

**BIO 201 - Cell and Molecular Biology
2015 Course Syllabus**

Course & Laboratory Instructors:

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Laboratory Coordinator:

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Laboratory Instructor:

Ngawang Gonsar
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Office Hours: Office hours for this course vary by instructor; check the instructor's office door for a schedule or for weekly sign up sheets.

Lecture: TWF 8 AM – 8:50 AM, Nobel 222 (B. Shields, BIO-201-001)
TWF 10:30 AM – 11:20 AM Nobel Aud (J. Dahlseid, BIO 201-002)
TWF 12:30 PM – 1:20 PM, Confer 128 (C. Jacks, BIO-201-003)

Lab Lecture: M 8 – 8:50 AM, Nobel 222 (S. Qazi, BIO-201-001)
M 10:30 AM – 11:20 AM Nobel Aud (S. Qazi, BIO-201-002)
M 12:30 – 1:20 PM, Confer 128 (S. Qazi, BIO-201-003)

Required Texts: *The World of the Cell* (8th Edition) by Becker, Kleinsmith and Hardin
Cell and Molecular Biology Lab Manual, Dept. of Biology, Gustavus Adolphus College
Writing Papers in the Biological Sciences (5th Edition) by Victoria E. McMillan

Lab Sections and Instructors: All lab sections meet in NHS 237.

004	Monday 2:30-5:20 PM	Sanjive Qazi
005	Monday 6:30-9:20 PM	Colleen Jacks
006	Tuesday 1:30 – 4:20 PM	Jeff Dahlseid
007	Tuesday 5:30 – 8:20 PM	Ngawang Gonsar
008	Wednesday 2:30 – 5:20 PM	Ngawang Gonsar
009	Thursday 10:30 AM – 1:20 PM	Ngawang Gonsar
010	Thursday 2:30 – 5:20 PM	Brookhart Shields

Course Description and Objectives

This is the third course in the four-course core curriculum required for the biology major. It will expand on and cover in greater detail some topics you studied in BIO 101 *Principles of Biology*. The focus of this course is how cells function; both prokaryotic and eukaryotic cells will be examined at the genetic and biochemical levels. The learning objectives we have for you in this course are to:

- Identify and categorize biomolecules and their functions

- Understand how structures and interactions of biomolecules support cell and tissue function and
- Understand and describe the central dogma of biology at the molecular-level
- Understand and describe how cell functions are integrated
- Use the above information to make predictions of cell actions.
- Learn-(lecture and lab), experience (lab) and apply to experimental objectives (lecture and lab) a repertoire of techniques central to cell and molecular biological investigation.
- Increase your proficiency at scientific writing
- Increase your awareness of how you learn (metacognitive awareness) in order to promote your effectiveness as independent learners of biology

The chemistry you learned last year will be important, as you will use the principles of organic and inorganic chemistry to understand how molecules interact in cells. **Note: For all students following requirements under the 2013-2014 or later college catalogs, a grade of C or better must be earned in order to continue into BIO 202 Evolution, Ecology and Behavior and the 300-level biology courses.**

Laboratory

The laboratory is an integral part of this course and makes up 160 points of the 340 total points in the course. In the lab you will perform many techniques that are responsible for our current understanding of heredity and cell structure-function, developing observational, quantitative/numeracy and scientific writing skills. You must attend the section for which you are registered, as there are limited seats (15) in each section. Attending a lab different from your scheduled lab is possible under special and limited circumstances and must be prearranged with the instructor of the lab you wish to attend. Most labs will be performed in teams of three; all team members are expected to participate fully in each lab.

The labs are designed to use the entire three-hour period and you must be prepared to start working as soon as the lab period begins. The Monday lab lectures will give you the necessary information regarding the lab topic, the lab goals and the procedures of each new lab to enhance your efforts to be prepared to start work immediately. Of the eleven lab exercises, nine will have a worksheet-style written assignment and three (Western blot – 10 points, organelle fractionation – 10 points, and mutagenesis – 20 points) will require writing of specific sections of a scientific article. Additional information about the requirements of each assignment and the due date and time for the assignments are available in the lab manual and from your lab instructor. **There will be a 50% penalty for any assignment that is not turned in on time.** If you attend another lab section to make up your regularly scheduled lab, your lab assignment will be due at the same time as for those of the lab that you attended.

Exams and Quizzes

Four exams, each covering approximately one-fourth of the course topics, will be given for a total of 160 points. The first exam will be an evening exam and the next two exams will take place during class time, as indicated on the course outline. The last exam will be given during the final exam period. The format for each exam will vary, but will consist primarily of problems, essays and short-answer questions. Sample questions that illustrate the exam style will be made available before the first exam. Each lecture exam is worth 40 points. **In order to obtain a C or higher you must score 24 points or more on at least one of the four exams.**

Laboratory material will be tested in the form of lab quizzes. Three 10-point lab quizzes will be given throughout the semester as indicated on the course outline. **You must earn 15 or more of the 30 total quiz points to obtain a C or higher.**

Students are expected to take exams and quizzes on the scheduled days. Make-up exams or quizzes will be given only in cases of documented emergencies, such as illness or family emergency. Permission for a make-up exam requires that you provide the instructor a written excuse from your physician or an appropriate college staff member within a week of missing an exam. An alternative exam or quiz time may be scheduled for those students with documented school-sponsored commitments. Any student with an exam or quiz conflict during the semester must fill out the attached exam conflict form and submit it before September 28, 2015; only those students who submit this form by the deadline will be assured an alternate exam time. Jobs (including work-study), athletic practice, rehearsal, or attendance at a concert or play are not acceptable excuses; a regularly scheduled course in the Gustavus master schedule is acceptable. If you have an unexcused absence from an exam or quiz you will not be allowed to make up the exam and your grade will be zero (0).

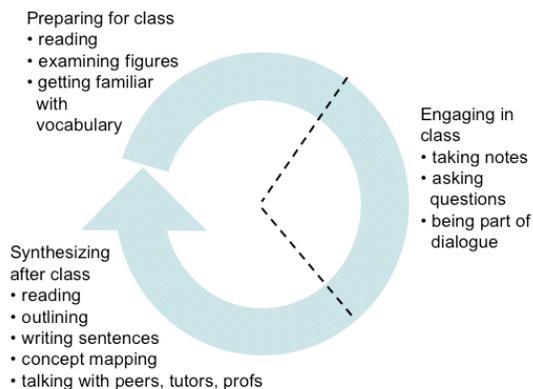
The exams given in this course require at least a week to grade due to the type of questions asked and the large number of students enrolled. Exam scores will be provided as soon as the exam grading is completed.

Class Participation

Class participation (20 total points) could be assessed by your instructor in a number of ways, for example through the use of minute papers, clicker questions and in-class discussion questions or activities. Each course instructor will indicate how points can be earned in that particular section. You are only eligible for these points by attending class (no make-ups), but you will be able to miss some opportunities due to illness, school-sponsored events, etc., without any effect on your course grade.

Strategies for Success in This Course

Preparing for class and actively participating in class will be helpful to you in this course. Completing or at least skimming the assigned reading before each class will help your preparation by exposing you to relevant vocabulary and concepts. A good way to start is to read 1) the introduction to the chapter; 2) the “Summary of Key Points” and “Making Connections” sections at the end of the chapter; and 3) text and figures related to key points that interest you. An overall strategy to approaching this course is shown in the following diagram:



You'll notice that time in class accounts for only about a third of the diagram. That's fitting because the typical expectation for a college course is that you spend about two to three hours studying outside of class for every hour spent in class. How should you spend that time? Students have different learning styles, so there's no simple formula that works for everyone. However, trying everything at first and then doing more of whatever works for you is a good general approach.

Synthesizing course material after class is how you will probably be spending more than a third of your time devoted to this course. Memorization of core ideas and vocabulary will be necessary, but insufficient; using lectures and your reading as a guide, you will be building your own base of knowledge.

- Where to start? If there are gaps in your notes (and that's true for everyone sometimes), try to fill them as soon after class as possible – if not that day, at least before the next class session. Lectures are mostly based on your textbook, so reading will fill some of them. You can talk with other students and your instructor, too. Make use of instructor office hours.
- Organizing ideas from lecture by making an outline will expose connections between them, and will help you figure out what are general principles and what are details. Concept mapping, where you place a term (such as “DNA”) in the middle of the page, draw and label connections to other terms that describe their relationships, and then expand from those terms, will also get you synthesizing initially separate ideas.
- Self testing is also important, and recent research suggests that it may be the most helpful thing to do. After working through a unit, can you make a fresh concept map that fills a page, and are you able to articulate how terms are related? Can you take an unlabeled figure from the book and describe not only what the figure caption contains, but how elements in the figure are connected? Are you able to answer suggested study questions? Can you ask yourself questions about the material (often turning a higher-level line from your outline into a question is a good place to start), and can you answer in your own words using correct vocabulary and complete sentences? Don't be satisfied with just thinking of a few key terms that would form part of an answer to a question. Actually writing out whole sentences will build confidence and show what last few gaps you need to fill.

Disability Services

Gustavus Adolphus College is committed to ensuring the full participation of all students in its programs. If you have a documented disability (or you think you may have a disability of any nature) and, as a result, need reasonable academic accommodation to participate in class, take tests or benefit from the College's services, then you should speak with the Disability Services Staff, for a confidential discussion of your needs and appropriate plans. Course requirements cannot be waived, but reasonable accommodations may be provided based on disability documentation and course outcomes. Accommodations cannot be made retroactively; therefore, to maximize your academic success at Gustavus, please contact Disability Services as early as possible. Disability Services (<https://gustavus.edu/advising/disability/>) is located in the Academic Support Center. Disability Services Coordinator, Kelly Karstad, (kkarstad@gustavus.edu or x7138), can provide further information.

Help for Multilingual Students

Support for English learners and multilingual students is available through the Academic Support Center's Multilingual Learner Academic Specialist Jody Bryant (jbryant2@gustavus.edu or x7197). The MLAS can meet individually with students for tutoring in writing, consulting about academic tasks, and helping students connect with the College's support systems. When requested, the MLAS can consult with faculty regarding effective classroom strategies for English learners and multilingual students. The MLAS can provide students with a letter to a professor that explains and supports appropriate academic arrangements (e.g., additional time on tests, additional revisions for papers). Professors make decisions based on those recommendations at their own discretion. In addition, English learners and multilingual students can seek help from peer tutors in the Writing Center (www.gustavus.edu/writingcenter/).

Academic Integrity

One of the objectives of Gustavus Adolphus College as stated in the mission statement is to "foster the development of values as an integral part of intellectual growth." In a community of scholars nothing is more valuable than the intellectual property of a member of the community. It is unacceptable in this course to represent the work of another individual as your own, for example, another or former student of BIO 201 or material from a website. All cases of academic dishonesty including cheating on exams and plagiarizing laboratory assignments and reports from the internet or elsewhere will result in penalties up to and including automatic failure of the course and will be reported to the Provost for inclusion in your permanent file and disciplinary action as stated in the student code. We expect all students to abide by the following Student Honor Code for all assignments/exams: *"On my honor, I pledge that I have not given, received or tolerated others' use of unauthorized aid in completing this work."*

Cell phones and electronics

As a courtesy to your classmates and instructors, please turn your cell phones (or any other noisy devices) and laptop computers OFF and refrain from texting, etc. during class unless directed to by the instructor. Cell phones (and laptops) are not allowed during exams and quizzes.

Course Grade

Grades will be assigned by the total number of points accumulated during the semester as shown below. Differences in lab grading due to different instructors are identified statistically at the end of the semester and final grades are adjusted accordingly.

4 exams (40 pts. each)	160
3 lab quizzes (10 pts. each)	30
9 lab assignments	90
3 lab reports (2x10 pts, 1x20 pts)	40
Class participation	<u>20</u>
Total points	340

Letter grades will be assigned to point totals by the following guidelines

<u>Grade</u>	<u>Percent of Total Points</u>
A range	90-100
B range	80-89.5
C range	70-79.5
D range	60-69.5
F	below 60

Final percentages and + and - grades may vary at the discretion of the course instructor. Grade cutoffs may be lowered under some circumstances but grade cutoffs will not be raised. In addition to the passing point total, you must also meet the minimum score requirement for lecture exams and lab quizzes.

**BIO 201 Cell and Molecular Biology
2015 Exam or Quiz Conflict Form**

This form is to be completed by students in this course who have schedule conflicts with any of the exams or quizzes this semester. State the reason for the conflict and the name of a contact person for verification of the conflict. Contact persons included college faculty, coaches or staff. **This form must be submitted to a course instructor by September 28, 2015 for Exam 1 accommodation.**

Your name (print) _____

Your signature _____

Complete the information regarding exams for which you have a conflict:

Exam date and time:

Reason for conflict:

Contact person:

Exam date and time:

Reason for conflict:

Contact person:

Quiz date and time:

Reason for conflict:

Contact person:

Quiz date and time:

Reason for conflict:

Contact person:

Biology Department Use Only

Verification check: Name, date, phone number and title of person confirming conflict.

