

Course Syllabus

Course Topic Focus: The Molecular Basis of Disease

Biochemistry II /CHEM 4335

Spring 2021

Instructor: Lori Isom

Virtual Office Hours: M at 10:30am and by appointment

Email: lorii@uca.edu

Synchronous Zoom Room Live Lecture: M,W,F 11:00am-11:50am

*not all sessions will be synchronous but this time should be reserved throughout the semester. Contact me if you have a conflict for a particular synchronous session.

Course Description and Objectives:

Chem 4335 is the second semester of the two-semester Biochemistry sequence. This course is designed to be an intensive study of the important concepts in biochemistry today. The focus of this section of the course will be “The Molecular Basis of Disease” and will include in-depth consideration of the foundational biochemical processes establishing healthy physiological processes as well as the errors that lead to disease/disorder states. The course will include a variety of clinical and research related assessments in addition to traditional quizzes.

Prerequisites:

The prerequisite course for this class is successful completion of CHEM 4320 with a C or better.

This Biochemistry course will require students to recall and directly use a large amount of material from prerequisite courses. **Some students will benefit from a review of Biochemistry I (Chem 4320) and Organic Chemistry as well as advanced Biology topics.**

I will not be available on campus during the semester and the entire course is offered online only. You must have a **reliable** way to connect to the internet often, access to BlackBoard (BB), and UCA email account. Each student has an email account assigned to them free of charge upon registration. Contact information technology (450-3107) or visit their web site (<http://it.uca.edu/index.shtml>) to activate your account.

Course Materials

While the Biochemistry text used in Chem 4320 may be useful (and sufficient) for students, no text is required for this course but rather primary biochemistry research literature is used.

Students must have reliable access to the internet and electronic submission will require access to our classroom management systems as well as other technology used in the course. For credit, components of the assignments must be placed in the appropriate place (using the assigned instructions) in the course management systems before the time established as the due date/time. Assignments/submissions also must be named as described.

Course Disclaimer: Given these uncertain times, I may have to use my judgement and change aspects of this course from what is stated in this syllabus throughout the semester, including assignments, point values, due dates, assessments, material covered, mode of delivery, etc. I will inform students of these changes when they are necessary. The instructor alone determines what types of changes and the timing of implementation of those changes will benefit the class the best and be the most appropriate.

Course Arenas Reflect Course Priorities

WARNING!! This class will likely be very different from any other course you have taken!..and not just because it will be online but also because of it's focus and priorities. As with all my courses, this is an advanced biochemistry course, but it is SO MUCH MORE than that. For this new online section, I have redesigned the course, carefully selecting content, crafting assignments, and constructing an experience that more fully reflects my priority of providing my students with biochemistry, yes...but also with beauty and connection, and community. I have built this course with a lot of deliberate love and effort, and so I consider it a personal work of art. I know that sounds silly coming from a science professor...but it's true. It is my hope that you will enthusiastically embrace this gift as it is intended.

Each of the following three Content Arenas represents and fosters important over-arching goals of our course. Understanding these goals will help prepare you for what is to come.

A) Content Arena: In our Content Arena, you will find all of the content related assignments as well as our course schedules and quizzes, etc. I have chosen a combination of synchronous and asynchronous activities and sessions to share with you this semester as we journey through the molecular basis of disease. This section will be divided into modules.

B) Community Arena: In our Community Arena, you will find the MDB Cafe that I have built for you all. Our MBD Café will provide a place to nurture community within our class and will contain links to all of our discussion boards and Flipgrid opportunities to ask questions, to share what we learn with each other and to help each other out.

C) Connect Arena: In our Connect Arena, you will find the info to register for our Zoom sessions (i.e. synchronous lectures), a due date calendar, and for technology we will use in class. Fostering connections with each other and between our course material and real life, practical topics is a foundational priority in my class...and I'm not going to let the online nature of our course strip those connections away. They are too important...in many ways, MOST important. Therefore, regularly during the semester we will meet synchronously during our assigned lecture time in Zoom sessions. During these sessions, I will lecture in real time. Other times, the lecture will be available asynchronously instead of or in addition to meeting online. During part 1 of the class, the clinical section, we will often use Fridays for asynchronous activities. Many of the lecture videos will be posted in the Course Materials Arena section of our BB course so students can review the info or watch the lecture if they have to miss the Zoom session. Getting these videos processed, edited, and posted can take some time, however, so please be patient.

D) Course Materials Arena: In our Course Materials Arena, you will find a place where our course content is consolidated. Links will be provided here to course slides, syllabus, and select

course lecture videos to make this material easy to find if you want to find it outside the sequence of the course (i.e. You're looking for the Zoom lecture video on G-proteins to study but it's now week 6. Instead of searching through each week's schedule and folder, you can come to this arena to find the video.) This arena is not included in the three I listed as priority defining because it provides convenience and support rather than specific goals.

Class Engagement and Attendance

Class engagement and attendance are strongly recommended. Those students who attend and participate in class regularly are the most likely to succeed in this course. As mentioned above, the vast majority of the material presented in this course will **not** be in a textbook. So attending synchronous Zoom lectures and/or asynchronous lectures is necessary to obtain all the information that you will be held responsible for on quizzes and assignments. Whether a student is excused from an announced quiz or allowed to take it at a later date is solely the discretion of the instructor. If you must miss a class during which assessments are given or due, substantial proof (what constitutes this is solely my discretion) of the reason for the absence will be required before any consideration for make up work is granted. Any student who is absent from class for 4 class meetings without contacting me may be dropped from the course with a F, at my discretion.

Class Communications

Students are required to obtain all information missed from class absences from their peers.

We will use the texting app Remind for communication in our course. All announcements and logistical clarifications will be sent through Remind. Students should also check their UCA email account regularly for class information.

Students are required to seek help with class material and logistic "how to" and "when to" questions (not topics that require privacy of course) through our "Get a Little Help from our Friends" discussion group before contacting the instructor. This way community is encouraged and fostered and course information is more effectively disseminated to more to fellow students who have the same or similar questions. It also allows us to help each other and that is important in my course.

Students should not expect instant (especially last minute) or continuous access via email. I will check my UCA email regularly during working hours. I cannot respond to inquiries that require in depth explanations or instruction by email or to requests that should have been posted in our "Get Help" discussion group. Students are encouraged to contact me via email to set up a time to chat via our Zoom Room if privacy is requested or required, for example if specific grades or circumstances need to be discussed. These private topics should NOT be posted in our public discussion group.

Course Management Systems

Students must have access to the internet and electronic submission of all synchronous and asynchronous assignments, quizzes, and labs will require access to a our classroom management system: Blackboard (BB). Components of the assignments must be placed in the appropriate place (using the assigned instructions) in the course management system before the time

established as the due date/time. It must be submitted on time, as described or no credit may be given or a penalty assessed.

Make-up Policy

Make-up work will be given **only** at my discretion. If you must miss an assignment for an unavoidable, significant and validated reason (I decide what is unavoidable, significant, etc), contact me by email **BEFORE** the time of the scheduled assignment.

If an option to drop score is provided in the course, only scores 1) earned by completing the assignment or 2) excused by the instructor can be dropped.

Any student who doesn't participate in class for three consecutive days may be dropped from the course with a WF.

• Review Articles

Students will be required to download and read/discuss articles assigned in class (using Perusall) or on the course schedule. Many of these articles will be posted in our course management system in pdf form so the student must have computer/internet access that will allow downloading and printing/viewing the pdf files provided. Students will be responsible for the information contained within these assigned articles.

Snow Days (leaving this in because who knows ...)

If campus closing due to inclement weather prevents adequate scheduled class time for all students to present their lectures and/or Dr. Isom to lecture sufficiently to provide the necessary foundational information for the lecture topics, additional class meetings will be scheduled during X-period(s).

Class Layout and Medical Biochemistry/Research related Course Assignments

Each student will be assigned a date the major course assignments are presented and/or due. Students will be allowed to exchange dates with another willing student before the announced deadline. Dr. Isom must be informed in writing of this agreement before the established deadline.

The semester will be divided into two sections:

Section 1 (wks 1-10) *Biochemical Foundations and Clinical Correlations*: This part of the course includes lectures on foundational biochemistry involved in certain physiological processes, which when they generate disease or disorder states. The material from these lectures will serve as background, foundational information for student MBD Lectures in part 2 of the semester. The information will also be expanded during Notecard Diagnoses and Rounds assignment described below. Quizzes, if given, will cover information presented during Isom lectures.

Possible Assessments: Quizzes, Notecard Diagnoses/Rounds, Show and Tells, Disease Detectives and other asynchronous assignments

Section 2 (wks 12-16) *Digging Deep into the Molecular Basis of Disease: Teaching and Research*: This part of the course includes Molecular Basis of Disease (MBD) Student Lectures

(described below) during which each student teaches the class biochemistry detail of a disease related to one of their assigned categories. Students will expand their knowledge of one of the presented diseases by delving deep into one aspect presented in a MBD Lecture.

Possible Primary Assessments: MBD Student Lecture and Research Rabbit Holes, and other asynchronous assignments.

Major Course Assessments: In addition to quizzes, students will complete **three** molecular basis of disease major assignments related to medical biochemistry or biochemical research.

1) *Clinical Correlations: Notecard Diagnosis and Notecard Rounds presentation:*

In addition to learning the foundational biochemistry of fundamental physiological systems, students will correlate the topics to clinical situations. A short case study type description of a patient with a disease/disorder related (directly or tangentially) to the current topic(s) will be provided. Students will confirm their diagnosis with Dr. Isom before completing their Patient Report. Students will then prepare to possibly (with our online class...I'm still working through how best to do this) present/answer questions regarding the diagnosis during a 5 minute presentation using the Zoom white board (no slides).

2) *Going Deeper: Molecular Basis of Disease (MBD) Student Lectures:*

Each student will select and get approved a disease of interest related to their topic category. Building on Dr. Isom's foundational lecture material, the MBD lecture will be prepared to instruct classmates on the molecular basis of the disease. The presentation will include all information and current primary literature results necessary for the class to obtain an in-depth understanding of the topic.

Students must also:

- 1) have their MBD topic approved by the date designated.
- 2) submit their lecture slides and primary references through the corresponding Blackboard assignment.

3) *Scientific Investigative Learning: Research Rabbit Holes*

Just try to restrain yourself to ONE question at a time! Each group of students will be assigned a range of dates during which a) the selected question topic will be selected and approved by Isom, 2) the project completed, and 3) turned in via our specified course management system by the assigned due date. Each individual student will select a relevant question that occurs to them during lecture or their studies to delve into more extensively using review and journal articles. One thread will be followed and details will be uncovered and reported. The final projects will include a powerpoint file containing figures from the papers and figure captions, a word document providing the thought process as the question is addressed and explaining each figure shown, and pdfs of review/journal articles. Since in biochemistry one rabbit hole inevitably leads

to a seemingly infinite number of others, examples of questions generated during the investigation of the selected morsel should be provided.

Possible Additional Assessments

1) Disease Detectives

Students will investigate lecture-related disease/disorder clues given at the end of lecture and will provide info via Google Classroom and/or lecture discussion participation. Students will be only required to participate in a subset of those provided throughout the course. These will be graded as boom/pass/fail.

2) Topic Show and Tell (we will definitely have these!!)

Students will use Flipgrid to film a show-and-tell related to one of the topics covered in class. Presentations will be limited to two minutes.

3) Other asynchronous assignments

4) Get a little help from our friends Discussion: To promote community and to expedite answers to questions, we will use our *Get a Little Help from Our Friends* discussion board: Students are required to post your course and content related questions here to get help and answer other students' questions to help each other out. *Students are required to post all non-private course questions here first before contacting the professor directly by email.* I will check our discussion board regularly and students are responsible for also doing so. It will be the responsibility of all students to check the board and they will be responsible for all information the instructor posts in our discussion board. The info posted most likely will not be provided in other ways so make sure you check the board!!

5) Deep Disease Diving (Perusal): Students will read and discuss journal articles throughout the semester.

Grading

The following is a *tentative description of the assignments/assessments required in this class.* Specific numbers may be changed if deemed necessary.

Late work will not be accepted except at the discretion of the instructor.

Boom/Pass/Fail (sounds like a Black-eyed Peas song...no?) Scale

Some assignments will be graded on what I call the Boom/Pass/Fail scale. Students earning a passing grade will have completed the assignment thoroughly and correctly. Students earning a Boom grade will have gone far above and beyond what would be expected on the assignment. Students earning a Fail grade would not have completed the assignment satisfactorily to earn a passing grade. Passing grades can either 1) contribute qualitatively to any participation credit applied in the course or 2) may include a certain number of points that are assigned as all (pass)

or nothing (fail). A Boom grade also contributes to any participation credit but also may include bonus points, which add to a student's total points in the course. A Fail grade negatively affects any participation credit and may also result in the reduction of a student's overall points in the course.

The following grading scale and assessments may be altered at any time by the instructor as seen fit and appropriate for a given class, including allowing the option to drop quiz/assignment scores and lowering grade threshold cutoffs. However, a student will always have the option to apply the following scale below if they deem it would be beneficial for their grade. The scale and number of quizzes reflects a maximum and will not be increased. For instance, a student whose average at the end of the semester is 90% is guaranteed an A. This threshold will not be raised, it may however be lowered at the instructor's discretion.

Optional quizzes and miscellaneous assignments are included at the discretion of the instructor and therefore a range of potential points is listed. If assigned, the points will be included in grade calculation and are not optional.

If a project/assignment requires the selection and approval of a topic, such selection and approval must be obtained in a timely manner. Delay past the announced deadline will result in the assignment of a 0 grade for the project.

If a student decides to drop a class, this decision is solely the responsibility of the student and should be made understanding the grade calculation methods explained and the instructor's right to adjust these when grades are assigned.

Grading

The grading for this course will be assessed using the total points earned from the following assignments/assessments.

Concept Quizzes (0-3)	0 - 90 pts
MBD Student Lecture	100 pts
Research Rabbit Hole	50-100 pts
Other Assignments (NCD, Show/Tell, participation, discussions, etc)	0-300 pts
Total	~ 150 - 590 pts

Tentative Scale (subject to change):

A = 90% +

B = 80 – 89%

C = 68 – 79%

D = 60 – 68%

F = < 60%

Important Dates

Monday, April 12th, last day to drop with a “W”

Drop policy

The last day to drop with a “W” is listed above. If a student drops on or before this date, a “W” is assigned regardless of the student’s grade in the course. The only possible grades assigned after the date are A-F letter grades and these obviously will impact your grade point average.

Students not attending class for whatever reason for more than three class periods or assignments may be dropped from the course by the instructor, at the instructor’s discretion.

Disability Disclosure

The University of Central Arkansas adheres to the requirements of the Americans with Disabilities Act. If you need an accommodation under this Act due to a disability, contact the UCA Disability Resource Center at 450-3613.

Students enrolled in this course who have a medically validated reason and a letter from DSS will be required to take assessments in a location determined by the instructor that provides for the allowances stated from DSS. Any other requests, not specifically provided for in the accommodation letter from DSS, will be considered and up to the sole discretion of the

Course Evaluations

Student evaluations of a course and its professor are a crucial element in helping faculty achieve excellence in the classroom and the institution in demonstrating that students are gaining knowledge. Students may evaluate courses they are taking starting on the Monday of the twelfth week of instruction through the end of finals week by logging in to myUCA and clicking on the Evals button on the top right.

I appreciate and take very seriously student comments concerning my courses. To encourage evaluation completion, a small number of bonus points may be offered if your course evaluation is completed and confirmation provided within the designated timeframe. Evaluations may be completed any time in the timeframe stated above but to be eligible for the bonus points, students must adhere to the instructions provided including completion timeframe and confirmation.

Academic Dishonesty

The penalties for cheating (ie. representing someone else’s work as your own) are SEVERE!! Penalties include, but are not limited to, assigning an “F” for the work and/or the course to expulsion from the University. Obtaining assistance from other students on work assigned as “student work only” is cheating and will be prosecuted.

Photographing and/or keeping copies of exams and/or quizzes is prohibited and violates the academic dishonesty policy.

Using or contributing information to Chegg or other “help” sites violates the academic dishonesty policy and is just plain lazy cheating. DON’T DO IT.

Soliciting or providing any help to others (eg. answers, providing topics included, etc) when such help as been excluded as an allowed resource violates the academic dishonesty policy.

The University of Central Arkansas affirms its commitment to academic integrity and expects all members of the university community to accept shared responsibility for maintaining academic integrity. Students in this course are subject to the provisions of the University's Academic Integrity Policy, approved by the Board of Trustees as Board Policy No. 709 on February 10, 2010, and published in the Student Handbook. Penalties for academic misconduct in this course may include a failing grade on an assignment, a failing grade in the course, or any other course-related sanction the instructor determines to be appropriate. Continued enrollment in this course affirms a student's acceptance of this university policy.

Disability Disclosure

The University of Central Arkansas adheres to the requirements of the Americans with Disabilities Act. If you need an accommodation under this Act due to a disability, contact the UCA Disability Resource Center at 450-3613.

Students enrolled in this course who have a medically validated reason and a letter from DSS will be required to take assessments in a location determined by the instructor that provides for the allowances stated from DSS. Any other requests, not specifically provided for in the accommodation letter from DSS, will be considered and up to the sole discretion of the instructor.

Emergency Procedures Summary

Although this course will be held online, a Emergency Procedures Summary (EPS) for the building in which this class is scheduled will be discussed during the first week of this course. EPS documents for most buildings on campus are available at <http://uca.edu/mysafety/bep/>. Every student should be familiar with emergency procedures for any campus building in which he/she spends time for classes or other purposes.

Title IX Disclosure:

If a student discloses an act of sexual harassment, discrimination, assault, or other sexual misconduct to a faculty member (as it relates to "student-on-student" or "employee-on-student"), the faculty member cannot maintain complete confidentiality and is required to report the act and may be required to reveal the names of the parties involved. Any allegations made by a student may or may not trigger an investigation. Each situation differs, and the obligation to conduct an investigation will depend on the specific set of circumstances. The determination to conduct an investigation will be made by the Title IX Coordinator. For further information, please visit: <https://uca.edu/titleix>. **Disclosure of sexual misconduct by a third party who is not a student and/or employee is also required if the misconduct occurs when the third party is a participant in a university-sponsored program, event, or activity.*

Student Handbook Policies

You should familiarize yourself with the policies listed in the most recent UCA student handbook (available on UCA website), especially those related to academics and the sexual harassment policy.

Stuff I shouldn't have to say.... But do.

- 1) I cannot discuss grades by phone or email. I do not make appointments by phone.
- 2) If you do not have another class during my office hours or another pressing and valid reason, you cannot make an appointment to meet with me outside of my office hours. Just so you know... not wanting to get up early enough to come to my office hours is not a valid reason.
- 3) I will not discuss grades during the last week of the semester. The end of the semester is not the time to be concerned about your grade in the course, unless there are sufficient extenuating circumstances (I determine what those are... and just wanting to know isn't a good reason), I will not make appointments or meet with students dropping by to discuss their grade in the course
- 4) Students will not be allowed to select the color of the paper, the font, or font size of the exams or other assessment/assignment materials regardless of whether other instructors have provided such accommodation in the past for the student without a validated DSS accommodation requiring the requested action
- 5) Late work will almost certainly not be accepted because of some unexpected computational or mechanical failure. Be responsible enough to get the assignment in on the time/date it is due. Procrastination is directly correlated with the excuses given above. Don't do it.
- 6) If you choose to drop the course, the decision is yours. No one else's. I reserve the right to adjust grades/assignments as I deem warranted for a given class after you make your decision.
- 7) If you miss class, I will not provide make up lecture for you in person or by email. It is your responsibility to obtain the missed information and you will forfeit any assignments and their corresponding points collected during your absence. If you have to miss class, you should try to have someone record lecture for you and get at least two people's notes over the material you missed. You should use these to get up to speed as quickly as possible once you return... After you have done these things, please come to me if you have specific questions about the material you missed.
- 8) You must submit assignments in the manner requested and follow all directions concerning those assignments/exams or you may lose significant points. Unless specifically stated, assignments/projects **cannot** be emailed electronically and even those allowing electronic submission will most likely require a hard copy to be submitted as well.
- 9) If you don't follow directions and select a topic/drug in a timely manner (ranging from 1-2 weeks before assignment/presentation is due, depending on the assignment), one will not be assigned to you and you will forfeit points for the resulting/related assignment. Except under extenuating circumstances, topics will not be approved via email.
- 10) Doctor's notes for missed assignments/lectures, if provided, must include the office information and must be provided by a qualified physician, an MD or DO, with direct knowledge and relevant specialty to the given situation. Notes from chiropractors, massage therapists, herbal specialists, and other non-traditional medical professionals will most likely not be accepted.

Tentative Class Schedule

all dates and content are subject to change!

Week # M/W/F	Topics
1) Jan x/20/22 -Group Assignment	Introduction and <i>Module 1: Pharmacodynamics</i>
2) Jan 25/27/29	<i>Module 1: Pharmacodynamics</i>
3) Feb 1/3/5 -Show and Tell #1	<i>Module 2: Signaling: Getting the Message Across...accurately.</i>
4) Feb 8/10/12 -Assign Notecard Diagnosis #1	<i>Module 2: Signaling continued</i>
5) Feb 15/17/19 -Tentative Concept Quiz #1	<i>Module 2: Signaling continued</i>
6) Feb 22/24/26 -Notecard Diagnosis questions due	<i>Module 3: Immunity & Inflammation: First Responders & Special Ops</i>
7) Mar 1/3/5 -Show and Tell #2	<i>Module 3: Immunity & Inflammation (cont)</i>
8) Mar 8/10/12 -Assign Notecard Diagnosis #2 - MBD Topic Selection approval deadline (F; 3/12)	<i>Module 3: Immunity & Inflammation (cont)</i>
9) Mar 15/17/19 -Tentative Concept Quiz #2	<i>Module 3: Immunity & Inflammation (cont)</i>
10) Mar 22/24/26	SPRING BREAK!
11) Mar 29/31 Apr 2	<i>Module 4: Blood Clotting and Module 5: COVID</i>
12) Apr 5/7/9	Module 6: Cancer and Student MBD Lectures #1-2 F)
13) Apr 12/14/16	Student MBD Lectures (#3-4 M, #5-6 W, #7-8 F)
14) Apr 19/21/23 - <i>Research Rabbit Hole</i> : Due F (Apr 23)	Student MBD Lectures (#9-10 M, #11-12 W, #13-14F)
15) Apr 26/28	TBA

The students presenting in slots that occur early in the sequence will be graded with more leniency to account for the lack of examples and feedback provided to those presenting later.