Information Session on CHEM Options and Capstone

(For Student Cohort of 2014/15)

Date: Nov 23rd, 2016

Time: 5:45 pm

Venue: Rm 2502

Outline

- Requirements for the B.Sc. Degree in Chemistry
- Introduction of the Four Chemistry Options
- How to fulfill the Option requirements
- Capstone Projects
- Q & A

Outline

- Requirements for the B.Sc. Degree in Chemistry
- Introduction of the Four Chemistry Options
- How to fulfill the Option requirements
- Capstone Projects
- Q & A

B. Sc. Degree in Chemistry

- University requirement for a B.Sc. degree: ***min.*** **of 120 credits**

- B. Sc. (Chemistry): ~108 credits (+ ~12 credits in free electives, minor, etc)

- B.Sc. (Chemistry with an **Option**): 121 credits

- *The requirements for students with in the IRE track are different from above.*

Outline

- Requirements for the B.Sc. Degree in Chemistry
- Introduction of the Four Chemistry Options
- How to fulfill the Option requirements
- Capstone Projects
- Q & A

The Four Chemistry Options **(14 credits)**

(1) Pure Chemistry Option

(2) Biomolecular Chemistry Option

(3) Materials Chemistry Option

(4) Environmental and Analytical Chemistry Option

(2 Lab Courses + 4 Chem Electives = 14 credits total)

(1) Pure Chemistry Option

Advanced study in **Fundamental Chemistry** plus in any **area of YOUR CHOICE**.

Requirements

- **CHEM 4550 Advanced Synthetic *Laboratory* (1)**
- **CHEM 4555 Advanced Molecular Characterization *Laboratory* (1)**
- **CHEM 4430 Symmetry in Chemistry and Spectroscopy (3)**

+ THREE other Chemistry Electives (9)

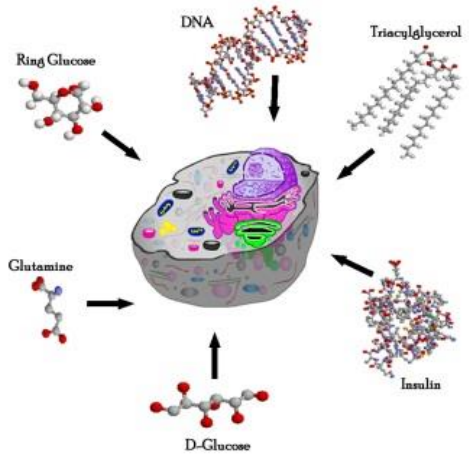
Chemistry Electives in any area of your choice: organic, inorganic, physical, or analytical chemistry, or other specialized areas

Career prospects

- Chemistry (e.g. chemists, environmental protection, food industry, pharmaceutical companies, education, etc.)

- Further post-graduate study (chemistry, environmental science, biochemistry, chemical engineering, etc.)

(2) Biomolecular Chemistry Option



Things you will learn:

- DNA & RNA, proteins, carbohydrates and lipids
- Their structure, reactivity, detection, analysis
- Drug-target interaction: how structure is linked to activity
- Strategies for drug discovery and optimization

Career Perspectives

- Graduate schools (Chemistry, Medicinal Chemistry, Biochemistry)
- Health care
- Medical school
- Pharmaceutical Industries
- Biotech Companies

(2) Biomolecular Chemistry Option

Lab courses:

- **CHEM 4150 Biomolecular Synthetic Laboratory (1)**
- **CHEM 4155 Biomolecular Characterization Laboratory (1)**

Core CHEM Electives:

- **CHEM 4110 Structural Elucidation in Organic Chem (3)**
- **CHEM 4120 Biomolecular Chemistry (3)**
- **CHEM 4130 Medical Chemistry (3)**
- **CHEM 4340 Bioanalytical Techniques (3)**

Take *at least* two

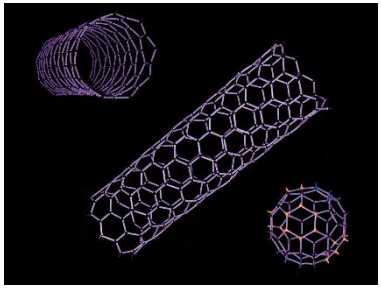
Other CHEM electives:

+ TWO other chemistry electives (6)

(3) Materials Chemistry Options

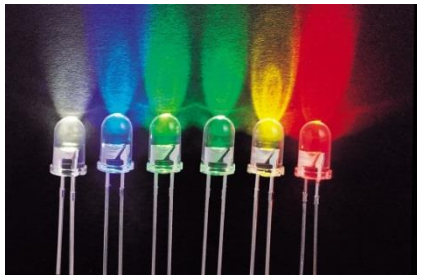
Things you will learn:

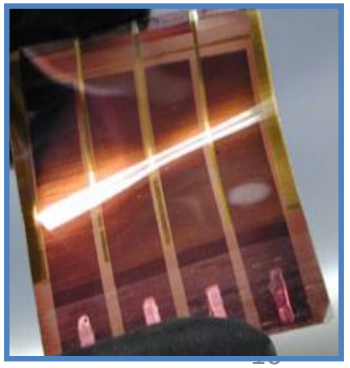
- Structure-property relationships in new, innovative materials
- Nanostructured materials, light emitters, conductive polymers, liquid crystals, plastic solar cells
- Design, synthesis and applications of these materials



Career Perspectives

- Technological Companies
- Graduate school
- Research and Development
- Manufacturing industries





(3) Materials Chemistry Options

Lab courses:

- **CHEM 4250 Materials Preparation Laboratory (1)**
- **CHEM 4255 Materials Characterization Laboratory (1)**

Core CHEM Electives:

- **CHEM 4210 Solid State Chemistry (3)**
- **CHEM 4220 Materials Chemistry (3)**
- **CHEM 4230 Materials Characterization Method (3)**
- **CHEM 4640 Chemistry for Advanced Solar Cell Technologies (3)**

Take *at least* two

Other CHEM Electives:

+ **TWO** other chemistry electives (6)

(4) Environmental and Analytical Chemistry Option

Things you will learn:

- Modern analytical techniques
- Chemical phenomena in water, soil and atmosphere
- Treatment of pollutants and waste
- Environmental monitoring

Career Perspectives

- Testing and Certification labs
- Consumer products
- Government labs
- Food Safety
- Environmental Protection

(4) Environmental and Analytical Chemistry Option

Lab courses:

- **CHEM 4350 Environmental Chem Lab (1)**
- **CHEM 4355 Instrumental Analytical Chem Lab (1)**

Core CHEM Electives

- **CHEM 4310 Environmental Chemistry (3)**
- **CHEM 4320 Environmental Analytical Chemistry (3)**
- **CHEM 4330 Separation Science (3)**
- **CHEM 4340 Bioanalytical Techniques (3)**

Take *at least* two

Other CHEM Electives

- **+ TWO other chemistry electives (6)**

Suggested Study Pathway

for B.Sc. in Chemistry (*without* an Option)

Year 1

Fall (12):

Gen. Chem. I (2)
Gen. Chem. Lab I (1)
Calculus I (3)
Science (3)
Eng. (3)

Spring (16):

Gen. Chem. II (3)
Gen. Chem. Lab II (1)
Calculus II (3)
Eng. (3)
U core (3)
Science (3)

Year 2

Fall (17):

Org. I (3)
Org. Lab (1)
Inorg. I (3)
Inorg. Lab (1)
Math (3)
U core (3)
Eng. (3)

Spring (17):

Org. II (3)
Inorg. II (3)
Syn Lab (2)
Computer (3)
U. Core (6)

Year 3

Fall (17):

Fund. An. Chem. (3)
P. Chem. I (3)
An. Chem. Lab (1)
P. Chem. Lab (1)
Science (3)
U core (6)

Spring (12):

Inst. Analysis (3)
P. Chem. II (3)
MC Lab (2)
Eng. (1)
U core (3)

Year 4

Fall (11):

Capstone (3)
CHEM Elective (3)
Eng (2)
U core (3)

Spring (6):

U core (3)
U core (3)

Total: ~108 credits (+ other FREE Electives to make up to 120 credits)

Suggested Study Pathway

for B.Sc. in Chemistry (*with* an Option)

Year 1

Fall (12):

Gen. Chem. I (2)
Gen. Chem. Lab I (1)
Calculus I (3)
Science (3)
Eng. (3)

Spring (16):

Gen. Chem. II (3)
Gen. Chem. Lab II (1)
Calculus II (3)
Eng. (3)
U core (3)
Science (3)

Year 2

Fall (17):

Org. I (3)
Org. Lab (1)
Inorg. I (3)
Inorg. Lab (1)
Math (3)
U core (3)
Eng. (3)

Spring (17):

Org. II (3)
Inorg. II (3)
Syn Lab (2)
Computer (3)
U. Core (6)

Year 3

Fall (17):

Fund. An. Chem. (3)
P. Chem. I (3)
An. Chem. Lab (1)
P. Chem. Lab (1)
Science (3)
U core (6)

Spring (15):

Inst. Analysis (3)
P. Chem. II (3)
MC Lab (2)
Eng. (1)
U core (3)
Opt. Chem Elective (3)

Year 4

Fall (13):

Capstone (3)
Eng (2)
U core (3)
Opt. Adv. lab (1)
Opt. Adv. Lab (1)
Opt. Chem Elective (3)

Spring (12):

U core (3)
U core (3)
Opt. Chem Elective (3)
Opt. Chem Elective (3)

Total: 121 credits

How to fulfill the Option requirements?

☐ In Mid-August, 2017 (Course Registration Period)

You **MUST** submit *Course Enrollment Requests* via SIS for the corresponding **Option Lab courses**:

- *Pure CHEM Option*: **CHEM 4550 and 4555**
- *Biomolecular Option*: **CHEM 4150 and 4155**
- *Materials Option*: **CHEM 4250 and 4255**
- *Env. & An. Option*: **CHEM 4350 and 4355**

- Depending on lab capacity, we might selectively approve students based on their GPA ranking.
- **Successful enrollment into the Option lab courses means you are eligible to fulfill that Option.**
- For the **required CHEM Elective courses**, you need to register them by yourself.

  (**Advice:** You may consider taking some of the CHEM Electives starting from **Spring semester of Year 3**)

Outline

- Requirements for the B.Sc. Degree in Chemistry
- Introduction of the Four Chemistry Options
- How to fulfill the Option requirements
- Capstone Projects
- Q & A

CHEM Capstone Courses

- **ALL CHEM students** (*w or w/o Options*) may choose:

1) CHEM 4689* - Capstone Project (3-credits)

OR

2) CHEM 4691* - Capstone Research I (3-credits)

Language Co-requisite course:* ***LANG 4012*

CHEM 4689 – Capstone Project

- Offered in **Fall and Spring** semesters only
- Instructor's approval needed prior to course enrollment.
- **Course Requirements:**

  (i) Library Workshops (use of data base, referencing)

  (ii) Consultation Sessions

  (iii) Literature Review Report

  (iv) Oral Presentation

  (v) Poster Presentation

CHEM 4691 – Capstone Research I

- Offered in **Fall, Spring and Summer** semesters
- Conducted in a **Research lab** under the guidance of **a research faculty supervisor**.
- Instructor's approval needed prior to course enrollment.
- **Course Requirements (*tentative only*):**

9 hrs per week
Lab Participation (50%)
Research Thesis (30%)
Oral Presentation (20%)

Timeline for Selection of Capstone Projects

Feb - March 2017:

If you plan to take **CHEM 4691 – Capstone Research**:

- ☐ - Browse our Departmental Website for the research areas of our faculties.
- ☐ - Meet with target faculties to learn more about their current research projects.
- ☐ - **Complete *On-line Safety Training and Exam from HSEO* (further details TBA)**

Early April: submit **a form to indicate your choices** of Capstone courses/supervisors.

- ☐ **Put down 5 choices: CHEM 4691 with names of research faculty, or CHEM 4689**
- ☐ **Attach a hardcopy of your HSEO Safety Certificate (for CHEM 4691)**

The Hong Kong University of Science and Technology
Department of Chemistry

Form for Selecting Capstone Projects/Supervisors for Students in the BSc. in Chemistry Program (B4201)

*This form is to be completed by ALL current Year-3 students (for academic year 2015-16)

Student Name		*HKUST Email*	
Student No.		*Mobile Phone No.*	

To fulfill the Chemistry Capstone requirement, students admitted in 2013-14 cohort may choose from:

3-credit CHEM4689 - 'Capstone Project' (conducted in a Teaching Laboratory)

OR

3-credit CHEM4691 - 'Capstone Research I' (conducted in a Research Laboratory under the supervision of a Faculty member)

Please LIST YOUR TOP FIVE CHOICES of Capstone Courses and Supervisors in the table below:

IMPORTANT NOTE:

i. 1st Choice being your *most preferred* choice
ii. For CHEM 4691 *only*, please also indicate a Faculty supervisor's name.
iii. Each particular Faculty Supervisor can only be ranked ONCE (i.e., same supervisor cannot appear in more than one choice).

Choice	*CHEM 4689 OR CHEM 4691*	*Faculty Supervisor's Name (for CHEM 4691 only)*
1st Choice		
2nd Choice		
3rd Choice		
4th Choice		
5th Choice		

*** Please *return the completed form in person* to Ms. Vera Tang of Chemistry General Office *by Friday, 15 April 2016* ***

Timeline for Selection of Capstone Projects

Feb - March 2017:

If you plan to take **CHEM 4691 – Capstone Research**:

- ☐ - Browse our Departmental Website for the research areas of our faculties.
- ☐ - Meet with target faculties to learn more about their current research projects.
- ☐ - **Complete *On-line Safety Training and Exam from HSEO* (further details TBA)**

Early April: submit **a form to indicate your choices** of Capstone courses/supervisors.

- ☐ **Put down 5 choices: CHEM 4691 with names of research faculty, or CHEM 4689**
- ☐ **Attach a hardcopy of your HSEO Safety Certificate (for CHEM 4691)**

Late May 2017: Announcement of Results

Depending on availability, the earliest term to enroll into CHEM 4691 is ***Summer 2017****.*

(Note: **CHEM 4691** is offered in **Summer, Fall & Spring**

CHEM 4689 is offered in **Fall & Spring only**.

Further Information

- Dr. Emily Tsang, UG Coordinator
  e-mail: chetsang@ust.hk

- Prof. Wa-Hung Leung, Deputy UG coordinator
  e-mail: chleung@ust.hk

- Ms. Vera Tang, Chemistry General Office
  e-mail: chvera@ust.hk

Q&A