstone Courses Title</u>	<u>Course Type</u>	<u>Prerequisite</u>	<u>Offering Semester</u>
CHEM3999	Directed Studies in Chemistry	Capstone Course (6 Credits)	Pass in at least 24 credits of advanced-level disciplinary core/elective chemistry courses (CHEM3XXX or CHEM4XXX) in the Chemistry Major including a pass in CHEM2341 or CHEM2441 or CHEM2442 or CHEM2541. This capstone course is for Chemistry Major/ Chemistry Major (Intensive) students only. This course is designed for third-year students who would like to take an early experience on research. The earliest that a student is allowed to take this capstone course is in their year 3 study.	1 st & 2 nd Sem
CHEM4966	Chemistry Internship	Capstone Course (6 Credits)	Pass in at least 24 credits of advanced-level disciplinary core/elective chemistry courses (CHEM3XXX or CHEM4XXX) in the Chemistry Major. This capstone course is for Chemistry Major/ Chemistry Major (Intensive) students only. The earliest that a student is allowed to take this capstone course is in their Year 3 study.	1 st & 2 nd Sem & Summer
CHEM4999	Chemistry Project	Capstone Course (12 Credits)	Pass in at least 24 credits of advanced-level disciplinary core/elective chemistry courses (CHEM3XXX or CHEM4XXX) in the Chemistry Major including CHEM3241, and CHEM3341, and CHEM3441, and CHEM3541. This capstone course is for Chemistry Major/ Chemistry Major (Intensive) students only. The earliest that a student is allowed to take this capstone course is in their Year 3 study.	Year Long

****All HKU students are required to complete the language requirement, AI literacy courses (25-26 cohort onwards), and common core courses.***