

**Instructor**

Timothy Flewelen, Ph.D

**Classroom/Times**

ENV110Lecture: TR 12:30p–1:50p

**Office Hours**

Via Zoom and Teams

By Appointment Only

Life Sciences B114

940-369-7621

**Email:** Timothy.Flewelen@unt.edu

**Lecture Materials:**

*Biochemistry*, 9th Edition by Mary K. Campbell and Shawn O. Farrell

**Prerequisites:**

One semester of Organic Chemistry

**Number of Credits:** 3

**Course Description:**

This course will discuss the chemistry of biologically significant compounds such as proteins, carbohydrates and lipids. Enzymes are introduced; bioenergetics and the most central topics of metabolism are outlined.

**Course Objectives:** By the end of this course, all students should be able to:

- Apply principles of mechanistic organic chemistry to enzyme and chemical reactions used in biochemistry.
- Identify functional groups in biomolecules
- Understand properties of functional groups within the context of biochemical reactions
- Interpret binding affinities and stability of complexes in biochemical systems on the basis of an understanding of the underlying molecular interactions of which they are comprised.
- Categorize amino acid side-chain structures on the basis of their physical properties.
- Understand how differences in physical properties of biochemical molecules serve as the basis for how biochemical molecules are resolved by (a) centrifugation, (b) chromatography, and (c) electrophoresis.
- Understand how to mathematically and conceptually describe chemical equilibria, and to evaluate how perturbations of equilibrium will affect the relative component concentrations in biochemical and ionization reactions. Determine how the concentrations of reaction component will affect spontaneity of a biochemical reaction and pathway.
- Interpret graphs to understand (a) substrate:enzyme or inhibitor:enzyme interactions; (b) binding of oxygen to oxygen-binding proteins; (c) the effects of regulatory molecules on protein function.
- Draw primary structural features of carbohydrates, proteins and lipids, and understand how higher-level structural features are represented.
- Understand the overall purpose, reactions, enzymes, and the integrated regulation of the metabolic pathways

**Attendance:** Attendance is mandatory for all exams. If a student is aware they will miss an exam due to an excused absence recognized by the University of North Texas, (observation of religious holiday, military service or wherein a student is representing the university in an official capacity, such as athletics or band), prior arrangements must be made to take the test early.

If you are absent due to illness or unexpected emergency, a make-up exam will be given for a justifiable, documented (by a medical professional) reason. Requests must go through the Dean of Students office. Additionally, you must E-mail me immediately before the exam.

**Covid-19:**

Students are expected to attend class meetings regularly and to abide by the attendance policy established for the course. It is important that you communicate with the professor and the instructional team prior to being absent, so you, the professor, and the instructional team can discuss and mitigate the impact of the absence on your attainment of course learning goals. Please inform the professor and instructional team if you are unable to attend class meetings because you are ill, in mindfulness of the health and safety of everyone in our community.

If you are experiencing any symptoms of COVID-19 (<https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/symptoms.html>) please seek medical attention from the Student Health and Wellness Center (940-565-2333 or [askSHWC@unt.edu](mailto:askSHWC@unt.edu)) or your health care provider **PRIOR** to coming to campus. UNT also requires you to contact the UNT COVID Hotline at [COVID@unt.edu](mailto:COVID@unt.edu) for guidance on actions to take due to symptoms, pending or positive test results, or potential exposure. **If you test positive for Covid-19 prior to the exam and need to quarantine, you will be given a make up exam upon your return to campus.**

UNT encourages everyone to wear a face covering when indoors, regardless of vaccination status, to protect yourself and others from COVID infection, as recommended by current CDC guidelines.

**Exception: The final exam must be taken on the assigned day. Do not plan to take the final exam early.**

**Academic dishonesty policy:** Students are not to engage in any form of academic dishonesty including, but not limited to plagiarism, alteration of records, substitution of another's work for one's own, and knowingly assisting another student in engaging in any such activity. Academic dishonesty will be penalized according to University policy and will result in a failing grade for the course. I may use plagiarism detection software to enforce academic honesty. We have zero tolerance for academic dishonesty.

**Student conduct code:**

Incivility and disruptive behavior will not be tolerated and may result in a request to leave class. Examples of inappropriate classroom conduct include repeatedly arriving late to class, using a cellular telephone or talking while others are speaking.

### **Accommodations for Disabilities**

The University of North Texas makes reasonable academic accommodation for students with disabilities. Students seeking accommodation must first register with the Office of Disability Accommodation (ODA) to verify their eligibility. If a disability is verified, the ODA will provide you with an accommodation letter to be delivered to faculty to begin a private discussion regarding your specific needs in a course. You may request accommodations at any time, however, ODA notices of accommodation should be provided as early as possible in the semester to avoid any delay in implementation. Note that students must obtain a new letter of accommodation for every semester and must meet with each faculty member prior to implementation in each class. For additional information see the Office of Disability Accommodation website at <http://www.unt.edu/oda>. You may also contact them by phone at (940) 565-4323.

|                   |             |
|-------------------|-------------|
| <b>Exam 1</b>     | <b>22.5</b> |
| <b>Exam 2</b>     | <b>22.5</b> |
| <b>Exam 3</b>     | <b>22.5</b> |
| <b>Exam 4</b>     | <b>22.5</b> |
| <b>Quizzes/HW</b> | <b>10</b>   |
| <hr/>             |             |
| <b>Total</b>      | <b>100</b>  |

|                     |                       |
|---------------------|-----------------------|
| <b><i>Grade</i></b> | <b><i>Percent</i></b> |
| A                   | 90-100                |
| B                   | 80-89.99              |
| C                   | 70-79.99              |
| D                   | 60-69.99              |
| F                   | <59.99                |

**This course includes online learning components. To fully participate in this class, students will need internet access to reference content and quizzes on the Learning Management System**

**Tentative schedule:**

| Week | Date                       | Lecture Topic                                                                  | Chapters Covered             |
|------|----------------------------|--------------------------------------------------------------------------------|------------------------------|
| 1    | 1/13<br>1/15               | Syllabus<br>Water                                                              | 2                            |
| 2    | 1/20<br>1/22               | Amino Acids, Peptides and Proteins<br>Amino Acids, Peptides and Proteins       | 3<br>3                       |
| 3    | 1/27<br>1/29               | 3D Structure of Proteins<br>3D Structure of Proteins                           | 4<br>4                       |
| 4    | 2/3<br>2/5                 | Protein Purification<br>Protein Purification                                   | 5<br>5                       |
| 5    | <b>2/10</b><br>2/12        | <b>Exam 1</b><br>Enzymes                                                       | <b>2-5</b><br>6              |
| 6    | 2/17<br>2/19               | Enzymes<br>Enzyme mechanism and control                                        | 6<br>7                       |
| 7    | 2/24<br>2/26               | Enzyme mechanism and control<br>Carbohydrates                                  | 7<br>16                      |
| 8    | 3/3<br><b>3/6</b>          | Carbohydrates<br><b>Exam 2</b>                                                 | 16<br><b>6,7,16</b>          |
| 9    | <b>3/10</b><br><b>3/12</b> | <b>No Class</b><br><b>No Class</b>                                             |                              |
| 10   | 3/17<br>3/19               | Glycolysis<br>Glycolysis                                                       | 17<br>17                     |
| 11   | 3/24<br>3/26               | Gluconeogenesis, PPP<br>Gluconeogenesis, PPP                                   | 18<br>18                     |
| 12   | 3/31<br>4/2                | The Citric Acid Cycle<br>The Citric Acid Cycle                                 | 19<br>19                     |
| 13   | 4/7<br>4/9                 | Energy Changes and Electron Transport<br>Energy Changes and Electron Transport | 20 (15)<br>20 (15)           |
| 14   | <b>4/14</b><br>4/16        | <b>Exam</b><br>Lipids                                                          | <b>17,18,19,20 (15)</b><br>8 |
| 15   | 4/21<br>4/23               | Lipids<br>Lipid Metabolism                                                     | 8<br>21                      |
| 16   | 4/28<br>4/30               | Amino Acid Metabolism<br>Discussion                                            | 22                           |
| 17   | <b>5/7</b>                 | <b>Final Exam</b><br><b>Covers Chapters-8, 21 and 22</b>                       | <b>10-12p</b>                |

- *The instructor and the College reserve the right to modify, amend or change the syllabus (course requirements, grading policy, etc.) as the curriculum and /or program require(s).*

### Prohibition of Discrimination, Harassment, and Retaliation (Policy 16.004)

The University of North Texas (UNT) prohibits discrimination and harassment because of race, color, national origin, religion, sex, sexual orientation, gender identity, gender expression, age, disability, genetic information, veteran status, or any other characteristic protected under applicable federal or state law in its application and admission processes; educational programs and activities; employment policies, procedures, and processes; and university facilities. The University takes active measures to prevent such conduct and investigates and takes remedial action when appropriate.

### Emergency Notification & Procedures

UNT uses a system called Eagle Alert to quickly notify students with critical information in the event of an emergency (i.e., severe weather, campus closing, and health and public safety emergencies like chemical spills, fires, or violence). In the event of a university closure, please refer to Canvas for contingency plans for covering course materials.

### Retention of Student Records

Student records pertaining to this course are maintained in a secure location by the instructor of record. All records such as exams, answer sheets (with keys), and written papers submitted during the duration of the course are kept for at least one calendar year after course completion. Course work completed via the Canvas online system, including grading information and comments, is also stored in a safe electronic environment for one year. Students have the right to view their individual record; however, information about student's records will not be divulged to other individuals without proper written consent. Students are encouraged to review the Public Information Policy and the Family Educational Rights and Privacy Act (FERPA) laws and the University's policy. See UNT Policy 10.10, Records Management and Retention for additional information.

### Access to Information - Eagle Connect

Students' access point for business and academic services at UNT is located at: [my.unt.edu](https://my.unt.edu). All official communication from the University will be delivered to a student's Eagle Connect account. For more information, please visit the website that explains Eagle Connect and how to forward e-mail [Eagle Connect](https://it.unt.edu/eagleconnect) (<https://it.unt.edu/eagleconnect>).

### Student Evaluation Administration Dates

Student feedback is important and an essential part of participation in this course. The student evaluation of instruction is a requirement for all organized classes at UNT. The survey will be made available during weeks 13, 14 and 15 of the long semesters to provide students with an opportunity to evaluate how this course is taught. Students will receive an email from "UNT SPOT Course Evaluations via IASystem Notification" ([no-reply@iasystem.org](mailto:no-reply@iasystem.org)) with the survey link. Students should look for the email in their UNT email inbox. Simply click on the link and complete the survey. Once students complete the survey they will receive a confirmation email that the survey has been submitted. For additional information, please visit the [SPOT website](http://spot.unt.edu/) (<http://spot.unt.edu/>) or email [spot@unt.edu](mailto:spot@unt.edu).

### Survivor Advocacy

UNT is committed to providing a safe learning environment free of all forms of sexual misconduct. Federal laws and UNT policies prohibit discrimination on the basis of sex as well as sexual misconduct. If you or someone you know is experiencing sexual harassment, relationship violence, stalking and/or sexual assault, there are campus resources available to provide support and assistance. The Survivor Advocates can be reached at [SurvivorAdvocate@unt.edu](mailto:SurvivorAdvocate@unt.edu) or by calling the Dean of Students Office at 940-5652648.

### Important Notice for F-1 Students taking Distance Education Courses

#### **Federal Regulation**

To read detailed Immigration and Customs Enforcement regulations for F-1 students taking online courses, please go to the [Electronic Code of Federal Regulations website](http://www.ecfr.gov/) (<http://www.ecfr.gov/>). The specific portion concerning distance education courses is located at Title 8 CFR 214.2 Paragraph (f)(6)(i)(G).

The paragraph reads:

(G) For F-1 students enrolled in classes for credit or classroom hours, no more than the equivalent of one class or three credits per session, term, semester, trimester, or quarter may be counted toward the full course of study requirement if the class is taken on-line or through distance education and does not require the student's physical attendance for classes, examination or other purposes integral to completion of the class. An on-line or distance education course is a course that is offered principally through the use of television, audio, or computer transmission including open broadcast, closed circuit, cable, microwave, or satellite, audio conferencing, or computer conferencing. If the F-1 student's course of study is in a language study program, no on-line or distance education classes may be considered to count toward a student's full course of study requirement.

#### **University of North Texas Compliance**

To comply with immigration regulations, an F-1 visa holder within the United States may need to engage in an on-campus experiential component for this course. This component (which must be approved in advance by the instructor) can include activities such as taking an on-campus exam, participating in an on-campus lecture or lab activity, or other on-campus experience integral to the completion of this course.

If such an on-campus activity is required, it is the student's responsibility to do the following:

- (1) Submit a written request to the instructor for an on-campus experiential component within one week of the start of the course.
- (2) Ensure that the activity on campus takes place and the instructor documents it in writing with a notice sent to the International Student and Scholar Services Office. ISSS has a form available that you may use for this purpose.

Because the decision may have serious immigration consequences, if an F-1 student is unsure about his or her need to participate in an on-campus experiential component for this course, s/he should contact the UNT International Student and Scholar Services Office (telephone 940-565-2195 or email [internationaladvising@unt.edu](mailto:internationaladvising@unt.edu)) to get clarification before the one-week deadline.

### Student Verification

UNT takes measures to protect the integrity of educational credentials awarded to students enrolled in distance education courses by verifying student identity, protecting student privacy, and notifying students of any special meeting times/locations or additional charges associated with student identity verification in distance education courses.

See [UNT Policy 07-002 Student Identity Verification, Privacy, and Notification and Distance Education Courses](https://policy.unt.edu/policy/07-002) (<https://policy.unt.edu/policy/07-002>).

## Academic Support & Student Services

### Student Support Services

#### *Mental Health*

UNT provides mental health resources to students to help ensure there are numerous outlets to turn to that wholeheartedly care for and are there for students in need, regardless of the nature of an issue or its severity. Listed below are several resources on campus that can support your academic success and mental well-being:

- [Student Health and Wellness Center](https://studentaffairs.unt.edu/student-health-and-wellness-center) (<https://studentaffairs.unt.edu/student-health-and-wellness-center>)
- [Counseling and Testing Services](https://studentaffairs.unt.edu/counseling-and-testing-services) (<https://studentaffairs.unt.edu/counseling-and-testing-services>)
- [UNT Care Team](https://studentaffairs.unt.edu/care) (<https://studentaffairs.unt.edu/care>)
- [UNT Psychiatric Services](https://studentaffairs.unt.edu/student-health-and-wellness-center/services/psychiatry) (<https://studentaffairs.unt.edu/student-health-and-wellness-center/services/psychiatry>)
- [Individual Counseling](https://studentaffairs.unt.edu/counseling-and-testing-services/services/individual-counseling) (<https://studentaffairs.unt.edu/counseling-and-testing-services/services/individual-counseling>)

#### *Chosen Names*

A chosen name is a name that a person goes by that may or may not match their legal name. If you have a chosen name that is different from your legal name and would like that to be used in class, please let the instructor know. Below is a list of resources for updating your chosen name at UNT.

- [UNT Records](#)
- [UNT ID Card](#)
- [UNT Email Address](#)
- [Legal Name](#)

*\*UNT eulDs cannot be changed at this time. The collaborating offices are working on a process to make this option accessible to UNT community members.*

### *Pronouns*

Pronouns (she/her, they/them, he/him, etc.) are a public way for people to address you, much like your name, and can be shared with a name when making an introduction, both virtually and in-person. Just as we ask and don't assume someone's name, we should also ask and not assume someone's pronouns.

You can [add your pronouns to your Canvas account](#) so that they follow your name when posting to discussion boards, submitting assignments, etc.

Below is a list of additional resources regarding pronouns and their usage:

- [What are pronouns and why are they important?](#)
- [How do I use pronouns?](#)
- [How do I share my pronouns?](#)
- [How do I ask for another person's pronouns?](#)
- [How do I correct myself or others when the wrong pronoun is used?](#)

### *Additional Student Support Services*

- [Registrar](https://registrar.unt.edu/registration) (<https://registrar.unt.edu/registration>)
- [Financial Aid](https://financialaid.unt.edu/) (<https://financialaid.unt.edu/>)
- [Student Legal Services](https://studentaffairs.unt.edu/student-legal-services) (<https://studentaffairs.unt.edu/student-legal-services>)
- [Career Center](https://studentaffairs.unt.edu/career-center) (<https://studentaffairs.unt.edu/career-center>)
- [Multicultural Center](https://edo.unt.edu/multicultural-center) (<https://edo.unt.edu/multicultural-center>)
- [Counseling and Testing Services](https://studentaffairs.unt.edu/counseling-and-testing-services) (<https://studentaffairs.unt.edu/counseling-and-testing-services>)
- [Pride Alliance](https://edo.unt.edu/pridealliance) (<https://edo.unt.edu/pridealliance>)
- [UNT Food Pantry](https://deanofstudents.unt.edu/resources/food-pantry) (<https://deanofstudents.unt.edu/resources/food-pantry>)

### *Academic Support Services*

- [Academic Resource Center](https://clear.unt.edu/canvas/student-resources) (<https://clear.unt.edu/canvas/student-resources>)
- [Academic Success Center](https://success.unt.edu/asc) (<https://success.unt.edu/asc>)
- [UNT Libraries](https://library.unt.edu/) (<https://library.unt.edu/>)
- [Writing Lab](http://writingcenter.unt.edu/) (<http://writingcenter.unt.edu/>)