



National Taiwan University of Science and Technology

2018 Summer Program

CHEM 101 Introduction to Chemistry with Lab

Course Outline

Term: July 02-August 03, 2018

Class Hours: 2:00-4:00PM (Monday through Friday)

Course Code: CHEM 101

Instructor: TBA

Home Institution: TBA

Office Hours: TBA and by appointment

Email: TBA

Credit: 4

Class Hours: According to the regulations of Minister of Education, R.O.C, 18 class hours could be counted as 1 academic credit in all universities in Taiwan. This course will have 72 class hours, including 40 lecture hours, professor 10 office hours, 10-hour TA discussion sessions, 2-hour review sessions, 10 laboratory hours.

Course Description:

Introduction to Chemistry will provide students with an overview of the current trends and body of knowledge in Chemistry, including basics of the scientific method and of the analysis of scientific data.

Course Objectives:

The main course goal is to allow students to reach a comprehensive understanding of the issues and methods in Chemistry, in order to decide whether to pursue studies in the field. In the process of reaching this goal,



our objectives are that each student will:

- Become familiar with current scientific theories and research in the major topic areas of Chemistry;
- Discover the personal relevance of course material in their everyday and professional lives, in order to make fully informed decisions;
- Develop the skills necessary to evaluate and think critically about information concerning biological phenomena obtained from research, the general public, and the media;
- Be well prepared for advanced courses in Chemistry/Life Sciences.

Required Textbooks

Introductory Chemistry, David Ball, ISBN 13: 978-1-4533110-7-3, Saylor Foundation.

<https://open.umn.edu/opentextbooks/BookDetail.aspx?bookId=22>

Several readings will be required throughout the course, either to prepare for class or to complete an assignment. Additional material will be posted online to provide a free and easy access to everyone.

Grading & Evaluation:

Assignments/Labs (30%) – Midterm exam (30%) – Final exam (40%)

Intermediary assignments will be posted throughout the course, to help students assess their needs and to ensure that all the important topics are well understood. Assignments and labs are also an opportunity for students to ask questions concerning unclear notions, as the main objective is not to grade but to help everyone reach an optimal level of comprehension.

Midterm and final exams will target all topics previously covered in class. Lecture notes, labs and assignments are important to succeed in the midterm and final exams, yet some questions will be specifically intended to stimulate students' critical thinking.

Attendance is extremely important for success in this class. It is expected that each student will commit fully to the assignments and readings required. Exams will cover the required texts as well as material presented or discussed in class.



Course Schedule (tentative):

Week 1:

Lecture 1: Course Introduction – Syllabus
Lecture 2: Chemistry: Methods and Measurements
LAB 1: Experimental designs

Week 2:

Lecture 3: The Scientific Method: Basics & Core Principles
Lecture 4: Experimental Design in Science
Lecture 5: Atom and Periodic Table
Review Session
LAB 2: Hypothesis testing

Week 3:

MIDTERM
Lecture 6: Chemical Equation and Calculations
Lecture 7: Matter and Solutions
Lecture 8: Energy, Rate and Equilibrium
LAB 3: Data analysis

Week 4:

Lecture 9: Acids and Bases and Oxidation-Reduction
Lecture 10: Organic Chemistry
Lecture 11: Biological Chemistry
Lecture 12: Cell Division & Differentiation
LAB 4: Personal project

Week 5:

Lecture 13: Analyzing Scientific Data
Review Session
Lecture 14: General Review
FINAL EXAM
Final Exam Q&A – Course Wrap-up