

## Chemistry 2B

Course Syllabus – Spring 2022

Office Hours: T 3:00 – 4:40 p.m., SLB 2064

Phone: 530-754-9501, Office: Sciences Lab Building 2033B

Class Info: TR 1:40 – 3:00 p.m., Sciences Lecture Hall 123

Course materials available on Equitable Access (EA) (<https://ucdavisstores.com/equitableaccess>).

Web Page: access through <http://canvas.ucdavis.edu/>

*It is your responsibility to check the web page for any pertinent announcements or information. If you have questions, check Canvas first. Then, your section TA is your next line of contact. You **must** use your @ucdavis.edu email address. To contact the course instructor, only use email and do not use Canvas Messages.*

All Other TA Office Hours: Posted on Class Web Page

TA mailboxes: In the hall outside Chemistry 149.

### Course Materials (Lecture & Discussion).

*Chemical Principles*, Zumdahl & DeCoste, 8<sup>th</sup> Edition & OWLv2 Homework System. (EA)

Enderle's Chemistry 2B Lecture Notes & Practice Exams (Available from EA or at Davis Copy Maxx, 232 3<sup>rd</sup> St.)

Scientific Calculator

### Course Materials (Laboratory).

*Chemistry 2B Laboratory Manual*, Department of Chemistry, UCD (**Spring 2022 version only**)

ANSI-compliant, indirectly-vented, chemical splash safety goggles; 100% cotton chemistry lab coat

Closed-toe, closed-heel shoes; clothing that completely covers your arms and legs (*lab only*)

Laboratory Notebook with carbon or duplicate pages

**Prerequisite.** Chemistry 2A

**Course Content.** The lectures will cover Chapters 9, 10, 12-14, 16, & 17 outlined in the schedule on page 3 following the reader & text (Zumdahl et al). You are responsible for all of this material, including any parts that may not be formally presented in lecture, unless explicitly directed otherwise in lecture. Readings and problems from the text will be assigned. While the problems will not be collected or graded, it is critical that you do these (and as many additional problems as possible) in order to succeed in the class. A tentative schedule of lecture assignments is given on Page 3 of this syllabus.

### Course Goals & Objectives.

- Mastery with SI units, conversions, scientific notation, and algebraic mathematics.
- Ability to integrate concepts/equations and apply them to chemical problems associated with the topics covered.
- Understand chemical bonding as it relates to structures, hybridization, and various bonding theories.
- Ability to read, understand, and interpret the periodic table and related electronic, physical, and chemical trends.
- Basic understanding the electron and the atom as it relates to structure and quantum mechanics.
- Basic understanding of thermodynamic quantities and thermodynamics as it relates to equilibrium.
- Knowledge of thermochemistry and ability to apply knowledge to various calorimetry problems.
- General knowledge of the solid, liquid, and gas phases, phase changes, and intermolecular forces.
- Connect the topics to application in daily life situations.

**Fees.** Chemistry 2B has a Course Material Fee of \$39.

**Grading.** Exam I and Exam II are each worth 23%; the Final is worth 36%; the Laboratory is worth 10%; the Discussion is worth 2%, and the Online Homework is worth 6% of the grade. Students must complete **all** laboratory experiments and turn in an acceptable report for each experiment in order to pass the course. Students who do not pass the lab portion of the course will receive an automatic failure in the course as a whole regardless of exam scores. You cannot receive an incomplete in the lab portion of the class. Incomplete grade eligibility is only for students who are passing the course, finished and passed the lab portion of the course, completed a majority of the course, and miss the Final Exam for “good cause.” Additionally, students who fail to complete the correct homework set cannot have extensions nor will it count. The penalty for turning in late assignments is as follows: Homework is 10%, and Lab is 5 points/calendar day. Furthermore, students who do not complete a majority of the coursework (including examinations) cannot pass the course (e.g., you

cannot miss >1 of the three examinations). Any excused absences of any kind must be accompanied by appropriate documentation for verification.

$$\text{Final Grade \%} = [(\text{Exam I\%}) \times 0.23] + [(\text{Exam II\%}) \times 0.23] + [(\text{Lab\%}) \times 0.10] \\ + [(\text{HW\%}) \times 0.06] + [(\text{Discussion\%}) \times 0.02] + [(\text{Final\%}) \times 0.36]$$

**Examinations.** Two examinations will be given during lecture hours on *Thursday April 21<sup>st</sup>* and *Thursday May 19<sup>th</sup>* in assigned rooms. The exams cover all material (lecture and laboratory) since the start of the quarter (Exam I) or the last exam (Exam II). The final examination will be comprehensive and common for all 2B sections (*Monday June 6<sup>th</sup> 8:00 a.m. – 10:00 a.m. PDT*). Exams are graded on chemistry, mathematics related to the questions, and your ability to demonstrate your knowledge. You must bring your student ID to the examinations. **No early, late, or make-up exams will be given.** It is the student's responsibility to talk to the head TA **at least 2 weeks** ahead of exam dates regarding conflicts or special needs. Missing exams for "good cause" according to university protocol (*including but not limited to documented sickness, accident, campus closure*) will automatically result in an exemption (*no early, late, or make-up exams*) where the exam weight is placed onto the final exam. If a student takes an exam, they cannot subsequently be excused. During exams, you must put your lab section and multiple-choice answers on the front-page and your name on every page, else forfeit up to 5 points automatically, at the discretion of the instructor and Head TA. Furthermore, you must complete all work for exam during the allotted class period (including but not limited to writing your name and circling M/C answers) because unauthorized additional time is forbidden. If there is a disruption or incident during an exam, the exam will not be cancelled. According to the Dept. of Chemistry Emergency Instructional Contingency Plan, the exam will continue outside regardless of weather and additional minutes will be granted. Exam re-grades occur on Gradescope. For a re-grade, you must review your exam within the time-period specified by the Head TA and instructor. Re-grades regarding grading rubric are not accepted. Once the re-grade period passes, you may not submit your exam for a re-grade. Inconsistencies or other "special requests" in the Canvas Gradebook must be resolved by the date set by the course instructor. Accommodations for religious observances must be submitted no later than two weeks after the beginning of the quarter per university policy. Finally, SDC students must provide official documentation at least one week ahead of time from the SDC in order for your accommodations to be processed. Absolutely no accommodations given unless official and completed paperwork is received from SDC. The Head TA will process all your paperwork unless you request otherwise from the instructor before the paperwork is sent.

**Discussion and Laboratory.** These are handled by TAs. The times and rooms of your 1-hour discussion and 3-hour laboratory depend on your particular section. In discussion, participation on the weekly worksheet earns you points each week amounting to 2% of your total grade. Discussion is mandatory for all students, including R0 students. For lab, a schedule is included on page 4. Note that discussions and labs start on *Monday March 28<sup>th</sup>* (*your first lab/discussion may be before the first lecture*). You must submit a report detailing your lab results by the beginning of the lab period immediately following the one in which the experiment was completed. **You must attend and complete all labs to be eligible to pass the class. A failure in lab from (1) one or more missing labs and/or (2) <50% of the total lab points will result in a failure in the entire course.** Safety rules, proper lab technique, appropriate clothing (PPE), and appropriate behavior are strictly enforced. The TAs, lab supervisor, and instructor reserve the right to remove any student from lab for unsafe or disruptive behavior resulting in a referral to SJA, a failure of that lab, and possibly the lab and lecture portion of the course. You must report any grade or points-earned issues either (1) 1 week after the due date or (2) 1 day before the final, whichever is earlier. Failure to do so will result in no change to your grade or points-earned.

### **Enrollment Issues.**

- All enrollment issues should be directed to the Head TA. You may contact the head TA through email or see the head TA during the scheduled office hours.
- If you wish to add this course, you should be present at the start of the laboratory period of the section you want. If there is space in the section, the Head TA will give you a PTA number, which will allow you to add the course.
- You cannot add the course without a PTA number. These are available only from the Head TA and subject to available space in the particular laboratory section. You can drop the course anytime before the drop date.
- You must be present at the start of your first laboratory period in order to keep your enrollment in the course. If you are not present, you may forfeit your enrollment.
- The R0 section is only open to students who are repeating the course and have satisfactorily completed the laboratory at UCD. Non-repeaters who enroll in the R0 section must drop and enroll in the correct section.
- If you are repeating the course and have previously completed the lab, see the Head TA as soon as possible. You are not excused from the lab until the Head TA checks that your previous lab score is satisfactory. If you are excused from the lab, the Head TA will assign you a discussion section to attend that accommodates your class

schedule; formally, however, you will remain enrolled in the R0 section. It is your responsibility you check with the head TA about discussion and read all Canvas announcements.

- All students, whether regularly enrolled, late adds, or R0, are completely responsible for **all** material and announcements discussed in lecture, posted on Canvas, or cited elsewhere regardless of date added or any other reason.

**Cheating/Plagiarism.** Cheating or plagiarism will result in a referral to Student Judicial Affairs (SJA) <https://ossja.ucdavis.edu/code-academic-conduct>, automatic failure of the respective assignment, and may result in dismissal/suspension from the class. In laboratory, all students must use their respective data (i.e., collected data) to finish each post-laboratory exercise. Students are not allowed to copy or post any data, calculations, or answers of any kind from any other person or website. Post-laboratory exercises must be done entirely independently of your lab partner or other persons. You may not copy or paraphrase another's work without appropriate citation.

**Health Services.** Here at UC Davis we care about the holistic well-being of our undergraduates. It is all too often that while focusing on academics students forget to attend to both their physical and mental health, resulting in anxiety, depression, and a multitude of detrimental issues. If you, or anybody you know, is in need of mental health care, please refer to the following campus resources: (1) Counseling & Psychological Services (CAPS): North Hall. (530) 752-2349; (2) Urgent Care: Student Health and Wellness Center; (3) 24-Hour Advice Nurse: (530) 752-2349

#### Useful Web Links.

*Petition for Repeaters & Chemistry 2B Lab Manuals:* <https://chemistry.ucdavis.edu/undergraduate/general-chemistry-series>

*Dr. E's Online Videos of Practice Problems:* (<https://www.youtube.com/EnderlePhD>) (select appropriate playlist)

**Tentative Lecture Schedule and Course Content.** The schedule and material covered during examinations are subject to change at the discretion of the instructor.

#### **Chemical Principles (8<sup>th</sup> Ed.), Zumdahl & DeCoste**

- Chp. 09: Thermochemistry
- Chp. 10: Spontaneous Change
- Chp. 12: Atomic Theory
- Chp. 13: Chemical Bonding Part I
- Chp. 14: Chemical Bonding Part II
- Chp. 16: Liquids & Solids
- Chp. 17: Properties of Solutions

Week of	Tuesday	Thursday
Mar 28	Intro / Chp. 9	Chp. 9
Apr 4	Chp. 9 & 10	Chp. 10
Apr 11	Chp. 10 & 12	Chp. 12
Apr 18	Chp. 12	<b>Exam I</b>
Apr 25	Chp. 12	Chp. 12 & 13
May 2	Chp. 13	Chp. 13
May 9	Chp. 14	Chp. 14
May 16	Chp. 16	<b>Exam II</b>
May 23	Chp. 16	Chp. 16 & 17
May 30	Chp. 17	Chp. 17
<b>Final:</b> Monday June 6 <sup>th</sup> , 8:00 – 10:00 a.m.		

## Chemistry 2B Laboratory Information & Schedule

Students must read the laboratory experiment, complete the pre-laboratory assignment, and complete the online pre-laboratory quiz at least 1 hour before coming to class. If you have any questions about the experiment to be performed, be prepared to ask your TA during your pre-lab introduction. All experimental data and observations will be taken directly into the laboratory notebook. Your TA must initial these entries each day before leaving the laboratory. A student must complete all labs and submit a laboratory report for all of the assigned laboratory work in order to pass the course. All laboratory work (including the online post-labs) must be submitted before the next normally scheduled laboratory meeting or at the time indicated by the teaching assistant.

### A laboratory report consists of:

#### **Title, Purpose, Procedure, Data Tables**

These constitute the prelab and must be prepared prior to coming to lab. Blank data tables should be made before lab. The prelab quiz is completed online at least 1 hour before coming to lab.

#### *Data, Calculations, Questions, Results, Summary, Conclusion*

These are done outside of lab time. The conclusion is to consist of a couple of well-written paragraphs discussing the results and possible sources of errors.

<b>Monday</b>	<b>Tuesday</b>	<b>Wednesday</b>	<b>Thursday</b>	<b>Friday</b>
<i>28-Mar</i>	<i>29-Mar</i>	<i>30-Mar</i>	<i>31-Mar</i>	<i>1-Apr</i>
Check In /Safety Rules/ Begin Thermochemistry				
<i>4-Apr</i>	<i>5-Apr</i>	<i>6-Apr</i>	<i>7-Apr</i>	<i>8-Apr</i>
Complete Thermochemistry				
<i>11-Apr</i>	<i>12-Apr</i>	<i>13-Apr</i>	<i>14-Apr</i>	<i>15-Apr</i>
Volumetric Analysis I				
<i>18-Apr</i>	<i>19-Apr</i>	<i>20-Apr</i>	<i>21-Apr</i>	<i>22-Apr</i>
Volumetric Analysis II				
<i>25-Apr</i>	<i>26-Apr</i>	<i>27-Apr</i>	<i>28-Apr</i>	<i>29-April</i>
Reactions of Copper				
<i>2-May</i>	<i>3-May</i>	<i>4-May</i>	<i>5-May</i>	<i>6-May</i>
Colligative Properties				
<i>9-May</i>	<i>10-May</i>	<i>11-May</i>	<i>12-May</i>	<i>13-May</i>
Spectrophotometry I				
<i>16-May</i>	<i>17-May</i>	<i>18-May</i>	<i>19-May</i>	<i>20-May</i>
Spectrophotometry II				
<i>23-May</i>	<i>24-May</i>	<i>25-May</i>	<i>26-May</i>	<i>27-May</i>
Avogadro's Number/Checkout				
<i>30-May</i>	<i>31-May</i>	<i>1-Jun</i>	<i>2-Jun</i>	<i>3-Jun</i>
No Lab (Discussion sections held as normal)				