

CHEM 520:001: Essentials of Biochemistry, TR 5pm-6:15pm, 3 credit hours, Spring 2018, CRN 22526

The textbook/e-book REQUIRED will be as follows:

Biochemistry Concepts and Connections, by Appling, Anthony-Cahill, Mathews, 2016, Pearson Publishing

Instructor: Dr. Detrick, Ph.D., SIMS109A, detricka@winthrop.edu Office Hours: MWF 10-10:50am, or by appointment

Course Overview: This course covers the fundamentals of biochemistry including: nomenclature of biological molecules, key reactions in anabolic and catabolic pathways, cell signaling, regulation of gene expression and interaction of biological pathways. Mechanistic explanations will be included for key reactions discussed. Chemistry/Physics/Geology Department. Prerequisite: CHEM302 with a grade of C or above, CHEM304 with a grade of C or above, 3.000 Credit hours, 3.000 Lecture hours, Graduate, Undergraduate levels.

University-Level Competencies (ULCs) & Course Goals: Winthrop's University-Level Competencies (ULCs) identify learning outcomes that apply across all undergraduate programs and that all Winthrop graduates attain. These capacities are essential preparation for working productively and living meaningfully in the contemporary and emerging world. The ULCs were approved by Faculty Conference in October 2010.

Competency 1: Winthrop graduates think critically and solve problems: Winthrop University graduates reason logically, evaluate and use evidence, and solve problems. They seek out and assess relevant information from multiple viewpoints to form well-reasoned conclusions. Winthrop graduates consider the full context and consequences of their decisions and continually reexamine their own critical thinking process, including the strengths and weaknesses of their arguments.

Competency 2: Winthrop graduates are personally and socially responsible: Winthrop University graduates value integrity, perceive moral dimensions, and achieve excellence. They take seriously the perspectives of others, practice ethical reasoning, and reflect on experiences. Winthrop graduates have a sense of responsibility to the broader community and contribute to the greater good.

Competency 3: Winthrop graduates understand the interconnected nature of the world and the time in which they live: Winthrop University graduates comprehend the historical, social, and global contexts of their disciplines and their lives. They also recognize how their chosen area of study is inextricably linked to other fields. Winthrop graduates collaborate with members of diverse academic, professional, and cultural communities as informed and engaged citizens.

Competency 4: Winthrop graduates communicate effectively: Winthrop University graduates communicate in a manner appropriate to the subject, occasion, and audience. They create texts – including but not limited to written, oral, and visual presentations – that convey content effectively. Mindful of their voice and the impact of their communication, Winthrop graduates successfully express and exchange ideas.

Grading & Requirements: Please feel free to speak with me at anytime regarding your grade. I will gladly help you devise a strategy for getting the best grade you possibly can. I want you to be successful and enjoy this class.

Grading Breakdown (1000 points total=100%):

Attendance/Participation	100 points/10%
Discussion Lead	100 points/10%
Journal Article	100 points/10%
Writing Assignment/Review Article	100 points/10%
Quizzes	200 points/20%
Midterm	200 points/20%
Final Exam (not cumulative)	200 points/20%

The grading scale of 1000 points is converted to a percentage-based grade as follows:

A	93-100% = A 90-92% = A-	Designates work of superior quality. Class participation is voluntary, frequent, relevant, and reflects that you have both read and thought about the science. Written work is clear, well-organized and thought-provoking, and free of grammatical or mechanical errors.
B	87-89% = B+ 83-86% = B 80-82% = B-	Designates work of high quality. Class participation is voluntary, frequent, and reflects that you are keeping up with the assigned materials. Written work reflects a good understanding of the biochemical concepts. Writing is clear with minimal errors.
C	77-79% = C+ 73-76% = C 70-72% = C-	Designates work that meets the course requirements. Class participation is occasional and/or rarely voluntary, with comments that reveal only a superficial grasp of biochemistry. Written work may contain arguments that are confusing, with minimal evidence of organization. Writing contains errors.
D	67-69% = D+ 63-66% = D 60-62% = D-	Reflects minimal clarity and comprehension. Class participation is minimal, never voluntary, and reveals that student has either have not read the assigned materials or did not look it up on his/her own. Written work is confusing, contradictory, repetitive, and/or not supported by credible sources. Writing contains errors.
F	0-59% = F	Unsatisfactory performance along most (or all) measures.

Attendance: Students are expected to attend classes and should understand that they are responsible for the academic consequences of absence. The student is responsible for all requirements of the course regardless of absences. Attendance is mandatory. Absences and tardiness beyond 3 may result in up to a full letter-grade reduction of the course grade, above and beyond the direct effects of problematic attendance on measured performance and class participation; excessive absences will result in a grade of N or F per University policy (see the University Catalog). **Five or more absences will result in a failing grade for the course. Use your “sick days” wisely. You are considered tardy once the class time starts. Being 10 minutes or more late will result in an absence. Two tardies will equal an absence.** Anytime you give me an excuse, I will refer you to the Dean of Students Office to give them documentation and their office will send an absence notification.” Miranda L. Knight, Assistant Dean of Students, Winthrop University, Dean of Students Office, 246 DiGiorgio Campus Center, Rock Hill, SC 29733, 803/323-4503(W), 803/323-4514 (FAX), knightm@winthrop.edu

Participation:

Throughout the course, I will assess your level of preparation for the class and your contributions to our learning environment. Some of my assessments may include (but, of course, are not limited to):

- Can you answer questions about the current readings and tie it together with previous readings in the class? Did you critically read the material?
- Do you arrive at class on time, each class period, with a positive, open attitude?
- Attendance is the foundation of doing well in class. Class meets 28 times. Being on time and present awards you 3.57 points and being tardy of 1-10 minutes awards you 3 points. Being tardy of 10 min. or more awards you 0 points, but at least you will not miss out on class content.

Discussion Lead: Once per semester, a student will be asked to lead the discussion for part of the class period on the chapter being covered that day. Dates/subject matter are listed at the end of the syllabus. Think about: a list of possible questions to be asked of the class and how you would give a presentation to your boss/others in the field in your respective job careers. Once you start a job, you will be the authority figures and it will be up to you to raise awareness and educate others.

Journal Article: Discuss a scientific paper/journal, your thoughts/opinions on the subject matter and what your critical thinking skills have deduced after reading your chosen paper/journal. One calendar week prior to the discussion, it is helpful but not required, that the student must email me the article they plan to discuss. That way, all students can read the article and talk about on the day you present the Journal Article. The scientific method can be utilized to help you think critically about your career goals and how it relates to achieving them. Be prepared to report your findings in front of the class. One that you present, both a hard copy of the article and the write-up must be submitted and turned into me following your presentation. Papers must be written in appropriate MLA format and must be cited with the one journal

article referenced at the end properly. The write-up will be written as follows: 1-3 pages, 12 point font, Times New Roman, double-spaced, avoid the word “I” and write in third person throughout the paper, answering five questions and in this order: 1) What is the purpose of this paper/why was it written? 2) What is the background information upon which the hypothesis/study/paper was made? In other words, what is the current knowledge of the topic? 3) What were the materials and methods of the experiments used to validate the study/studies? 4) What were the results of the paper/study? 5) What was the conclusion of the paper, your opinion of the strengths/weaknesses of the paper and does it spark any ideas for future research using the scientific method? Be prepared to give the class a 3-5 minute presentation on the paper/journal article and ask 1-2 questions to test the audience’s comprehension/raise awareness/opinion/stimulate discussion. Late journal article presentation grades will be deducted at the rate of 10% per class day. You may, optionally, turn the assignment in early, give your presentation early, and/or turn-in a rough draft early for me to edit, prior to turning your final submission. Sample journal articles are available for you to utilize on Blackboard or go to: Winthrop.edu, click on “Academics”, click on “Dacus Library”, click on “databases”, search “ScienceDirect”, click “search”, click on “ScienceDirect”, under keywords, type “biochemistry and _____ (your desired career field, e.g. forensics). Open and save the pdf of your choice. Our university has paid for full-text pdf subscriptions for many prestigious journals. I hope you are able to find at a fun and interesting article to relate to biochemistry and your desired career field.

Writing Assignment/Review Article: Choose a biology related topic which you would have an interest in when you graduate. The purpose will be to encourage you to apply the basic knowledge you have learned in class to your desired career. This assignment should also make you more aware of the current and real life issues that involve biology and helps teach you how to feel comfortable to write a review, especially in your desired future career field. The paper must have: your name, a title, body of text 4-5 pages, double spaced, 12 point font, Times New Roman, avoid the word “I” and write in third person through the paper. At least 5 references must be listed on a **separate** last page. Papers must be written in appropriate MLA format and must be cited properly. **You must turn in a hard copy AND submit a copy to turnitin.com by/before the beginning of class on the due date.** No technology excuses will be tolerated. This course (and many other courses on campus, e.g. HMXP) use a web-based service called turnitin.com. This service helps guard against improperly using another’s work. You must register with Turnitin.com. Your log-in is: Class ID = 15848586 and Enrollment Key = biochem520 Late paper grades will result in a 1 letter grade per day drop. You may, optionally, turn the assignment in early, give your presentation early, and/or turn-in a rough draft early for me to edit, prior to turning your final submission. You may take the paper to the Writing Center for additional help. Documentation attached to your paper will result in 5 extra points on your paper. They are amazing!

In your paper, follow the format of a typical scientific review, as one would publish in *Biochemistry Journal*. Here are some tips: <http://www.ascb.org/compass/compass-points/tips-for-writing-a-scientific-review-article/>

1. **Give yourself plenty of time to write a scientific review.** Compiling years of scientific progress into a short review article is not easy and it requires good understanding of the literature and implications of the discoveries made thus far. Most importantly, stay on time and submit your review article by the deadline. Start early, spend time reading literature extensively, and pen your thoughts as you go along.
2. **Make an outline and decide on the main topic for the review.** It is easy to digress and include all the information in the field; however, this would not be useful to readers.
3. **Be aware of journal requirements.** Decide where you are going to publish your review and be sure to read journal requirements for submission of the review. It is good to strictly adhere to journal requirements such as number of papers cited or word/page limits.
4. **Be well versed with the literature.** It is important to know about the initial studies and also know of the latest discoveries (i.e., be scholarly). A good review summarizes relevant discoveries, discusses implications, and speculates on the future of the field.
5. **Make notes while reading the literature.** It is impossible to remember every article that you read along with your thoughts or interpretations. Try making notes while reading. It will help give a structure to your review article.
6. **Analyze published scientific literature.** As a scientist it is imperative to assimilate data and understand its implications or caveats. A scientific review article is a good place to discuss these issues and point out how caveats can be addressed in the future.

7. **Discuss significant findings.** This allows the author(s) to elaborate on whether certain pathways/observations are conserved across species. Also discuss differences and speculate on how the different regulation in other species may be advantageous. Such evolutionary conservation is not only biologically significant but can also help readers understand how a process is regulated.
8. **Utilize graphics.** Include charts or figures to depict key points of the review. A useful tool employed in many reviews is a timeline that details significant discoveries that have contributed to better understanding of the field.
9. **Request Feedback.** Your lab mates, mentor, or colleagues in your university will be happy to read drafts and provide feedback. They may help with different perspectives or can also help you interpret certain studies in new ways you hadn't thought of. Discussing your review with peers will definitely improve it and help prevent inaccuracies.
10. **Discuss the future of the field.** Determine if there is a consensus on where experts think the field is headed. Speculate on how the future will improve our understanding of the field.

Most importantly take the time to write a scientific review! I encourage everyone to take a short break from experiments/studying/working to speculate on all the broader picture of science and write a scientific review.

Plagiarism: If any part of your papers is plagiarized, you will receive a grade of zero on that assignment, you may be referred to the Dean of Students Office, and it may also result in an automatic F in the class. Information regarding the correct use of borrowed information is available at www2.winthrop.edu/wcenter/handoutsandlinks/dontplag.htm. Please don't hesitate to ask if you have questions about appropriate referencing or paraphrasing.

Make-Ups: There will be no make-ups/late assignments accepted, with the exception of an email notification from the Dean of Students Office or an email from you, if you are represented by the Office of Accessibility, that details a plan of action of how you intend to make up missed work.

Final Examinations The form of the final examination is determined by the instructor. The exam period may not exceed 2.5 hours. The times of final examinations are officially scheduled by the Master Schedule Coordinator. Legitimate exam conflicts are defined as follows: more than one scheduled exam per period; more than two examinations scheduled per day; or more than three examinations scheduled in any four consecutive periods. A student with a legitimate conflict should work directly with his/her instructor to resolve the conflict. It is the student's responsibility to initiate the resolution of any conflicts. Personal conflicts such as travel plans and work schedules do not warrant a change in examination times.

Syllabus Change Policy: This syllabus may be revised at the discretion of the instructor, which will be announced via class instruction and/or an e-mail to the enrolled students in the course.

Electronics Policy: Cell phones and other unapproved electronics (IPads, tablets, laptops, etc) are not allowed, unless you are using them to take notes.

Student Conduct Policies:

Students are expected to cultivate personal and academic integrity. Academic misconduct will be addressed in accordance with the Student Conduct Code and the University Undergraduate Catalog. Above all, The Student Conduct Code must be followed in all classes. You may find a copy at <http://www.winthrop.edu/uploadedFiles/studentconduct/StudentHandbook.pdf> In my class, an environment where students feel safe to be themselves, to discuss their honest and educated opinion and to be listened to is important. Actions and words that do not allow this will not be tolerated.

Students with Disabilities/Need of Accommodations for Access: Winthrop University is committed to providing access to education. If you have a condition that may adversely impact your ability to access academics and/or campus life, and you require specific accommodations to complete this course, contact the Office of Accessibility (OA) at 803-323-3290, or, accessibility@winthrop.edu. Please inform me as early as possible, once you have your official notice of accommodations from the Office of Accessibility.

Date	COURSE SCHEDULE	Discussion Lead; Journal Article Presenters, Questions at end of chapters for quizzes/exams:
T 1/9	Ch. 1	
R 1/11	Ch. 2	Discussion Lead: Cooper Aiken; Journal Article: Marcus Alexander
T 1/16	Ch. 3	Discussion Lead: Ashley Cooper; Journal Article: Naikesha Daniels AND Natalie Mseis
R 1/18	Ch. 4	Discussion Lead: Amy Fernandez; Journal Article: Ashley Graham
T 1/23	Ch. 5	Discussion Lead: Alexia Hall; Journal Article: Sara Manore
R 1/25	Ch. 6	Discussion Lead: Eulillian McFadden
T 1/30	Ch. 7	Discussion Lead: Jack Nguyen; Journal Article Julia Scott
R 2/1	Ch. 8	Discussion Article: Madeline Weih
T 2/6	Ch. 9	Quiz 1 on Chapter 1-4
R 2/8	Ch. 10	Quiz 2 on Chapters 5-8
T 2/13	Ch. 11	Quiz 3 on Chapters 9-11
R 2/15	Review	
T 2/20	Midterm Exam	(Midterm Covers Ch. 1-11)
R 2/22	Ch. 12	Discussion Lead: Marcus Alexander; Discussion Lead: Cooper Aiken
T 2/27	Ch. 13	Discussion Lead: Naikesha Daniels; Journal Article: Ashley Cooper
R 3/1	Ch. 14	Discussion Lead: Ashley Graham; Journal Article: Amy Fernandez
T 3/6	Ch. 15	Discussion Lead: Sara Manore; Journal Article: Alexia Hall
R 3/8	Ch. 16	Discussion Lead: Natalie Mseis; Journal Article: Eulillian McFadden
T 3/20	Ch. 17	Discussion Article: Julia Scott; Journal Article: Jack Nguyen
R 3/22	Ch. 18	Journal Article: Madeline Weih
T 3/27	Ch. 19	Quiz 4 on Chapters 12-13
R 3/29	Ch. 20	Quiz 5 on Chapters 14-15
T 4/3	Ch. 21	Quiz 6 on Chapters 16-17
R 4/5	Ch. 22	Quiz 7 on Chapters 18-19
T 4/10	Ch. 23	Quiz 8 on Chapters 20-21
R 4/12	Ch. 24	Quiz 9 on Chapters 22-23
T 4/17	Ch. 25	Quiz 10 on Chapters 24-25

R 4/19	Review and last class day for this class	Writing Assignment Due: Both a hard copy and to turnitin.com at/by the beginning of class
T 4/24	University Study Day	
Sa 4/28	Final Exam 5pm	The Final Exam covers Ch. 12-25. Good Luck and Thank You!