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)

2026/5/6

課程代號： CH165B007 Course Code 學分數： 3 Credits	必選修：必修/全學年 Required/Electve:Required/Full Yr. 先修課程： Prerequisites
節次教室： Time/Location	F2(IB-410-2) F3(IB-410-2) R2(IB-410-2)
專業核心能力： Core Professional Competencies	
課程網址： Course Website	https://chem.libretexts.org/
課程宗旨： Course Objectives	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. 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. 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.
課程大綱： Outline of 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： Method of Instruction	講授 Lecture：65% 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： Textbooks	Zumdahl DeCoste, Chemical Principles: The Quest for Insight. 8th ed. Chemistry: The Central Science 15 th ed. BROWN
參考書目： References	Chemical Principles — Atkins & Jones
修課須知： Notice	Principles of Chemistry offers a comprehensive exploration into the 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： Grading	Mid exam 30%, quiz 20%, Final exam (50% Oral + 50 % exam) 40%, Attendance 10%.
備註說明： Notes	There are no formal prerequisites for the course at NTUST. Typically, Principles of Chemistry is scheduled for the freshman (first) year and assumes that students have completed one year of high school chemistry.