

科目名	Course Title
物理化学1(Physical Chemistry I)	
学科・専攻	Department/Program
G30 Chemistry	
受講年次	Grade
2nd	
授業形態	Class style
必修・選択の別	Compulsory or Elective
講義	* See "Remarks"
時間割コード	Registration code
0681080	Fall semester Thu : 1
単位数	Credit
2	
科目区分	Course type
	Basic Specialized Courses
担当教員	Instructor
	BUTKO Peter(BUTKO Peter)
所属研究室	Laboratory
連絡先	Contact
居室	Room

講義の目的とねらい	Course purpose
The purpose of this course is to grasp the physical basis of the interactions between particles and of the behavior and properties of matter. The course begins with perfect gas law, proceeds to thermodynamics, and finishes with applications of thermodynamics to simple mixtures.	
履修要件	Prerequisite
Fundamentals of Chemistry I and II	
履修取り下げの方法について	How to Apply for Course Withdrawal
<p>&lt;「履修取り下げ届」提出の要・不要 Necessity/Unnecessity to submit "Course Withdrawal Request Form"&gt; Necessary &lt;条件等 Conditions&gt; Students who do not intend to finish the course must inform the Instructor as soon as possible, preferably before the half of the semester. No withdrawals will be accepted in the last two weeks before the examination period.</p>	
成績評価	Grading
<p>Two exams: the midterm (worth 50 points) and the final (comprehensive, worth 100 points), homework (40 points), and 10 points for activity in online communication with the instructor and the class. TOTAL: 200 points. Grade "S": 100-90% (180 or more points), "A": 89-80% (179 - 160 pts), "B": 79-70% (159 - 140 pts), "C": 69-60% (139 - 120 pts), "F": 59-0% (fewer than 120 pts).</p>	
不可 ( F ) と欠席 ( W ) の基準	Criteria for "Absent(W)" & "Fail" grades
The “ Absent ” grade (W) is reserved for students that withdraw at least two weeks before the examination period. After the deadline, a letter grade (S to F) will be awarded based on grades earned from all assignments during the semester.	
関連する科目	Related courses

It is important to have working knowledge of Calculus.

教室 Class room

Check the Course Timetable.  
A-407

到達目標 Goal

The goal is to understand how thermodynamics governs the material world, in particular, to apply the Laws of Thermodynamics to the concept of equilibrium.

授業内容 Content

1 Gases and the Zeroth Law of Thermodynamics 1 (Ch. 1)/  
2 Gases and the Zeroth Law of Thermodynamics 2 (Ch. 1)/  
3 The First Law 1 (Ch. 2)/  
4 The First Law 2 (Ch. 2)/  
5 The Second and Third Laws 1 (Ch. 3)/  
6 The Second and Third Laws 2 (Ch. 3)/  
7 Midterm Exam (Chs. 1 – 3)/  
8 Gibbs Energy and Chemical Potential 1 (Ch. 4)/  
9 Gibbs Energy and Chemical Potential 2 (Ch. 4)/  
10 Introduction to Chemical Equilibrium (Ch. 5)/  
11 Equilibria in Single-Component Systems (Ch. 6)/  
12 Equilibria in Multiple-Component Systems (Ch. 7)/  
13 Electrochemistry and Ionic Solutions (Ch. 8)/  
14 Pre-final Review/  
15 FINAL EXAM (Chs. 1 – 8)

教科書 Textbook

David W. Ball: Physical Chemistry, 2nd Ed., Cengage Learning, 2015

参考書 Recommended reading

Atkins' Physical Chemistry, any edition

連絡方法 Contact method

pbutko@chem.nagoya-u.ac.jp

その他 Remarks

\*See Course List and Graduation Requirements for your program for your enrollment year.

Homework is crucial for mastering new material and developing skills in applying concepts. Weekly homework will be either on paper or electronic. Homework is due at the beginning of class on the due date. A general guideline says an average of 2 to 3 hours of study time per week is necessary for each 1 credit hour.

Exams focus on problem solving, and exam questions will be similar to the homework problems. Exam grades will be posted in the Gradebook on the Course website before next class period.