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<b>Professor</b>	Jon D. Stewart Office: 102 Leigh Hall Phone: 352.846.0743 E-mail: jds2@chem.ufl.edu
<b>Lectures</b>	Tuesday, 6 <sup>th</sup> period (12:50 – 1:40 p.m.), 309 Leigh Hall Thursday, 5 <sup>th</sup> and 6 <sup>th</sup> periods (11:45 a.m. – 1:40 a.m.), 309 Leigh Hall
<b>Office hours</b>	Tuesday, 4 <sup>th</sup> period, 10:40 – 11:30 a.m., 102 Leigh Hall Thursday, 4 <sup>th</sup> period, 10:40 – 11:30 a.m., 102 Leigh Hall Friday, 4 <sup>th</sup> period, 10:40 – 11:30 a.m., Zoom
<b>Course Objectives</b>	<p>Overview of concepts of biological catalysis, including transition state theory, descriptions and examples of mechanisms of biochemical catalysis and a survey of co-factors. Students who have successfully completed this course will be able to:</p> <ul style="list-style-type: none"><li>• Deduce enzyme mechanisms based on experimental data</li><li>• Propose mechanisms for novel enzymes</li><li>• Propose useful experiments for elucidating enzyme mechanisms</li></ul>
<b>Prerequisites</b>	None.
<b>Grading</b>	<p>Three examinations (100 points each) will be scheduled during the semester (<b>during the evenings of September 21, October 26 and November 30</b>). The final examination (100 points) will be comprehensive, although it will somewhat emphasize material presented after the third in-class examination (<b>5:30 – 7:30 p.m. on Tuesday, December 14</b>). No make-up exams will be offered. After each exam, approximate letter grade distributions will be posted separately for so that you will have a feel for your performance relative to others in the class as the semester progresses. The lowest grade from exams 1 - 3 will be dropped before calculating your final grade (you may not drop the final exam score). Your final letter grade will be calculated in two ways:</p> <ol style="list-style-type: none"><li>1) Points method. After dropping the exam score (from tests 1, 2 or 3) with the lowest number of points, the remaining two scores will be added together with the final exam score and compared to the distribution of total points for the class in order to assign a final letter grade. The class-wide mean of grades assigned by this method will be at the B+ / B border.</li><li>2) Letter grade method. After dropping the lowest exam letter grade (from tests 1, 2 or 3), the remaining two letter grades will be averaged with that from the final exam by assigning points in the following manner: A = 4.00, A - = 3.67, B + = 3.33, B = 3.00, B - = 2.67, C + = 2.33, C = 2.00, C - = 1.67, D + = 1.33, D = 1.00, D - = 0.67, E = 0.00. The three best values will be averaged, then the following scheme will be used to convert this to the final course grade:</li></ol>

3.85 - 4.00 = A  
3.51 - 3.84 = A -  
3.18 - 3.50 = B +  
2.85 - 3.17 = B  
2.51 - 2.84 = B -  
2.18 - 2.50 = C +  
1.85 - 2.17 = C  
1.51 - 1.84 = C -  
1.17 - 1.50 = D +  
0.84 - 1.16 = D  
0.51 - 0.83 = D -  
<0.51 = E

For example, if your three best exam letter grades are A, A and A-, your average would be  $(4.00 + 4.00 + 3.67) / 3 = 3.89$ , which is an A.

*Whichever method (#1 or #2) gives you a higher grade will be used to calculate the letter grade reported to the Registrar.*

Current UF grading policies can be found at <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>.

**Class Attendance**

While attendance is voluntary, the lectures are an essential component of the experience for this class. Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at <https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

**Make-Up Work**

Since students are allowed to drop an exam score, no make-up exams will be scheduled.

**Course Evaluation**

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at <https://evaluations.ufl.edu>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results/>.

**Required Textbook**

*The Organic Chemistry of Enzyme-Catalyzed Reactions*, Revised Edition, Silverman, R.B., Academic Press, 2002.

**Academic Honesty**

UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Honor Code

(<http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor in this class.

### **Students with Disabilities**

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, [www.dso.ufl.edu/drc/](http://www.dso.ufl.edu/drc/)) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

### **Campus Resources**

#### **Health and Wellness**

*U Matter, We Care:* If you or a friend is in distress, please contact [umatter@ufl.edu](mailto:umatter@ufl.edu) or 352 392-1575 so that a team member can reach out to the student.

*Counseling and Wellness Center:* <https://counseling.ufl.edu/>, 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

*Sexual Assault Recovery Services (SARS)* Student Health Care Center, 392-1161.

*University Police Department*, 392-1111 (or 9-1-1 for emergencies). <http://www.police.ufl.edu/>

#### **Academic Resources**

*E-learning technical support*, 352-392-4357 (select option 2) or e-mail to [Learning-support@ufl.edu](mailto:Learning-support@ufl.edu). <https://lss.at.ufl.edu/help.shtml>.

*Career Connections Center*, Reitz Union, 392-1601. Career assistance and counseling. <https://career.ufl.edu/>

*Library Support*, <http://cms.uflib.ufl.edu/ask>. Various ways to receive assistance with respect to using the libraries or finding resources.

### **COVID-19 Policies**

In response to COVID-19, the following practices are in place to maintain your learning environment, to enhance the safety of our in-classroom interactions, and to further the health and safety of ourselves, our neighbors, and our loved ones.

- If you are not vaccinated, get vaccinated. Vaccines are readily available at no cost and have been demonstrated to be safe and effective against the COVID-19 virus. Visit this link for details on where to get your shot, including options that do not require an appointment: <https://coronavirus.uflhealth.org/vaccinations/vaccine-availability/>. Students who receive the first dose of the vaccine

somewhere off-campus and/or outside of Gainesville can still receive their second dose on campus.

- You are expected to wear approved face coverings at all times during class and within buildings even if you are vaccinated. Please continue to follow healthy habits, including best practices like frequent hand washing. Following these practices is our responsibility as Gators.
- Sanitizing supplies are available in the classroom if you wish to wipe down your desks prior to sitting down and at the end of the class.
- Hand sanitizing stations will be located in every classroom.
- If you sick, stay home and self-quarantine. Please visit the [UF Health Screen, Test & Protect website](#) about next steps, retake the questionnaire and schedule your test for no sooner than 24 hours after your symptoms began. Please call your primary care provider if you are ill and need immediate care or the UF Student Health Care Center at 352-392-1161 (or email [covid@shcc.ufl.edu](mailto:covid@shcc.ufl.edu)) to be evaluated for testing and to receive further instructions about returning to campus. UF Health Screen, Test & Protect offers guidance when you are sick, have been exposed to someone who has tested positive or have tested positive yourself. Visit the [UF Health Screen, Test & Protect website](#) for more information.
- Course materials will be provided to you with an excused absence, and you will be given a reasonable amount of time to make up work.
- If you are withheld from campus by the Department of Health through Screen, Test & Protect you are not permitted to use any on campus facilities. Students attempting to attend campus activities when withheld from campus will be referred to the Dean of Students Office.

Continue to regularly visit [coronavirus.UFHealth.org](https://coronavirus.UFHealth.org) and [coronavirus.ufl.edu](https://coronavirus.ufl.edu) for up-to-date information about COVID-19 and vaccination.

## Tentative Lecture Schedule

August 24	Introduction
August 26	Proteases, esterases and lipases (Chapter 2)
August 31	Glutamine-dependent enzymes (Chapter 2)
September 2, 7	Phosphoryl transfer (Chapter 2)
September 9, 14, 16	Nicotinamide-dependent enzymes (Chapter 3)
September 16, 21, 23	Flavin-dependent enzymes (Chapter 3)
September 23, 28	Quinone-dependent enzymes (Chapter 3)
September 30	Other redox enzymes (Chapter 3)
September 30 / October 5	Flavin-dependent hydroxylations (Chapter 4)
October 7	Pterin-dependent hydroxylations (Chapter 4)
October 12	Heme-dependent hydroxylations (Chapter 4)
October 14	S <sub>N</sub> 1 substitutions (Chapter 6)
October 19	S <sub>N</sub> 2 substitutions (Chapter 6)
October 21	S <sub>N</sub> 2' substitutions (Chapter 6)
October 21, 26	Carbon dioxide-dependent carboxylations (Chapter 7)
October 28	Bicarbonate-dependent carboxylations (Chapter 7)
October 28 / November 2	β-Keto acid decarboxylations (Chapter 8)
November 4	β-Hydroxy acid decarboxylations (Chapter 8)
November 4	α-Keto acid decarboxylations (Chapter 8)
November 9, 16	Amino acid decarboxylations (Chapter 8)
November 18	Racemases (Chapter 9)
November 23	<i>Cis</i> / <i>trans</i> -isomerases (Chapter 9)
November 30 / December 2	<i>Anti</i> -eliminations and additions (Chapter 10)
December 2, 7	<i>Syn</i> -eliminations and additions (Chapter 10)