

## 國立台灣科技大學 114學年 第2學期 課程大綱

## Spring 2026 NTUST Course Outline

授課教師：高夢瑤

Instructor: Mengyao Gao

課程名稱：化學(下)

Course Title : Chemistry (II)

2026/6/22

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|---|---|
| 課程代號： CH165B007<br>Course Code<br>學分數： 3<br>Credits   | 必選修：必修/全學年<br>Required/Elective: Required/Full Yr.<br>先修課程：<br>Prerequisites  |
| 節次教室： F2(IB-410-2) F3(IB-410-2) R2(IB-410-2)<br>Time/Location                                   |   |
| 專業核心能力：<br>Core Professional<br>Competencies  |   |
| 課程網址：<br>Course Website <a href="https://chem.libretexts.org/">https://chem.libretexts.org/</a> |   |
| 課程宗旨：<br>Course<br>Objectives   | <p>The objectives of this course are to foster a holistic and intuitive comprehension of how electronic structure governs the three-dimensional configurations of molecules, influences the physical and chemical attributes of molecules across gaseous, liquid, and solid phases, and, in the broader context, orchestrates the construction of macromolecules, exemplified by polymers and DNA.</p> <p>Throughout the course, a central focus will be on elucidating the interconnections between chemistry and other foundational scientific disciplines, notably biology and physics, while concurrently highlighting the practical applications of chemistry in diverse fields, encompassing environmental science, electronic device technology, and the realm of renewable energies.</p> <p>The learning objectives are for students to: (1) have a working knowledge of chemical principles that will allow them to take advanced chemistry classes. (2) appreciate how chemistry is used to solve real-world problems. (3) make informed decisions about their health, environmental and energy issues, and science policy. (4) advance science and engineering through the application of chemical principles. (5) employ chemistry in your research in a non-chemistry department laboratory.</p> |
| 課程大綱：<br>Outline of<br>Lectures   |   |

|      |      |   |          |
|------|------|---|----------|
| Week | Date | Syllabus  | Note     |
| 1-1  | 2/26 | Chemistry of the Environment                            | Ch 18    |
| 1-2  | 2/27 | (和平紀念日，放假一天)  |          |
| 2-1  | 3/5  | Liquids and Intermolecular Forces                       | Ch 11    |
| 2-2  | 3/6  |   |          |
| 3-1  | 3/12 | Properties of Solutions                                 | Ch13     |
| 3-2  | 3/13 |   |          |
| 4-1  | 3/19 | Chemical Kinetics                                       | Ch 14    |
| 4-2  | 3/20 |   |          |
| 5-1  | 3/26 | Chemical Equilibrium                                    | Ch 15    |
| 5-2  | 3/27 |   |          |
| 6-1  | 4/2  | Acid-Base Equilibria                                    | Ch 16    |
| 6-2  | 4/3  | (兒童節、民族掃墓節)   |          |
| 7-1  | 4/9  | Additional Aspects of Aqueous Equilibria                | Ch 17    |
| 7-2  | 4/10 |   |          |
| 8-1  | 4/16 | Review  |          |
| 8-2  | 4/17 | Mid-term  |          |
| 9-1  | 4/23 | Chemical thermodynamics                                 | Ch 19    |
| 9-2  | 4/24 |   |          |
| 10-1 | 4/30 | Electrochemistry  | Ch 20    |
| 10-2 | 5/1  | (勞動節)   |          |
| 11-1 | 5/7  | Nuclear chemistry                                       | Ch 21    |
| 11-2 | 5/8  |   |          |
| 12-1 | 5/14 | Chemistry of Nonmetals                                  | Ch 22    |
| 12-2 | 5/15 |   |          |
| 13-1 | 5/21 | Transition metals and coordination chemistry            | Ch 23    |
| 13-2 | 5/22 |   |          |
| 14-1 | 5/28 | The Chemistry of Life: Organic and Biological Chemistry | Ch 24    |
| 14-2 | 5/29 |   |          |
| 15-1 | 6/4  | Systems thinking approach in chemistry education        | Handouts |
| 15-2 | 6/5  |   |          |
| 16-1 | 6/11 | Review  |          |
| 16-2 | 6/12 | Final   |          |

授課方式： 講授 Lecture：65%  
Method of Instruction 分組討論 Group discussion：20%  
案例研討 Case study：15%  
操做練習 Practical exercises：0%  
講授 Lecture：NONE.%

教科書： Zumdahl DeCoste, Chemical Principles: The Quest for Insight. 8th ed.  
Textbooks Chemistry: The Central Science 15 th ed. BROWN

參考書目： Chemical Principles — Atkins & Jones  
References

修課須知： Principles of Chemistry offers a comprehensive exploration into the  
Notice realm of chemistry, encompassing the study of chemistry, measurements and units, handling numbers, dimensional analysis, real-world problem solving, common states of matter, and physical and chemical properties. This course places a primary focus on elucidating fundamental concepts related to liquids and intermolecular forces, solids and modern materials, properties of solutions, chemical kinetics, and catalysis, et al.

評量方式： Mid exam 30%, quiz 20%, Final exam (50% Oral + 50 % exam) 40%,  
Grading Attendance 10%.

備註說明： There are no formal prerequisites for the course at NTUST. Typically,  
Notes Principles of Chemistry is scheduled for the freshman (first) year and assumes that students have completed one year of high school chemistry.