reinhardt UNIVERSITY

**CHE 440 010 – bioCHEMISTRY, spring ‘24**

**Professors:** Dr. Fred A. Fortunato **E-mail:** faf@reinhardt.edu

**Office:** Dobbs 126 **Phone:** 770-720-5594

**Office Hours:** As posted **Study Sessions:** TBD

**Lectures:** 8:00-9:15 am, T/R (Dobbs 101)

**General Information**

Below are items of general information related to this course.

**Textbooks and Required Materials:**

* Tymoczko, John L., Berg, Jeremy M., Gatto, Jr., Gregory J., and Stryer, Lubert. *Biochemistry-A Short Course.* Fourth Edition. W. H. Freeman and Company, 2019. ISBN: 978-1-319-11463-3 (softbound).
* Labster lab simulation software. Access will be provided by the professor and paid for using the students’ course fees. Students will need to register (professor will provide instructions).
* A scientific calculator that does not store text information (for quizzes and exams). Some examples are: TI-30XIIS, TI-30Xa, CasioFx-300ESPLS2, Mr. Pen-scientific calculator. These can be purchased at Walmart, Target, or Amazon. If you are not sure whether your calculator is acceptable, please see the professor. Note, high-end graphing calculators like the TI-84 or equivalent are not acceptable, neither are mobile phones nor “smart” watches.
* Your operable Reinhardt University e-mail account. This must be working and checked frequently. Your account is not operable if your mailbox is full!
* Students are expected to have adequate computing capabilities and web (internet) access.

**Recommended Supplementary Materials:**

* *Student Companion to accompany Biochemistry-A Short Course.* Fourth Edition. W. H. Freeman and Company, 2019. ISBN: 1-319-11463-6.
* Organic Chemistry Molecule Kit.

**Catalogue Course Description:** The course covers basic concepts in biochemistry as well as biochemistry in health and disease. Biochemistry includes a study of protein structure and their physical properties; how these properties relate to catalysis, regulation of catalysis and metabolic chemistry, as well as a general understanding of role of DNA in inheritance, genetic manipulation and gene therapy. This course includes group discussions, primary literature searches and presentations, clinical case study review and web-based assignments. *Prerequisites:* *BIO 120/121 General Biology I, CHE 380/381 Organic Chemistry I, and at least one other 200 level or above course in Biology.*

**Credit Hours:** Over 15 weeks, students will spend 150 minutes per week in lectures, class discussions, and examinations (37.5 hours for the semester). Instructional time includes a 75-minute mid-term exam and a 3-hour comprehensive final exam. Worksheets, preparation for exams and quizzes, and other out-of-class work will require around 350 minutes per week (87.5 hours for the semester).

**Course Objectives and Learning Outcomes:** Biochemistry is one semester course, which serves to expand on the foundations formed in General Biology, General and Organic Chemistry, and prepares the student for more advanced courses in both the Biological Sciences and courses of study beyond Reinhardt University. Material will be presented in lecture and discussion formats to aid students in the development of an understanding and appreciation of the following topics:

* To appreciate that normal physiology, disease processes, and pharmacological interventions are based on molecular interactions and reactions between proteins, nucleic acids and metabolites.
* To learn the basic concepts governing protein structure, reactivity and regulation.
* To be able to calculate fundamental acid/base relationships including pH and buffer solutions as applied to biological systems.
* To understand how energy and essential nutrients are derived from foods, how these are stored and how these processes are regulated.
* To be able to process enzyme kinetic data and to learn how inhibitors function.
* To have a general understanding of how and where essential polymers (e.g. DNA, RNA, proteins, and glycogen) and metabolites are synthesized and reacted.
* To describe the molecular events which govern the growth of cells and the communication between them.
* To explain the pathophysiology that results from the abnormal functioning of processes described in the above.
* To understand how several clinically relevant techniques of molecular biology function.
* To be able to apply biochemical principles to understanding new clinical scenarios.

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| **Course Learning Outcome** |  **Program Learning Outcome** |
| Students will demonstrate an understanding of the central dogma of biological systems and how this can be manipulated. | SLO 4: Students will demonstrate proficiency in using basic principles of heredity to predict patterns of inheritance of genetic traits and to demonstrate an understanding of the central dogma of molecular biology: as within each cell genetic information flows from DNA is transcribed into RNA and is translated into protein. Students will be able to explain how organisms function at the level of the gene, genome, cell, tissue, organ, and organ-system.  |
| Students will demonstrate an understanding of basic biochemical principles  | SLO 4: Students will demonstrate proficiency in using basic principles of heredity to predict patterns of inheritance of genetic traits and to demonstrate an understanding of the central dogma of molecular biology: as within each cell genetic information flows from DNA is transcribed into RNA and is translated into protein. Students will be able to explain how organisms function at the level of the gene, genome, cell, tissue, organ, and organ-system.  |
| Students will demonstrate an understanding of basic principles in enzyme kinetics, protein structure as it relates to function and metabolism | SLO 4: Students will demonstrate proficiency in using basic principles of heredity to predict patterns of inheritance of genetic traits and to demonstrate an understanding of the central dogma of molecular biology: as within each cell genetic information flows from DNA is transcribed into RNA and is translated into protein. Students will be able to explain how organisms function at the level of the gene, genome, cell, tissue, organ, and organ-system.  |
| Students will demonstrate an understanding of the role of biochemistry in health and disease. | SLO 4: Students will demonstrate proficiency in using basic principles of heredity to predict patterns of inheritance of genetic traits and to demonstrate an understanding of the central dogma of molecular biology: as within each cell genetic information flows from DNA is transcribed into RNA and is translated into protein. Students will be able to explain how organisms function at the level of the gene, genome, cell, tissue, organ, and organ-system.  |

**Conceptual Framework:** The study of science at Reinhardt University recognizes that students have academically diverse needs because of their different learning styles and life experiences. A variety of classroom instructional strategies are utilized to address the diverse needs of all learners. Lectures typically use PowerPoint formats and the professor generally provides students with study notes generated from the PowerPoint presentations. Visual, auditory, and kinetic modalities are used in lecture and laboratory instruction. Where possible, lectures seek to address problems from an applied viewpoint. The study of science at Reinhardt recognizes that essential course content is best learned through the perspectives and methods of inquiry. Inquiry may be fostered through small study groups and workshops that encourage and support student efforts to collaborate. Workshop exercises will seek to actively investigate phenomena, to make observations, and to interpret results in a manner consistent with currently accepted scientific methods.

**Course Structure:** For this semester, it is anticipated that the course will be deliverd in an in-person format by the professor. As health and safety concerns change, modifications to the course delivery will be adapted as appropriate. This course will be based on lectures, problems, and discussions. Some special projects may be assigned and completed on an individual or group basis in class. A detailed preliminary course schedule is attached to this syllabus. Students should expect to spend a minimum of 3 hours studying outside-of-class for each hour of in-class lecture (at least 9 hours per week), and at least two hours per week outside-of-class for completion of homework, worksheets, or Labster exercises. Some topics may require more study time depending on the student’s preparation for the concept being covered.

**Course Requirements/Assignments**

Below are the activities and assignments that will be used to evaluate student’s achievement of the learning outcomes.

**Lectures**:  It is the intention of the professor to present this course using a typical class setting. It may be necessary, however, to change to a virtual format as conditions warrant. Each class member is responsible for all material and information discussed and assigned in class. It is recommended that you make arrangements with a fellow class member to take notes, to collect handouts, and to contact you about important assignments when you are absent from class. Also, regularly check your e-mail for announcements pertaining to class.

Lectures delivered in a class setting will require that students follow any distancing guidelines and must wear acceptable face covering delineated by the university or the professor. This is discussed further in the “Health Considerations” section.

Most of the lectures will be presented in PowerPoint format.  In many situationsthe PowerPoint slides shown in class will be made available to aid in your note-taking efforts.  It is very important to understand that these slides only serve as an outline for your own note taking.  Students are responsible for filling in any blanks or other details in the lecture material in preparation for quizzes and exams. The professor will **not** be responsible for covering every aspect of the textbook or the lecture notes in class. The lecture will consist of traditional instruction, class discussions, example problems, and other means appropriate for a chemistry course. Not all the material presented in lecture will be from the textbook, and not all the information in the textbook will be presented in lecture.

**In this course it is advisable (and you are responsible) to keep ahead of the lectures.  For clarity in lecture, material in the text should be read prior to lectures.  Recommended homework problems will generally be taken from the textbook and should be attempted prior to the applicable lectures. Homework, worksheets and/or quizzes will evaluate how well you are keeping up with this responsibility.**

**Prereading Assignments:**  While there are no formal prereading assignments for this course, it is expected (and highly recommended) that students read the textbook material in advance of the lecture which is to be presented. Outlining or preparing individual notes by the students is highly advisable as well.

**Homework:**  There are no formal recommended nor required homework problems on the course schedule. It is highly advised that students look over and work some of the questions/problems at the end of each chapter to further their understanding and skill in this course.

**Worksheets:**  Throughout the semester printed worksheets will be provided. These exercises serve to reinforce information covered in lecture and will serve as a review of pertinent material prior to a quiz or exam. If students collaborate on these assignments, it is expected that each student in a collaboration group contributes to the solutions of the questions.

**Quizzes and Exams:** Exams and quizzes will be based on your text preparation and lecture material. Some quizzes may assess your preparation on assigned reading material that was not presented in lecture. Quizzes will typically be given near the end of a lecture period and may include chapter questions along with professor-generated ones. You should work many of the examples and the end-of-the-chapter problems in preparation for quizzes and exams.

Quizzes and/or Labster exercises place an added responsibility on the student to keep current in the course.  Fully study a chapter, complete the example exercises, and work the homework. Class preparedness, accurate note-taking, and daily study will be reflected in quiz scores and your overall success in this course.  **The grade you attain from this course is usually directly proportional to the effort you put forth.**

First the good news: On occasions, bonus points are available on worksheets, quizzes, or exams. This has the net effect of dropping questions and thereby raising your overall assignment average. Now, the bad news: There are no dropped quizzes, assignments, or exams. Furthermore, if you miss one of the assignments, quizzes, or exams due to an unexcused absence, you will not be able to make it up without prior approval from the professor.  Missing a quiz or assignment for the third time (short of a documented serious emergency or a university-sponsored activity you’re obliged to participate in) will significantly affect your overall course average. For excused absences, it is preferable to complete the quiz prior to the absence. Be advised, the professor is very stingy when it comes to making up such assignments without a valid reason!

A mid-term exam and a final exam are scheduled for this course. The dates are shown on the class schedule. No exam grades will be dropped. Exams, like other assignments, cannot be made-up for an unexcused absence.  If you know you are going to be absent for an exam**, arrangements must be made with the professor a minimum of one week prior** to the exam.  **Make-up exams will need to be scheduled with the professor, but only after approval has been granted.** See the Attendance Policy below for the procedures to follow for an excused absence.

*Papers retained by the instructor (e.g., graded exams and some quizzes) will be kept for one year past the conclusion of the current course.*

# Evaluation and Grading: Grades in this course are based a mid-term unit exam, a final exam, homework, Labster exercises, quizzes, worksheets, and miscellaneous activities. All students are required to keep a current class notebook in which assignments, as well as lecture notes are kept. These notebooks, your textbook, and your notes are to be carried to all class meetings. If a student has an issue (i.e. illness), late worksheets, quizzes, and exams may be accepted if the student has verifiable documentation for his/her absence, and receives permission of the professor. Any make-up exam, quiz, or other assignment will be given on the day the student returns to class unless other arrangements are made with the professor, and may not be in the same format as the original assignment. Class grades are based on a percentage of the total number of points accumulated in the course. Additional grading information is summarized below.

#  Breakdown

Grading Criteria Points % of Grade

Midterm exam 50 12.5

Final Exam 70 17.5

Quizzes 100 25.0

Worksheets 50 12.5

Labster Exercises 120 30.0

Other 10 2.5

 Total 400 100.0

# Grading Scale

90.0% + A (360 + pts)

80.00 – 89.99% B (320-359.99 pts)

70.00 – 79.99% C (280-319.99 pts)

60.00-69.99% D (240-279.99 pts)

<60.00% F (< 240 pts)

This scale is subject to change at the instructor’s discretion. However, do not rely on potential modification (i.e., points adjustment or “curving”) of the grading scale.

# Policy Regarding Online Sources: While the use of on-line sources and especially Artificial Intelligence (AI), commonly known as ChatGPT, is becoming more widespread, its use should be done sparingly and with great caution. ChatGPT is one of many AIs available today, and as a text generating AI, it is programmed mostly to create language indistinguishable from human generated language. The professor’s experience regarding solving chemistry problems using such sources, however, has resulted in erroneous answers in many cases. If a student chooses to use such a tool for out-of-class assignments, they should proceed with the utmost caution and check the results against the professor’s notes and the textbook information. Remember, for any discrepancies between your class notes, assignments, or the textbook with on-line sources, the course resources, including the professor’s comments, take priority.

**Attendance Policy:**  Attendance in lecture will be taken daily.  Chemistry is a hybrid of basic chemical principles with some mathematics and deductive reasoning required for problem solving.  Students consistently underestimate the amount of “understanding” required by this course.  Many topics require intricate explanation by the instructor, with lectures building on the previous ones. **Therefore, good attendance and keeping ahead in the reading is imperative for success in this course.**

A good grade in CHE 440 is more likely with regular, punctual attendance.  Tardiness or early exit is disruptive to the class and not conducive to the learning environment. If the student is tardy or absent, the student is responsible for any missed content and/or assignments. Exams, quizzes, and other assignments are taken from material covered in class lectures, the textbook, quizzes, and homework activities.  The professor will not give make-up exams, quizzes, or other assignments without a notarized letter from the Mayo Clinic (a note from a medical practitioner will do).  He also may not allow taking exams late**.  If you are going to miss a class, you must take care of all required work prior to leaving or face receiving no credit for the work missed.  The professor must be notified of this absence one week (two weeks is preferred) prior to the event in writing via e-mail BY YOU, and not from a student list from the sponsor of the event, at** **faf@reinhardt.edu****. You are responsible for using the correct e-mail address for communication.**

In the event of an illness, please communicate to the professor prior to class, if possible, that you are ill and will not be in class. It is in all our best interests that you stay away from class if you are ill or are presenting any of the symptoms of COVID-19, as delineated on the Reinhardt University website. Note, you must notify the professor each day you are absent, even if it is a multi-day illness/school activity. If you miss more than two consecutive classes due to illness, please provide a note from a medical professional (including the school nurse, or the Dean of Students) stating that you are cleared to return to class.

All assignments are expected to be turned in on their due date. In general, **no** late work will be accepted unless the student has a legitimate, verifiable reason for turning something in late, and has the approval of the professor. All exams and quizzes are expected to be completed in class on the scheduled day of the exam or quiz. If an exam, quiz, or other assignment is missed, you must have a legitimate, verifiable reason for missing it to be able to make it up (see “Acceptable Reasons for Missing Class” below), otherwise, the missed assignment will count as a zero. Additionally, any make-up exam or quiz will be given on the day the student returns to class, unless otherwise approved by the professor.

**Please note that this absence policy is especially enforced IMMEDIATELY BEFORE AND AFTER HOLIDAYS or BREAKS.  Any material missed during these days due to early departures or late returns will NOT be made-up, so plan your trips (rides/tickets) accordingly.**

**Acceptable Reasons for Missing Class:** Regular attendance at scheduled classes, quizzes, and examinations is each student’s obligation. A student must account to the instructor for absences and make up all work missed, if permitted. Legitimate reasons for missing a class, assignment deadline, quiz or exam include required attendance at a university-sponsored event (e.g., sports, music, field trips, etc.), any illness requiring a doctor’s visit or if you have been checked by the campus nurse (you must have a note from your doctor or have the campus nurse send the professor an e-mail), or a critical illness or a death in the student’s immediate family. Emergency absences are excused at the discretion of the professor and only if the student makes her or his situation known immediately upon returning to class. Any other reasons for an absence (e.g., complications arising from transportation problems, ordinary business, or legal transactions) do not constitute emergency situations, will be considered on an individual basis and the professor will determine whether the absence will be excused, thereby allowing the student to make up any work missed due to that absence.

When in doubt, communicate your needs with the professor for clarification to determine if the proposed absence will be considered excused or unexcused. **Remember, students who are absent without an acceptable excuse will NOT be permitted to make up a missed exam, quiz, or other assignment, and will receive a grade of zero for the work missed.**

**Other Course Provisions**

Below are miscellaneous items related to this course.

**Students with Disabilities:  The Americans with Disabilities Act (ADA)** is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. This legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation for their disabilities. Reinhardt University is committed to providing reasonable accommodations for all persons with disabilities. Therefore, if you are seeking classroom accommodations under the Americans with Disabilities Act, you are required to register with the **Academic Support Office (ASO)**. ASO is located in the basement of the Lawson Building. To receive academic accommodations for this course, please obtain the proper ASO documentation.

**The Center for Student Success:** The Center for Student Success (CSS) is located on the upper (top floor) of the library, room 313. **CSS offers free peer and faculty tutoring for all subjects**. For appointments, go to the Reinhardt webpage and click Center for Student Success.

**Technology Requirements:** For those times that viritual communication, either class lectures or study sessions, is required, students should be aware of the technological requirements for engaging by online conferencing platforms. These sessions may be accessible by smart devices (phones and tablets). However, in some situations, a student may find that is it best to access these learning sessions through a computer (laptop or desktop). Engaging with an online conference can be easier at a computer as it provides a larger screen and easier access to chat functions.

The student will need to be able to share both video and audio during online conferences, so the device chosen must support those requirements. In other words, your device must have a camera and a microphone. If the computer used to connect with an online conference does not have audio and video support, then the student may have success logging in to the conference from two sources: a computer for ease in utilizing chat functions and seeing the presentation, and a smart device to provide audio and video sharing with the conference. If logged in from two devices, please make sure to listen to the audio from the device with the microphone and mute the sound on the other device. This will prevent microphone feedback and echoes. Earphones with microphones (gaming headsets or smartphone earbuds) are recommended.

In the event that a student needs to submit work on-line, students will likely need a computer.

**Electronic Devices in the Classroom:** The use of electronic devices in the classroom is intended to enhance the learning environment for all students. Any use of technology that substantially degrades the learning environment, promotes dishonesty or illegal activities is prohibited. Your mobile phone, laptop, tablet, or other electronic device can become a distraction to you and to those around you if it is not used for proper academic purposes.  Proper academic purposes include taking notes, following along with the instructor on PowerPoint, as well as working on assigned in-class activities, projects, and discussions that require in-class computer use.  Texting, Internet surfing, e-mailing, gaming and other such activities are **not** permitted in class and can result in losing the privilege to bring electronic devices to class.

**Mobile phones, pagers, and wearable computer devices (such as Bluetooth, Google glass, and computer-interfaced watches) must be turned off (silenced) during class** unless extenuating circumstances are discussed with the professor, and approval to have them activated is given prior to class.  It is not permissible to answer telephones in class or to engage in text messaging at any time while class is in session. Students who violate this rule risk being counted absent for the class. Note, mobile phones and interfaceable watches will **not** be permitted to be used as calculators for this course. Students are not permitted to take photographs or make audio or video recordings during class **without prior approval** from the professor. If allowed, these recordings may only be used to assist the individual student in the course. Publishing, distributing to current or future students, or using classroom recordings in violation of these restrictions is a violation of the student code of conduct and may be a violation of federal copyright laws.

**Communication:** While it is often expedient to inform the professor in class (or via a friend) regarding items of importance (such as class absence), there is no guarantee that your message will be remembered by the next hour. Therefore, it is required that you communicate such items in writing. For this purpose, please use the professor’s Reinhardt e-mail address provided at the top of this syllabus, and for security purposes, send it from your Reinhardt e-mail address. When submitting an e-mail, please indicate in the subject line the course number, e.g., CHE 440, and your name.

The professor will use e-mail to expedite communications with the class. It is imperative, and **each student’s responsibility,** that you keep your e-mail account sufficiently cleaned out so that they do not miss a class announcement because of an “overfull” mailbox. In addition, the professor will be using Canvas for dissemination of class materials (such as lectures, additional information, and assignments) and will post announcements when appropriate.

**Student’s Responsibility and Conduct:** All students are expected to adhere to the highest standards of academic integrity, and to abide by the Reinhardt Honor Code. Also, all students are expected to be familiar with the Reinhardt policy on academic dishonesty stated in the University Catalog and in the Student Handbook. The following are recognized as unacceptable forms of academic behavior at Reinhardt University:

1. Plagiarism (using the ideas and phrases of others without crediting them, therefore claiming those ideas and phrases as you own).
2. Submitting a paper written by another student or another person as if it were your own.
3. Submitting a paper containing sentences, paragraphs, or sections lifted from another student’s work or other publication, without appropriate documentation.
4. Submitting a paper written by you for another course or occasion without the explicit knowledge and consent of the professor.
5. Fabricating evidence or statistics that supposedly represent your original research.
6. Cheating of any sort on quizzes, tests, papers, projects, reports, etc.
7. Using the internet inappropriately as a resource.

To avoid such academic dishonesty, you must use a citation (footnote or in text) for all ideas drawn from your reading and research, including research in encyclopedias and on-line, even when you have restated those ideas in your own words. Times when you are allowed (often encouraged) to work with other students (i.e., to collaborate) or to seek outside sources for problem solving will be delineated by the professor.

Consequences for cheating or plagiarizing are as follows:

1. No form of academic dishonesty or student misconduct will be tolerated in this course. It is an HONOR CODE VIOLATION to:
	* Cheat on (copying from another person’s work) or to pass information about quizzes and exams from one individual to another.
	* To use unauthorized reference material (i.e., “cheat sheets”) during a quiz or exam. The professor may provide reference information at times when additional information is required for such assignments.
	* Exchange verbal or written information during a quiz or exam.
	* Obtain information outside the classroom during a quiz or exam (e.g., notes hidden elsewhere in the classroom or on campus, etc.)
	* Give or receive information ***before, during, or after*** quizzes or exams – including previous exam information, copying actual exams or quizzes, or possession and use of unauthorized instructor materials.
	* Enter the professor’s office or lab unauthorized with the intent to obtain quizzes or exams, or information about those assignments.
	* Use mobile devices or inappropriate calculators during a quiz or exam.

The professor has the right to give both the person who attempts to pass or use such information, and the person who receives such information, a grade of 0 for the assignment, and/or the grade of F for the course.

1. The Office of the Provost/Vice President of Academic Affairs and the School Dean will be notified of actions taken against students who violate the academic integrity policy, which may result in further consequences, including designation of “academic warning” on your official transcript, academic suspension, or expulsion for academic reasons.

Students are always expected to maintain professional standards of behavior when fulfilling course requirements. Free discussion, inquiry, and expression are encouraged in this course. **Classroom behavior that interferes with either (a) the instructor’s ability to conduct the class, or, (b) the ability of students to benefit from the instruction, is not acceptable. Examples include routinely entering class late or departing early; improper use of electronic devices; repeatedly talking in class without being recognized; talking while others are speaking; or arguing in a way that is perceived as “crossing the civility line” is unacceptable.** In the event of a situation where a student legitimately needs to answer a beeper/mobile telephone, prior notice to and approval from the instructor is required.

As should be expected in a college course, the student assumes responsibility for keeping up with their standing in the course. The professor will not routinely issue grade warnings. Furthermore, it is not up to the professor to follow up on missed exams or assignments – it is your grade, and thus your responsibility. It is also expected that students will conduct themselves in an academically honest and ethical manner. Cheating, plagiarism, and disruptive, disrespectful, or inappropriate conduct will not be tolerated. These activities will result in penalties including, but not limited to, your **expulsion from the course and/or the university.** Please take time to reread this syllabus; it is your guide to the way class is conducted. The syllabus and the course calendar are very important; take care not to lose them.

**Conversations During Class:** To provide the most optimal learning environment in the classroom, conversations during lecture should be kept to a minimum. When the private conversation becomes disruptive to the class or the lecturing faculty, the participants may be asked to leave the room.

**Class Cancellation Policy:** If a class is cancelled (e.g., school closing, professor illness or emergency) any assignment which is due in the cancelled class will become due at the beginning of the next available class day. That means assignments are to be turned in at the next available class. Quizzes and exams scheduled for the day of the cancelled class will likewise be given on the next available class day. A revised course schedule will be distributed on the first day class is conducted following the cancellation. Please consult your e-mail for further updates.

**Service/Comfort Animals:** Service/comfort animals are permitted in the lecture portion of this course provided that such animals do not create a distraction or pose a danger to other students in the course. Before service/comfort animals may be brought into the class room, the student needs to discuss their needs with the professor to gain approval. Permitting of service/comfort animals in the classroom will be decided on a case-by-case basis and may require verification from a medical practitioner. In the event such animals create a distraction or pose a danger to other students, the animals may need to be removed from the classroom.

**Health Considerations:**Reinhardt University is committed to providing a healthy environment for its students, visitors, faculty, and staff. Below are some general guidelines related to a healthy environment:

* If you are ill, it would benefit your fellow classmates and the professor if you NOT attend class. Many illnesses are air-born and thus transmitted via that route. In addition, you are required to follow all the guidelines set out by the university related to social distancing and face covering in the classroom.
* Initially, your professor will be conducting seated classes to provide a better experience for your course. As such, he requests you be mindful of the protocols to minimize contact and possible transmission of germs. If this is not followed, the professor reserves the right to modify the course delivery up to and including a virtual format.
* In our on-going effort to be transparent about COVID-19 cases confirmed within our campus community, while maintaining confidentiality, the university revises the COVID-19 FAQ page that provides a count of how many members of the Reinhardt community have contracted the virus.
* All students, faculty, staff and administration at Reinhardt University are subject to changes in policies if mandated by the State of Georgia. Policies and procedures, which were current at the time of printing of this syllabus, can be found at:

[**https://www.reinhardt.edu/student-life/student-services-resources/COVID-19-Updates**](https://www.reinhardt.edu/student-life/student-services-resources/COVID-19-Updates)

* If you have any questions, please refer to the websites or contact Reinhardt University at the numbers below.
* Campus Nurse within the Student Health Center

nurse@reinhardt.edu, 770-720-5542, or [www.reinhardt.edu/nurse](http://www.reinhardt.edu/nurse)

* Public Safety

Non-Emergency Phone: 770-720-5789

Emergency Phone: 770-720-5911

publicsafety@reinhardt.edu

* Dean of Students

deanofstudents@reinhardt.edu, 770-720-5540

* Office of the Provost/Vice President of Academic Affairs

vpaa@reinhardt.edu, 770-720-9102.

**Campus Safety:**Reinhardt University is committed to providing a safe environment for its students, visitors, faculty, and staff. Below are some general guidelines related to safety:

* **Firearms** - Long-established policies, approved by Reinhardt’s Board of Trustees, prohibit possession of firearms on property owned by the University.
* **Fire** – When the building evacuation alarm is sounded or when you are ordered to leave, take your belongings and walk quickly to the nearest marked exit and calmly ask others to do the same. Evacuate the building to a safe distance. Instructors/supervisors should account for everyone in their group once outside.
* **High Wind Incident (tornado/hurricane)** – When Reinhardt University’s Emergency Communications Notification System has been activated, or when there is a public safety announcement, determine if you have time to move to a designated refuge area. If time does not permit this, then move to an interior windowless room.
* **Campus Threat** – Notify Public Safety and prior to the arrival of a threat some options include locking the room, turning out the lights, and staying out-of-sight or escaping the area if safe to do so. Use common sense. As a last resort, and if no other options are viable, make a plan to physically defend yourself against the threat.

**Professionalism**

A key aspect of success in today’s workplace is the ability to communicate effectively and to act professionally. The way we conduct ourselves displays the type of individual we are and goes far beyond whatever personal successes we may have achieved. Understanding the culture of our workplace, meeting expectations, communicating competently, and building credibility through authenticity is vital. The aspect of professionalism should not only stem from a desire to succeed, but it should demonstrate who we are. This demonstration will be evident in the way you communicate in and outside the classroom. This includes all written, verbal and nonverbal communication with your professor and fellow students in class as well as your written, verbal and nonverbal communication with your professor outside of class. As in the workplace, it is important to remember that your credibility with your fellow students and your professor is directly related to how competently you communicate in the professional culture established. While many of the aspects of a professional attitude have been mentioned previously in this syllabus, below is a summary of the professional culture for this course.

**Preparation:** The professor’s education and work experience, and ongoing professional development will enable him to provide meaningful content, leadership, and evaluation for this course. He takes that responsibility seriously. The quality of this course, however, is directly proportional to the time both the student and the professor dedicate to preparation. Just as the professor prepares diligently for each class, he expects the students to be punctual turning in assignments, thorough in completing assignments (including all readings), and disciplined in studying for quizzes and tests. Just as late work affects your performance evaluation in the workplace, it also affects your performance evaluation in this course. Unless otherwise noted or agreed to with the professor, late assignments will not be accepted.

**Engagement:** Engagement in class is an important aspect of the educational experience. As a result, we are partners in learning. The professor will endeavor to create learning opportunities, will be interested in your insights/questions, and attentive to your feedback. Engagement is not a one-way street. It requires the students to be attentive to the professor and their classmates, ask relevant questions, and provide informed insights. The professor expects the students to be positive and engaged in class, open in their approach to their classmates and the course content, and concerned about their progress in learning the material, not just watching their grades. The true purpose of education is to help us learn how to learn, not just pass a course to check a box on a degree sheet. This requires that you be an integral part of the process.

**Meetings:** Every professional culture has formal and/or informal expectations during meetings. For this course, meetings are defined as regularly scheduled class periods and individual meetings scheduled with the professor, as needed.

Meetings are designed to facilitate work done corporately, therefore, you are expected to attend and be on time for all meetings. In professional cultures it is not acceptable to miss a meeting without informing the appropriate person, regardless of the reason. The same is true for this course. Anytime you will not be able to attend a meeting you must notify the professor in advance, regardless of whether the absence is excused or unexcused. See “Attendance” for more information regarding excused and unexcused absences. You should always be equipped for each meeting. This means having your textbook, and a way to take notes either manually or electronically. If preprinted notes are provided, you may need to add your own comments to the notes for completeness. In addition, you are expected to be prepared with the necessary writing implements and the appropriate calculator for quizzes and exams.

Professional cultures create guidelines for the use of technology in meetings based on several variables including meeting length and objectives. Since our meetings are relatively brief and engagement is key to our educational objectives, sending or receiving text messages, or using forms of social media unrelated to class is not appropriate. See additional guidelines under “Electronic Devices in the Classroom.”

**Inquiries:** A very important aspect of our course is understanding the adhering to appropriate timing. Questions regarding class schedule, homework, etc. are always welcome. However, these questions are appropriate at the beginning and the end of class only. Unrelated questions during class activities, including any group work assigned, indicate the student is not engaged in the task at hand. Just as lack of focus affects your performance in the workplace, it affects your performance in this course. Similarly questions regarding personal circumstances that are not relevant to the entire class (i.e., absences, medical issues, etc.) should be asked one-on-one outside of class. This is best handled in a private meeting with the professor.

There are topics that never should be discussed in the classroom. The Family Educational Rights and Privacy Act (FERPA) (20 U.S.C. § 1232g; 34 CFR Part 99) is a Federal law that protects the privacy of your student educational records. Based on FERPA regulations, questions regarding assignment/test evaluation and grades are inappropriate in the classroom. Questions regarding assignment/test feedback or grades can be submitted to the professor via e-mail, or can be addressed in person with the professor, by setting up a meeting at an appropriate time.

**Communication via Technology:** For our purposes, formal communication should be done via e-mail from the student’s Reinhardt University account. The message should include a subject line starting with “CHE 440” followed by the subject (e.g., CHE 440: Homework Question). To make a positive impression on the professor, all written communication should be formatted appropriately, written in complete sentences, free from spelling and grammatical errors, and include the required subject line. Formal communication is anything directly related to assignments, individual meetings, absences, grades, or schedule clarification. Messages should contain clear questions, include any pertinent details, and be specific if a response is needed within a certain time frame. Please note abbreviations such as BTW, GR8, UR, etc., are not appropriate for these formal communications.

**Personal Information about the Professors**

It is my privilege and honor to be in my seventh year as full-time Professor of Chemistry at Reinhardt University. I have been teaching at the university level for over 16 years and feel the call to help students get prepared for the next phase of their lives. I’ve been married to a wonderful woman for 47 years and have three tremendous children. We have three beautiful granddaughters and two cute grandsons (no bias from their grandfather) all living in Georgia. Technology has been an integral part of my life, both as a student and a professional scientist/engineer for a long *(don’t ask!)* time. I enjoy understanding how things work and spent nearly 30 years in a graduate or an industrial career developing things no one else ever tried to do. *(I often wondered myself why I was trying to develop some of the things I attempted!)* Throughout that career, I was blessed to work in many different capacities, for a variety of companies that spanned a myriad of technological areas. That background will become evident as I share some of my experiences with this class.

***For matters not covered in this syllabus, please consult the professor or refer to the Reinhardt University catalog/student handbook. It is not intended that this syllabus be all inclusive of classroom or college policies and procedures***.

**Course Schedule**

Below is a tentative schedule of assignments for this course. Modifications may be made to this schedule as the semester progresses or as circumstances dictate.

**CHE 440, Spring 2024 – Class Schedule**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Class** **Date** | **Day** | **Text Chapters** | Homework Assignments (points as indicated) | **Quiz / Exam** |
| Jan 9 | T | Course IntroductionChapter 1 | **Class ID# Card (1 point)** |  |
| 11 | R | Chapter 1Chapter 2 | **Syllabus Acknowledgement (4 points)** |  |
| **16** | **T** | **Final day to change schedule** |  |  |
| 16 | T | Chapter 2Review: Acids, Bases, Salts, & Buffers |  |  |
| 18 | R | Chapters 1-2 | Worksheet #1 (10 points) | Chs 1-2, & Acids/bases Quiz(20 points) **\*** |
| 23 | T | Unit 2 IntroductionChapter 3 |  |  |
| 25 | R | Chapter 4 |  |  |
| 30 | T | Chapter 4 |  | Amino Acid Quiz(10 points) |
| Feb 1 | R | Chapter 5 |  |  |
| 6 | T | Chapter 5Unit 3 IntroductionChapter 6 |  |  |
| 8 | R | Chapters 3-5 | Worksheet #2 (10 points) | Chs 3-5 Quiz(20 points) **\*** |
| 13 | T | Chapter 6Chapter 7 |  |  |
| 15 | R | Chapter 7Chapter 8 |  |  |
| 20 | T | Chapter 8Chapter 9 |  |  |
| 22 | R | Chapter 9 |  |  |
| 27 | T | Chapters 6-9 | Worksheet #3 (10 points) | Chs 6-9 Quiz(20 points) **\*** |
| **29** | **R** | **Midterm** |  | **Chs 1-9 (50 points)** |
| **Mar 4-8** |  | **No school – Spring Break** |  |  |
|  |  |  |  |  |

Note: Modifications may be made to the above schedule as needed. Revised: January 9, 2024

The schedule for Labster exercises is on a separate page.

**\* – chapter quizzes have a 75-minute time limit.**

**CHE 440, Spring 2024 – Class Schedule, continued**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Class** **Date** | **Day** | **Text Chapters** | Homework Assignments (points as indicated) | Quiz / Exam |
| **Mar 12** | **T** | **Final Day to Withdraw with a W** |  |  |
| 12 | T | Unit 4 IntroductionChapter 10 |  |  |
| 14 | R | Chapter 10Chapter 11 |  |  |
| 19 | T | Chapter 11 |  |  |
| 21 | R | Chapters 10 & 11 | Worksheet #4 (10 points) | Chs 10 & 11 Quiz(30 points) **\*** |
| 26 | T | Units 6 & 7 IntroductionChapter 14 |  |  |
| 28 | R | Chapter 14Chapter 15 |  |  |
| Apr 2 | T | Chapter 15 |  |  |
| **4** | **R** | **No School – Spring Day** |  |  |
| 9 | T | Chapter 15Chapter 16 |  |  |
| 11 | R | Chapter 16Chapter 17 |  |  |
| 16 | T | Chapters 14-17 | Worksheet #5 (10 points) | Chs 14-17(20 points) **\*** |
| 18 | R | Misc. TopicsTBD |  |  |
| 23 | T | Misc. TopicsTBD |  |  |
|  |  |  |  |  |
| TBD |  | Course Evaluation |  | 5 points |
|  |  |  |  |  |
| **Apr 29****8-11 am** | **M** | **Final Exam** |  | **Chs 10-11, 14-17, Misc. Topics, & Review****(70 points)** |
|  |  |  |  |  |

Note: Modifications may be made to the above schedule as needed. Revised: January 9, 2024

The schedule for Labster exercises is on a separate page.

**\* – chapter quizzes have a 75-minute time limit.**

**CHE 440, Spring, 2024 – Labster Schedule**

|  |  |
| --- | --- |
| **Date Due****(at noon)** | **Labster Activity** |
| Jan 17 |  Demo Simulation (0 points)Exp #1a: The Scientific Method (2.29 points)Exp #1b: Experimental Design (5.71 points) |
| 24 | Exp #2: Advanced Acids and Bases (6 points) |
| 31 | Exp #3a: Protein Synthesis (8.60 points)Exp #3b: Biuret’s Test for Proteins (1.40 points) |
| Feb 7 | Exp #4a: Size Exclusion Chromatography (3.33 points)Exp #4b: Ion Exchange Chromatography (3.33 points)Exp #4c: Gel Electrophoresis (2 points)Exp #4d: SDS-Page: Separating proteins by molecular weight (1.33 points) |
| 14 | Exp #5: HPLC (10 points) |
| 21 | Exp #6: Enzyme Kinetics (10 points) |
| 28 | Exp #7: Introduction to Food Macromolecules (8 points) |
| Mar 13 | Exp #8: Carbohydrates: the sugars that feed us (8 points) |
| 20 | Exp #9a: Benedict’s Test for Simple Carbohydrates (3 points)Exp #9b: Iodine Test for Complex Carbohydrates (2.5 points)Exp #9c: Sudan IV Test for Lipids (2.5 points) |
| 27 | Exp #10: Urinalysis: Analyze urine to suggest a diagnosis (6 points) |
| Apr 3 | Exp #11: Elisa (10 points) |
| 10 | Exp #12: Polymerase Chain Reaction (10 points) |
| 17 | Exp #13: Antibodies: Why are some blood types incompatible (8 points) |
| 23 | Exp #14a: Immunoassay for detecting SARS-CoV-2 antibodies (2.67 points)Exp #14b: Photosynthesis; Electron transport chain (2.67 points)Exp #14c: Liquid-liquid Extraction (2.66 points) |

 Revised: January 9, 2024

These assignments will be taken from the Labster virtual lab package for this course. Points for each are as indicated. Each exercise will consist of questions (adjusted to the point value for the assignment). Each of the assignments will be due on the date indicated. **Total Labster score is 120 points.**

Note: This schedule may be revised during the semester, as needed.

**Reinhardt University**

CHE 440, Biochemistry Syllabus Acknowledgement

I \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ have read and I understand all material contained in the course syllabus. I also certify that the instructor has explained in detail all information contained within that syllabus.

Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

***To receive the maximum credit for this assignment, answer the following questions based on information contained in the syllabus:***

1. How should a student proceed when using on-line sources such as ChatGPT?
2. If a student misses more than two consecutive classes due to illness, what do they need to provide?
3. How should communications with the professor be done in this course?

Make sure your answers include all of the appropriate details. Once completed, please return this page to the professor by the scheduled due date.