

Class Meetings

Lecture: Monday and Wednesday, 8:15 am–9:30 am Room 101
Zoom link: <https://nyu.zoom.us/j/95007805367>
(Legislative days Zoom link: <https://nyu.zoom.us/j/9852112020>)

Recitation: Friday, 9:45 am–11:00 am Room 209
Zoom link: <https://nyu.zoom.us/j/98835333763>
(Legislative days Zoom link: <https://nyu.zoom.us/j/5503164530>)

Instructor

Professor Xiang Sun, xiang.sun@nyu.edu
Office hours: Wednesday, 3:00 pm–5:00 pm, Room 1262-1
Zoom by appointment: <https://nyu.zoom.us/j/9852112020>

Recitation Instructors (RI)

Professor Xiao He, xiaohe@phy.ecnu.edu.cn
Office hours: Friday 2:30 pm–4:30 pm, Room 1111
Zoom by appointment: <https://nyu.zoom.us/j/5503164530>

Grader

Xiaofang Zhang, xz3067@nyu.edu
Office hours: Tuesday 4:00 pm–5:00 pm, Room 1262-E

Course Learning Outcomes

This course is a continuation of CHEM-SHU 125 Foundations of Chemistry I. After successful completion of this course, you will have gained a foundational understanding of general chemical principles including intermolecular forces, chemical kinetics, chemical equilibria, acid-base reactions, phase transformations, electrochemistry, transition metals, and radiochemistry.

Course Requirements**Textbook**

Required: Steven S. Zumdahl, Donald J. Decoste, ***Chemical Principles***, (8th edition). NYU Shanghai provides only an e-book version with printed-out course reader of relevant chapters. You may instead purchase your own physical copy from an independent store/second hand, in which case, no course reader will be provided.

Materials

Required: (1) **Plicker QR card** (will be distributed in class of Week 1 or Week 2); (2). **Non-programming scientific calculator.** Your calculator must have the following capabilities: logarithms, exponentiation, and trigonometric functions. It must have at least an eight-digit display and you must be able to switch manually between scientific and decimal notation. Typically, these are standard features.

In-person/remote mixed-mode teaching

Due to the public health situation, we are implementing **synchronized** in-person/remote mix-mode. **Zoom links are for remote students only.** In-person students are expected to come to classroom for lectures and recitations. During the semester, you may switch from remote to in-person mode after you arrive in Shanghai, but the reverse switching is not allowed. You should meet synchronized course participation requirements and manage your time such that you can complete your assignments on or before the time they are due. Typically, synchronized lectures and recitation sessions are offered such that the students could interact with lecturers to have timely feedback to reinforce learning. Cloud recordings may be available for some of the lectures, and you could find from Brightspace → Zoom section. Students are strongly encouraged to ask questions and are expected to

- **Regularly check your email and NYU Classes to make sure you've read all announcements and respond to instructors' emails within 24 hours.**
- **Complete the required reading before attending the lectures.**
- Notify professors via email before the class starts if you have technical difficulty attending Zoom meetings for remote students.

Web access

Brightspace (<https://brightspace.nyu.edu>) serves as the electronic portal for this course. Please check it regularly for announcements, slides, homework, solutions, etc. Please familiarize yourself with how to post questions on the class forum (see Email policy below).

Assessment, Measurement and Evaluation**Rubrics for the entire course, i.e. how to be successful in this class**

Category	Excellent	Good	Average	Poor	Fail
Terminology	Always able to use correct terminology, notation, and units	Often able to use correct terminology, notation, and units	Generally able to use correct terminology, notation, and units	Seldom able to use correct terminology, notation, and units	Rarely able to use correct terminology, notation, and units
Scientific concepts	Shows complete understanding of the scientific concepts	Shows substantial understanding of the scientific concepts	Shows some understanding of the scientific concepts	Shows limited understanding of the scientific concepts	Shows little understanding of scientific concepts
Application of chemical principles	Able to choose the most suitable chemical principle and apply it to solve problems	Able to choose a suitable chemical principle and apply it to solve problems	Able to choose a working chemical principle and apply it to solve problems	Able to choose a tangent chemical principle and apply it to solve problems	Unable to choose a chemical principle and have trouble of applying it to solve problems

Category	Excellent	Good	Average	Poor	Fail
Mathematical accuracy	All of the calculations have no mathematical errors	Almost all of the calculations have no mathematical errors	Most of the calculations have no mathematical errors	A minority of the calculations have no mathematical errors	Most of the calculations have mathematical errors
Logic and reasoning	Uses complex and refined scientific reasoning	Uses effective scientific reasoning	Some evidence of scientific reasoning	Little evidence of scientific reasoning	No evidence of scientific reasoning
Connecting the dots	Connect new knowledge or skills with previous one in an effective and organized manner	Connect new knowledge or skills with previous one in a clear manner	Connect new knowledge or skills with previous one in an acceptable manner	Connect new knowledge or skills with previous one in a passive manner	Unable to connect new knowledge or skills with previous one
Communication	Summarize, explain, articulate and exemplify concepts and ideas in a perfectly clear and efficient manner	Summarize, explain, express and exemplify concepts and ideas in a clear and efficient manner	Summarize, explain, express and exemplify concepts and ideas in an acceptable manner	Summarize, explain, express and exemplify concepts and ideas in a vague manner	Unable to summarize, explain, express and exemplify concepts and ideas
Creativity	Apply chemical principles and initiate new approaches of understanding nature in a proactive manner	Apply chemical principles and initiate new approaches of understanding nature in a proactive manner	Apply chemical principles and initiate new approaches of understanding nature in a passive manner	Able to apply chemical principles and understand nature in approaches taught in class	Unable to apply chemical principles and understand nature in approaches taught in class

In-class Plicker Participation

Most lectures will have Plicker polling survey/participation. Typically, each polling question requires just one correct answer (out of around three or four). These polling questions are designed to help both instructor and students to discover misunderstanding or confusion so as to clarify concepts or give feedback in a timely manner. **Polling participation is required to receive credits.** Plicker QR card number will be distributed in Week 1, or Week 2 (for new registered students). Failing to participate in Plicker polling will result in no participation, therefore won't receive credits.

Quizzes

Quizzes, unless stated otherwise, will be given at the start of the Recitation sessions. Quizzes will be implemented online and submitted in a restricted time window. Quizzes will include material covered during the previous lectures, homework and recitation. Quizzes will be graded and returned to you within one week. The lowest two quiz grades will be dropped, and there will be no make-up or rescheduled quizzes.

Homework

Homework will be assigned after the second lecture of the week and will be due at the beginning of the second lecture the following week, and no late homework will be accepted. The homework should be announced at “**Assignments**” section in “Brightspace”.

- In-person students should submit your handwritten paper-based Homework directly to Prof. Sun on site; whereas the remote students should submit to Brightspace electronically. Ensure your **name** and NYU **NetID** is written clearly at the top of the homework.
- For remote students, please take a digital scan of your homework and **convert to a single PDF** file format before uploading, and it is your responsibility to make sure the scanned PDF is legible, otherwise the illegible part won't receive credits.

Homework will be graded. Problem sets are assigned to help you pace your learning and for you to gauge your own understanding of the material, and **you should finish homework on your own**. Homework will probably be related to Quizzes and Exams and serves as the evidence of your progress in the course. It is also important to show your approach to the problems, rather than just the final answer. **Box the final answer with the correct unit and significant figures.** Solutions will be posted on Brightspace after the due date. The lowest two homework grades will be dropped, and there will be no make-up or rescheduled homework. No late work will be accepted.

Exams

There will be one midterm and one final exam. Exams are mandatory. If you have a schedule conflict involving other courses or religious obligations, communicate with the instructor as soon as you are aware of the conflict and no later than one week prior to exam. Any missed exams will result in a zero grade for that particular exam unless there are serious extenuating personal circumstances that are immediately brought to the attention of the course instructor. A grade of “Incomplete” (I) will not be given for this course unless it is warranted by circumstances like those described above. The midterm exam will cover lecture materials up to and including Lecture 14. The final exam is comprehensive but will be weighed more heavily on material not covered by the midterm exam. Only non-programming calculators will be allowed during the exams.

Quizzes and exams will be **closed book**. Laptops, mobile devices, notes, books or any other material will not be allowed during testing periods.

Grading

The grade for this course will be determined according to the following formula:

Assignments/Activities	% of Final Grade
In-class Plicker Participation	10%
Homework	10%
Quizzes	15%
Midterm Exam	25%
Final Exam	40%

Grading Evaluation Scale

NYU Shanghai follows the same grading practices as NYU New York. The following grades may be awarded: A, A-, B+, B, B-, C+, C, C-, D+, D, F. In general, A indicates excellent work, B indicates good work, C indicates satisfactory work, and D indicates passable work and is the lowest passing grade. F indicates failure. There are some additional grades—P for pass, W for Withdrawal—which are awarded administratively.

The final score will be scaled to a maximum of 100 points, and then assigned a letter grade according to:

Letter Grade	Percent
A	90.0% and higher
A-	85.0% – 89.99%
B+	80.0% - 84.99%
B	75.0% - 79.99%
B-	70.0% - 74.99%
C+	65.0% - 69.99%
C	60.0% - 64.99%
C-	55.0% - 59.99%
D	50.0% - 54.99%
F	49.99% and lower

The instructor reserves the right to give **extra bonus of up to 10%** based on the overall excellent performance during the entire course (see Rubrics).

Course Policies**Class Attendance and Participation**

Students are expected to attend all lectures and recitations. Important concepts will be presented during lecture and **students are strongly encouraged to ask questions.** You will get the most benefit from lectures if you complete the reading beforehand. If you have difficulty understanding a particular point presented during lecture, chances are other students feel the same. It is better to ask the instructor to clarify a point of confusion than get lost and not follow for the rest of a lecture. Recitations are held by the RI to clarify concepts presented in lecture, to help students engage in problem solving, and to address questions about the homework and quizzes.

To encourage active learning, a **bonus of final grade up to 10% will be granted based on the involvement in lectures, accuracy and effectiveness of scientific communication.**

Lectures start promptly at the scheduled time, after which time the lecture room door is closed. Out of courtesy to your fellow classmates, and the instructor, late arrivals will not be admitted.

Laptop and mobile device policy

Laptops or tablets are permitted in lecture and recitation but may be used only for legitimate classroom purposes, such as taking notes, translating words, or accessing information from NYU Classes. Email, social media, browsing, reading the news, or playing games are not considered legitimate classroom purposes; such inappropriate laptop use is distracting to those seated around you and is unprofessional. The first one or two rows of seats in lecture and recitation will be reserved for students who do not wish to use a laptop/tablet.

Cellphones must be switched off or made silent, and put away. The use of any electronic device is forbidden during exams and quizzes, with the exception of an approved calculator.

Email Policy

For Course-related questions, avoid emailing the instructor or RI and instead **please post to the class forum any questions related to the course** (logistics, or material covered in lecture/recitation) so that everyone has access to discussions pertinent to the entire class. Before posting, please first look at the class announcements and search the forum to see if your question has already been covered. For questions that would benefit the class to have answers to, please post them for all to see by logging on to classes.nyu.edu.

E-mail correspondence to the Instructor or RI is reserved for matters of a personal nature (non-Course-related), e.g. illness, religious observances, etc. The expected response time is 24 hours. We will not check and respond to emails after working hours in weekdays or anytime on weekends/holidays.

Late Assignment

Assignments are due at the date and time indicated in the syllabus. Late assignments will be treated as missing assignments. Exceptions can be made only with the prior approval of the instructor.

University Policy on Make-up of Absence from Class due to illness

When students are ill, they are expected to notify professors in advance of class, if at all possible. Students should negotiate with professors the time and place for make-up of assignments, tests and/or examinations missed. In cases where students are seriously ill and will miss more than a week of classes, the Office of Health and Wellness should be contacted so that the student's other professors may be contacted. The Office off Health and Wellness will not verify medical absences of under a week.

Academic Honesty/Plagiarism

NYU Shanghai has ZERO tolerance of any kind of cheating or plagiarism. Behaviors that are in violation of NYU Shanghai's policies on academic integrity include, but are not limited to, bringing or accessing unauthorized materials during an exam or quiz, or verbatim copying homework. While you are encouraged to work in groups on problem sets, the

answers you turn in must be finished on your own. When academic dishonesty is suspected, it will be dealt with in adherence to the official guidelines of NYU Shanghai. If you are found in violation of NYU Shanghai's policies on academic integrity you will receive an F in the course and you could be subject to additional sanctions, including academic dismissal. It is not worth risking your career over a few possible points. If you have any questions or doubts about plagiarism, please do not hesitate to come to my office hours or speak with your academic advisor.

Violations of Academic Integrity include, but are not limited to:

- Cheating: Intentionally using or attempting to use unauthorized materials, information, notes, study aids, or other devices in any academic exercise.
- Fabrication and Falsification: Intentional and unauthorized alteration or invention of any information or citation in an academic exercise. Falsification is a matter of inventing or counterfeiting information for use in any academic exercise.
- Multiple Submissions: The submission of substantial portions of the same academic work for credit (including oral reports) more than once without authorization.
- Plagiarism: Intentionally or knowingly presenting the work of another as one's own (i.e., without proper acknowledgment of the source).
- Abuse of Academic Materials: Intentionally or knowingly destroying, stealing, or making inaccessible library or other academic resource materials.
- Complicity in Academic Dishonesty: Intentionally or knowingly helping or attempting to help another to commit an act of academic dishonesty.

Plagiarism includes, but is not limited to:

- Copying or borrowing liberally from someone else's work without his/her knowledge or permission or from online resources; or with his/her knowledge or permission and turning it in as your own work.
- Copying of someone else's homework, code, data, exam or paper.
- Allowing someone to turn in your work as his or her own.
- Not providing adequate references for cited work.
- Copying and pasting large quotes or passages without properly citing them.

Disability Disclosure Statement

Academic accommodations are available for students with disabilities. Please contact the Moses Center for Students with Disabilities (212-998-4980 or mosescsd@nyu.edu) for further information. Students who are requesting academic accommodations are advised to reach out to the Moses Center as early as possible in the semester for assistance.

NYU is committed to providing equal educational opportunity and participation for students with disabilities. It is NYU Shanghai's policy that no student with a qualified disability be excluded from participating in any NYU Shanghai program or activity, denied the benefits of any NYU Shanghai program or activity, or otherwise subjected to discrimination with regard to any NYU Shanghai program or activity. Any student who needs a reasonable accommodation based on a qualified disability is required to register with the CSD for assistance. Students can [register online](#) through the Moses Center and can contact the Director of the Academic Resource Center with questions or for assistance.

Title IX Compliance

From the [NYU Title IX website](#): "Title IX of the Education Amendments of 1972 (Title IX) prohibits discrimination on the basis of sex in educational programs. It protects victims of

sexual or gender-based bullying and harassment and survivors of gender-based violence. Protection from the discrimination on the basis of sex includes protection from being retaliated against for filing a complaint of discrimination or harassment. NYU is committed to complying with Title IX and enforcing University policies prohibiting discrimination on the basis of sex. Mary Signor, Executive Director of the Office of Equal Opportunity, serves as New York University's Title IX Coordinator. The University's Title IX Coordinator is a resource for any questions or concerns about sex discrimination, sexual harassment, sexual violence, or sexual misconduct and is available to discuss your rights and judicial options. University policies define prohibited conduct, provide informal and formal procedures for filing a complaint and a prompt and equitable resolution of complaints.

Links to the Policy and related documents:

- [Sexual Misconduct, Relationship Violence, and Stalking Policy](#)
- [Procedures for Complaints Against Students](#)
- [Procedures for Complaints Against Employees](#)
- [Resource Guide for Students](#)
- [Resource Guide for Employees](#)

Important Dates to Remember

Add or Drop Deadline:	Feb 11, 2022
Midterm Grade Deadline:	Apr 1, 2022
Final Grade Deadline:	72 hours after final exam

Religious Observances

New York University, as a nonsectarian institution, adheres to the general policy of including in its official calendar only certain legal holidays. However, it has also long been NYU policy that members of any religious group may, without penalty, excuse themselves from classes when compliance with their religious obligations requires it. In 1988, the University Senate affirmed this policy and passed the following resolution:

1. Students who anticipate being absent because of any religious observance should, whenever possible, notify faculty in advance of such anticipated absence;
2. Whenever feasible, examinations and assignment deadlines should not be scheduled on religious holidays. Any student absent from class because of religious beliefs shall not be penalized for any class, examination, or assignment deadline missed on that day or days.
3. If examinations or assignment deadlines are scheduled, any student who is unable to attend class because of religious beliefs shall be given the opportunity to make up that day or days.
4. No adverse or prejudicial effects shall result to any student who avails himself or herself of the above provisions.

Course Schedule

Topics and Assignments

Week/Date	Topic	Reading	Assignment Due
W1, Feb 7, M	#1: Introduction; Intermolecular forces (I)	Ch. 16.1,16.6	

Week/Date	Topic	Reading	Assignment Due
W1, Feb 9, W	#2: Intermolecular forces (II)	Ch. 16.1,16.6	
W1, Feb 11, F	Recitation		
W2, Feb 14, M	#3: Reaction Rates and Rate Laws (I)	Ch. 15.1-15.3	
W2, Feb 16, W	#4: Reaction Rates and Rate Laws (II)	Ch. 15.4-15.5	Homework 1
W2, Feb 18, F	Recitation		Quiz 1
W3, Feb 21, M	#5: Reaction Mechanisms; Steady-State Approximation.	Ch. 15.6-15.7	
W3, Feb 23, W	#6: Catalysis Kinetics & Chemical Equilibria	Ch. 15.8-15.9	Homework 2
W3, Feb 25, F	Recitation		Quiz 2
W4, Feb 28, M	#7: Chemical equilibria & Le Chatelier's Principle	Ch. 6.1-6.8	
W4, Mar 2, W	#8: Acid-Base Equilibria; pH Scale; weak acids	Ch. 7.1-7.5	Homework 3
W4, Mar 4, F	Recitation		Quiz 3
W5, Mar 7, M	#9: Acid-Base Equilibria; weak bases	Ch. 7.6	
W5, Mar 9, W	#10: Acid-Base Equilibria; polyprotic acids	Ch. 7.7	Homework 4
W5, Mar 11, F	Recitation		Quiz 4
W6, Mar 14, M	#11: Acid-Base Properties of Salts	Ch. 7.8-7.11	
W6, Mar 16, W	#12: Buffered Solutions	Ch. 8.1-8.2	Homework 5
W6, Mar 18, F	Recitation		Quiz 5
W7, Mar 21, M	#13: Buffer Capacity & Titrations	Ch. 8.4-8.5	
W7, Mar 23, W	#14: Acid-Base Indicators & Titrations	Ch. 8.6-8.7	Homework 6
W7, Mar 25, F	Recitation		Quiz 6
W8, Mar 28, M	Midterm Exam		
W8, Mar 30, W	#15: Solubility Products & Complex Ion Equilibria	Ch. 8.8-8.10	
W8, Apr 4, F	Recitation		

Week/Date	Topic	Reading	Assignment Due
W9, Apr 4, M	#16: Thermodynamics of Solution	Ch. 17.1-17.3	
W9, Apr 6, W	#17: Colligative Properties of Solutions	Ch. 17.4-17.7	Homework 7
W9, Apr 8, F	Recitation		Quiz 7
W10, Apr 11, M	#18: Crystalline Solids	Ch. 16.3-16.5	
W10, Apr 13, W	#19: Ionic Solids; Phase Changes & Phase Diagrams	Ch. 16.7-16.12	Homework 8
W10, Apr 15, F	Recitation		Quiz 8
W11, Apr 18, M	#20: Electrochemistry: Voltaic & Galvanic Cells, Standard Reduction Potential	Ch. 11.1-11.2	
W11, Apr 20, W	#21: Electrical Work & Free Energy	Ch. 11.3-11.4	Homework 9
W11, Apr 22, F	Recitation		Quiz 9
W12, Apr 24, Sun	#22: Application of Nernst Eq; Batteries & Corrosion (Legislative day on Monday)	Ch. 11.5-11.6	
W12, Apr 25, M	#23: Electrolysis	Ch. 11.7-11.8	
W12, Apr 27, W	#24: Transition Metals: Coordination	Ch. 19.1-19.4	Homework 10
W12, Apr 29, F	Recitation		Quiz 10
W13, May 2, M	Chinese Labor Day Holiday		
W13, May 4, W	#25: Crystal Field Theory	Ch. 19.5-19.8	Homework 11
W13, May 6, F	Recitation		Quiz 11
W14, May 9, M	#26: Radiochemistry	Ch. 20.1-20.6	
W14, May 11, W	#27: Review		Homework 12
W14, May 13, F	Recitation		Quiz 12
W15, May 16, M	Final Exam		

Exam Schedule

Midterm Exam: Mar 28, 2022, 8:15 am – 9:30 am (Zoom)

Final Exam: May 16, 2022, 9:00 am – 12:00 pm (Zoom)

Note: If exam arrangement is updated or changed, please follow instructions from Brightspace announcement.

Resources

- **Access your course materials:** [NYU Classes](https://nyu.edu/its/classes) (nyu.edu/its/classes)
- **Obtain 24/7 technology assistance:** [IT Help Desk](https://nyu.edu/it/servicedesk) (nyu.edu/it/servicedesk)
- **Academic Support.** The Academic Resource Center (ARC) provides free tutoring and support to students looking to reach their highest academic potential. Students can schedule a meeting, or drop by, for any of the following:
 - Individual and small-group tutoring with the class Learning Assistant (LA)
 - Individual writing consultations at any stage of the writing process
 - Academic coaching in areas such as time management, reading & note-taking strategies, exam preparation, and goal setting
 - Workshops on writing, academic skills, and technologies
 - Group study and conversation circles
- **Library and Research Services.** The Library is available to support your research needs. They have access to 14,000 print resources, 2,000 DVDs, and 1,000 databases (including over a million e-books, as well as streaming audio and video and image databases). Librarians with expertise in Business, Economics, Humanities, Science (STEM), and Social Sciences are available in-person and online to help. Services include:
 - One-to-one consultations to help you with your research projects
 - Reference Desk hours for immediate help with finding and using resources
 - Workshops throughout the semester on research strategies, special databases, academic integrity, and using citation tools.
 - Visit the Library on the 4th floor, or go to shanghai.nyu.edu/library to learn more