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|---------------------------|---------------------------------------|-----------------|---|
| <b>Academic Year</b>      | 2020/2021                             | <b>Semester</b> | 2 |
| <b>Course Coordinator</b> | So Cheuk-Wai                          |                 |   |
| <b>Course Code</b>        | CM4021                                |                 |   |
| <b>Course Title</b>       | Current Topics in Inorganic Chemistry |                 |   |
| <b>Pre-requisites</b>     | CM3021 Organometallic Chemistry       |                 |   |
| <b>No of AUs</b>          | 3 AU                                  |                 |   |
| <b>Contact Hours</b>      | Lecture: 39 hours                     |                 |   |
| <b>Proposal Date</b>      | 16 March 2020                         |                 |   |

#### Course Aims

This course aims to introduce latest topics, findings and results in the field of inorganic and organometallic chemistry.

#### Intended Learning Outcomes (ILO)

Upon the successful completion of this course, you should be able to

1. Discuss the latest development in inorganic and organometallic chemistry
2. Apply fundamental chemical knowledge as a basis for discussing and criticizing the chemistry behind new areas of inorganic and organometallic chemistry.
3. Propose new direction in current inorganic and organometallic chemistry.

#### Course Content

Course content will be selected from latest research literatures in inorganic and organometallic chemistry and will vary from year to year. Topics include, but not limited to,

1. Fundamental of current main-group element and transition metal chemistry
2. Organometallic chemistry of main-group elements and transition metals
3. Catalysis mediated by novel main-group element and transition metal complexes

#### Assessment (includes both continuous and summative assessment)

| Component  | Course LO Tested | Related Programme LO or Graduate Attributes | Weighting | Team/Individual | Assessment rubrics |
|--|------------------|---|-----------|-----------------|--------------------|
| 1) TBC (the instructor will inform students of the assessment in the 1 <sup>st</sup> week of lesson) | 1-3              | Competence, Creativity                      | 100%      | Individual      |                    |
| Total  |                  |   | 100%      |                 |                    |

### Formative feedback

Formative feedback: Lecturers will be closely working with you to monitor your learning progress. They will provide you with timely feedback to improve your understanding of concepts. Furthermore, you will be given opportunities to express your ideas and discuss them with lecturers.

Summative Feedback: Summative feedback on continuous assessment will be given. This will help you to achieve the intended learning outcomes 1 to 3 above.

### Learning and Teaching approach

| Approach  | How does this approach support students in achieving the learning outcomes?   |
|---|---|
| Lecture with incomplete notes and hand-written examples | To encourage you to remain engaged in lectures by taking notes and working on in-class examples. The engagement facilitates you to understand the chemistry delivered in lectures. You are also less likely to sit back, relax, and watch a performance while understanding nothing.  |
| Video clips relevant to the class                       | To help you visualize chemistry concepts and enhancing your understanding.  |
| Lectures with in-class practice examples                | To help you verify your understanding of lectures in real time as well as your ability to apply precise and correct chemistry concepts in problem-solving questions.<br><br>Through practice, you learn to what extent you need to master and apply a particular knowledge point.<br><br>To show you common mistake(s) you can make and difficult points to master. |
| Clickers  | To provide instant feedback in lectures in real time about the level of understanding and the level of difficulty of the concept.<br><br>To give you the opportunity to measure and compare your learning in class<br><br>To highlight common mistakes and tricky pointed related to lectures   |

### Reading and References

Textbook: *Inorganic Chemistry*, 5/e by Gary L. Miessler, Paul J. Fischer, and Donald A. Tarr [ISBN 10: 1-292-02075-X; ISBN 13: 978-1-292-02075-4]

Literatures related to the above ILOs. They will be uploaded in NTULearn and will vary from year to year.

## Course Policies and Student Responsibilities

### (1) General

Students are expected to complete all assigned pre-class readings and activities, attend all seminar classes punctually and take all scheduled assignments and tests by due dates. Students are expected to take responsibility to follow up with course notes, assignments and course related announcements for seminar sessions they have missed. Students are expected to participate in all seminar discussions and activities.

### (2) Absenteeism

Attendance of classes is strongly encouraged for the discussion with lecturers as well as for participation in clicker and in-class practice.

If you are absent due to medical or other valid reasons, you must catch up each week by watching recorded lectures.

If you are absent in any continuous assessment due to medical and other valid reasons, you have to

1. Send an email to the instructor regarding the absence and request for a make-up continuous assessment.

2. Submit the original Medical Certificate<sup>ll</sup> to administrator

<sup>ll</sup> The medical certificate mentioned above should be issued in Singapore by a medical practitioner registered with the Singapore Medical Association.

## Academic Integrity

Good academic work depends on honesty and ethical behaviour. The quality of your work as a student relies on adhering to the principles of academic integrity and to the NTU Honour Code, a set of values shared by the whole university community. Truth, Trust and Justice are at the core of NTU's shared values.

As a student, it is important that you recognize your responsibilities in understanding and applying the principles of academic integrity in all the work you do at NTU. Not knowing what is involved in maintaining academic integrity does not excuse academic dishonesty. You need to actively equip yourself with strategies to avoid all forms of academic dishonesty, including plagiarism, academic fraud, collusion and cheating. If you are uncertain of the definitions of any of these terms, you should go to the [academic integrity website](#) for more information. Consult your instructor(s) if you need any clarification about the requirements of academic integrity in the course.

## Course Instructors

| Instructor   | Office Location | Phone     | Email           |
|--------------|-----------------|-----------|-----------------|
| So Cheuk-Wai | SPMS-CBC 06-17  | 6513 2730 | CWSo@ntu.edu.sg |

## Planned Weekly Schedule

| Week | Topic  | Course ILO | Readings/ Activities  |
|------|--|------------|---|
| 1-13 | Current Topics in Inorganic and Organometallic Chemistry | 1-3        | (1) Reading lecture notes, literatures and textbook<br>(2) Answering questions based on scientific literatures. |

## CBC Programme Learning Outcome

The Division of Chemistry and Biological Chemistry (CBC) offers an undergraduate degree major in Chemistry that satisfies the American Chemical Society (ACS) curricular guidelines and equips students with knowledge relevant to the industry. Graduates of the Division of Chemistry and Biological Chemistry should have the following key attributes:

### **1. Competence**

Graduates should be well-versed in the foundational and advanced concepts of chemical science, be able to evaluate chemistry-related information critically and independently, and be able to use complex reasoning to solve emergent chemical problems.

### **2. Creativity**

Graduates should be able to synthesize and integrate multiple ideas across the curriculum, and propose innovative solutions to emergent chemistry-related problems based on their training in chemistry.

### **3. Communication**

Graduates should be able to demonstrate clarity of thought, independent thinking, and sound scientific analysis and reasoning through written and oral reports to audiences with varying technical backgrounds. They should also be able to effectively engage other professional chemists in collaborative endeavours.

### **4. Character**

Graduates should be able to act in responsible ways and uphold the high ethical standards that the society expects of professional chemists.

### **5. Civic-mindedness**

Graduates should be aware of the impact of chemistry on society, and how chemistry can be applied to benefit mankind. They should also be aware of and uphold the best chemical safety practices.