

Course Syllabus

**offered by Department of Chemistry
with effect from Semester A 2021/22**

This form is for the completion by the *Course Leader*. The information provided on this form is the official record of the course. It will be used for the City University's database, various City University publications (including websites) and documentation for students and others as required.

Please refer to the Explanatory Notes on the various items of information required.

Prepared / Last Updated by:

| | | | |
|--------------|---|----------------|--------------------------------|
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**City University of Hong Kong
Course Syllabus**

**offered by Department of Chemistry
with effect from Semester A 2021/22**

Part I Course Overview

| | |
|--|---|
| Course Title: | Entrepreneurship Programme In Chemistry 2 |
| Course Code: | CHEM4088 |
| Course Duration: | 2 semesters |
| Credit Units: | 6 |
| Level: | B4 |
| Proposed Area: <i>(for GE courses only)</i> | <input type="checkbox"/> Arts and Humanities <input type="checkbox"/> Study of Societies, Social and Business Organisations <input type="checkbox"/> Science and Technology |
| Medium of Instruction: | English |
| Medium of Assessment: | English |
| Prerequisites: <i>(Course Code and Title)</i> | CHEM2073 Entrepreneurship Programme In Chemistry 1 |
| Precursors: <i>(Course Code and Title)</i> | Nil |
| Equivalent Courses: <i>(Course Code and Title)</i> | Nil |
| Exclusive Courses: <i>(Course Code and Title)</i> | Nil |

Part II Course Details

1. Abstract

(A 150-word description about the course)

This course allows the highly motivated students of Entrepreneurship Programme In Chemistry 1 (EPIC1) to test, optimise and extend their original ideas in the laboratory. In this highly personalised and research-based course, the students will be assigned to a research lab in the Department of Chemistry, where they will learn laboratory skills necessary for the developing of their technologies and learn how to keep legitimate record of their research and development. The goal of this course is to generate advanced drafts of a patent application and a business proposal. Further disseminations of the research data produced in the course will be considered on a case-by-case basis.

The overarching aim of EPIC 1 and 2 is to provide students with a structured guideline towards entrepreneurship, by breaking down this intimidating and precarious journey into smaller, bite-size stages, with guidance and support from specialists in the field at each step.

2. Course Intended Learning Outcomes (CILOs)

(CILOs state what the student is expected to be able to do at the end of the course according to a given standard of performance.)

| No. | CILOs [#] | Weighting* (if applicable) | Discovery-enriched curriculum related learning outcomes (please tick where appropriate) | | |
|-----|---|-------------------------------|---|----|----|
| | | | A1 | A2 | A3 |
| 1. | <u>Develop</u> one original idea for a new chemistry-related product or technology, and <u>analyse</u> the market demand and existing competitions for this idea. | 10% | | ✓ | |
| 2. | <u>Critically evaluate</u> the literature relevant to the invention or idea developed in CILO1, in order to <u>identify</u> and <u>design</u> experiments needed for testing and optimising the invention or idea. | 10% | | ✓ | ✓ |
| 3. | <u>Develop</u> the appropriate laboratory skills and instrumentation(s) to undertake the experiments in CILO1. | 15% | | ✓ | ✓ |
| 4. | <u>Analyse</u> and <u>critically evaluate</u> the data collected in CILO2. | 15% | | ✓ | ✓ |
| 5. | Using the data generated in this course, <u>compose</u> an advanced draft of a patent application based on the format of a Hong Kong short-term patent. | 20% | ✓ | | ✓ |
| 6. | <u>Deliver</u> an oral presentation, in the format of a business pitch, on the research project, summarising the background, hypothesis being tested, methods involved, results obtained and the business potential of the project. | 10% | ✓ | | ✓ |
| 7. | Based on the feedbacks from the business pitch, <u>compose</u> an advanced draft of a business proposal based on the format of Technology Start-up Support Scheme for Universities (TSSSU). | 20% | ✓ | | ✓ |
| | | 100% | | | |

* If weighting is assigned to CILOs, they should add up to 100%.

[#] Please specify the alignment of CILOs to the Gateway Education Programme Intended Learning outcomes (PILOs) in Section A of Annex.

- A1: *Attitude*
Develop an attitude of discovery/innovation/creativity, as demonstrated by students possessing a strong sense of curiosity, asking questions actively, challenging assumptions or engaging in inquiry together with teachers.
- A2: *Ability*
Develop the ability/skill needed to discover/innovate/create, as demonstrated by students possessing critical thinking skills to assess ideas, acquiring research skills, synthesizing knowledge across disciplines or applying academic knowledge to self-life problems.
- A3: *Accomplishments*
Demonstrate accomplishment of discovery/innovation/creativity through producing /constructing creative works/new artefacts, effective solutions to real-life problems or new processes.

3. Teaching and Learning Activities (TLAs)

(TLAs designed to facilitate students' achievement of the CILOs.)

| TLA | Brief Description | CILO No. | | | | | | | Hours /week (if applicable) |
|---|---|----------|---|---|---|---|---|---|-----------------------------|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | |
| Library and web-based searching and literature review | Library and web-based searching of the literature, reading and interpretation of relevant patents and scientific literature, and assembly of a literature review, including the appropriate analysis of the legal and marketing aspects, relating to the invention. | ✓ | ✓ | | | | | | |
| Undertaking of suitable experiments | Learning the relevant experimental techniques, undertaking of suitable experiments and prototyping under supervision, and maintaining a log book of data collected from the process. | | | ✓ | ✓ | | | | |
| Writing | Writing, under supervision, a patent application and a business proposal based on the format of Technology Start-up Support Scheme for Universities (TSSSU). | | | | ✓ | ✓ | | ✓ | |
| Oral presentation | Delivery of an oral presentation, in the format of a business pitch, of the project (10 min), followed by questions (5 min) from the audience. | | | | ✓ | | ✓ | | |

4. Assessment Tasks/Activities (ATs)

(ATs are designed to assess how well the students achieve the CILOs.)

| Assessment Tasks/Activities | CILO No. | | | | | | | Weighting* | Remarks |
|---|----------|---|---|---|---|---|---|------------|---------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | |
| Continuous assessment: <u>100%</u> | | | | | | | | | |
| Library and web-based searching and literature review | ✓ | ✓ | | | | | | 10% | |
| Undertaking of suitable experiments | | | ✓ | ✓ | | | | 30% | |
| Writing | | | | ✓ | ✓ | ✓ | | 40% | |
| Oral presentation | | | | | | | ✓ | 20% | |
| Examination: <u>0%</u> (Duration: -) | | | | | | | | | |
| | | | | | | | | 100% | |

*The weightings should add up to top 100%.

Starting from Semester A, 2015-16, students must satisfy the following minimum passing requirement for courses offered by CHEM:

“A minimum of 40% in both coursework and examination components.”

5. Assessment Rubrics

(Grading of student achievements is based on student performance in assessment tasks/activities with the following rubrics.)

Students are allowed to join this course or as individuals or as a group (maximum number of students per group is 4), but each student will be assessed individually.

The following description is indicative of the grading criteria adopted for assessment purposes:

| Grade | Criteria |
|-------|--|
| A | Student completes all assessment tasks/activities and can demonstrate excellent synthesis of the principles, characteristics, processes, methodologies, problems and limitations of the study related to various aspects of the project in detail. Provides a comprehensive analysis of the data with clarity of the explanations, logical and advanced justifications, and creative/personal interpretations and viewpoints. Shows evidence of critical evaluation of the impact and commercial potential of the findings, and originality in thought, argument or application with effective oral and written communication. Both the patent and business proposals could be submitted to the official bodies without major revisions. |
| B | Student completes all assessment tasks/activities and can describe and explain the principles, characteristics, processes, methodologies, problems and limitations of the study. Provides a detailed, critical analysis of the data, with accurate, clear explanations and fair justifications. Shows ability in integration of various sources of information to explain the impact of the findings via clear oral and written communication. The patent and business proposals could be submitted to the official bodies with some revisions. |
| C | Student completes all assessment tasks/activities and can describe and explain some key elements in the principles, characteristics, processes, methodologies, problems and limitations of the study. Provides simple but accurate explanations and basic justifications of the data. Shows evidence of use of oral and written communication clearly. The patent and business proposals could be submitted to the official bodies with major revisions. |
| D | Student completes all assessment tasks/activities but can only briefly describe isolated elements of principles, characteristics, processes, methodologies, problems and limitations of the study. Demonstrates limited ability in analysis and justification of the data. Can communicate simple ideas accurately in writing and orally. The patent and business proposals could not be submitted to the official bodies. |
| F | Student fails to complete all assessment tasks/activities and/or cannot accurately describe and explain relevant principles, characteristics, processes, methodologies, problems and limitations of the study. Cannot provide appropriate analysis and satisfactory justifications of data, and may show evidence of plagiarism or inability to communicate ideas. |

Part III Other Information (more details can be provided separately in the teaching plan)

1. Keyword syllabus

Weeks 1-4: Idea development and market analysis.

Weeks 5-7: Literature review and experimental design.

Weeks 8-20: Conduct experiments and analyse data.

Weeks 21-24: Compose an advanced draft of a patent application based on the data collected in this course.

Weeks 24-26: Preparation of oral presentation and writing of business proposal based on the project conducted in this course.

2. Reading List

2.1 Compulsory Readings

(Compulsory readings can include books, book chapters, or journal/magazine articles. There are also collections of e-books, e-journals available from the CityU Library.)

| | |
|-----|--|
| 1. | |
| 2. | |
| 3. | |
| ... | |

2.2 Additional Readings

(Additional references for students to learn to expand their knowledge about the subject.)

Reading and reference materials will be provided by the supervisor on individual basis.

A. Please specify the Gateway Education Programme Intended Learning Outcomes (PILOs) that the course is aligned to and relate them to the CILOs stated in Part II, Section 2 of this form:

| GE PILO | Please indicate which CILO(s) is/are related to this PILO, if any (can be more than one CILOs in each PILO) |
|---|--|
| PILO 1: Demonstrate the capacity for self-directed learning | |
| PILO 2: Explain the basic methodologies and techniques of inquiry of the arts and humanities, social sciences, business, and science and technology | |
| PILO 3: Demonstrate critical thinking skills | |
| PILO 4: Interpret information and numerical data | |
| PILO 5: Produce structured, well-organised and fluent text | |
| PILO 6: Demonstrate effective oral communication skills | |
| PILO 7: Demonstrate an ability to work effectively in a team | |
| PILO 8: Recognise important characteristics of their own culture(s) and at least one other culture, and their impact on global issues | |
| PILO 9: Value ethical and socially responsible actions | |
| PILO 10: Demonstrate the attitude and/or ability to accomplish discovery and/or innovation | |

GE course leaders should cover the mandatory PILOs for the GE area (Area 1: Arts and Humanities; Area 2: Study of Societies, Social and Business Organisations; Area 3: Science and Technology) for which they have classified their course; for quality assurance purposes, they are advised to carefully consider if it is beneficial to claim any coverage of additional PILOs. General advice would be to restrict PILOs to only the essential ones. (Please refer to the curricular mapping of GE programme: http://www.cityu.edu.hk/edge/ge/faculty/curricular_mapping.htm.)

B. Please select an assessment task for collecting evidence of student achievement for quality assurance purposes. Please retain at least one sample of student achievement across a period of three years.

| Selected Assessment Task |
|---------------------------------|
| |