Marshall University Syllabus
College of Science, Biological Sciences

Course

BSC450/550, Molecular Biology

Course Description

This course is designed to provide a comprehensive understanding of the current knowledge of the basic principles of Molecular Biology. The concepts introduced will provide a basis for you to comprehend the development of modern scientific research and its historical basis. In addition, by learning about those methods and concepts, you will be able to better understand and criticize the up-to-date published literature. It is also meant to improve your ability to think critically about biological and scientific principles. Students will be asked for a functional e-mail address and are expected to check their e-mail accounts before class for possible special announcements.

Credits

3-credits (Undergraduate/Graduate)

Prerequisites

BSC324 Genetics **or BSC322** Cell Biology

Term/Year

Spring 2023

Class Meeting Days/Times

MWF 11:00am to 11:50am (Labor Day: No Class)

Location

Science Building Room S-374

Academic Calendar

For beginning, ending, and add/drop dates, see the Marshall University Academic Calendar (URL: https://www.marshall.edu/academic-calendar/).

Instructor

Instructor: Dr. Philippe Georgel **Office**: Science S-200A

Phone: 304-696-3965 **email:** georgel@marshall.edu

Note: **All E-Mails Are To Be Sent To Me Using The Address Above, NOT Through Blackboard.**

Contact Information

- Office: Office hours and appointments will be held in person. Mask's policy will be in agreement with the University policy at the time of the meeting. If a need for virtual meeting was to arise, Teams will be used as virtual "space".
- Office Hours: Open hours TR 10:00-11:00 AM Room S-200A. Depending on the final COVID-19 policies implemented by the University, office hours may become virtual (using Teams). Mask policy will reflect the University's policies.
- Office Phone: 304-696-3965

Marshall Email: georgel@marshall.edu

Health and Safety Information

All members of the Marshall University community are expected to always observe health and safety protocols. This includes general health and safety protocols as well as specific protocols that might emerge in response to community and campus health conditions.

Campus Carry Policy

University Policy, UPGA-12 (Campus Carry Policy) derives its authority from West Virginia State law, including the Campus Self-defense Act (W. Va. Code § 18B-4-5b). It pertains to the exercise of Concealed Carry on Marshall University's campus, except in designated areas, by individuals with a valid permit to Conceal Carry.

Individuals who choose to Conceal Carry are responsible for knowing and understanding all applicable federal, state, and local laws and Marshall University Board of Governors Rules, University Policies, and Administrative Procedures. University Policy, UPGA-12 applies to areas of campus and buildings that are directly under the possession or control of Marshall University.

Concealed Handguns are not observable to others and must be holstered and concealed on the body of the permit holder or in a personal carrier, such as a backpack, purse, or other bag that remains under the exclusive and uninterrupted control of the permit holder. This includes wearing the personal carrier with a strap, carrying or holding the personal carrier, or setting the personal carrier next to or within your immediate reach at all times. If your participation in class activities impedes your ability to maintain constant control of your Handgun, please make alternate arrangements prior to coming to class.

Faculty Office

NOTICE: University Policy, UPGA-12 (Campus Carry Policy) defines Sole Occupancy Offices as areas that may restrict Concealed Carry. Please be aware that my office is a Sole Occupancy Office and this statement serves as notice that concealed weapons or handguns are not permitted in my office. If you plan to attend a meeting in my office or to drop by my office, secure your weapon or handgun appropriately before you arrive.

Required and/or Recommended Texts and Materials

Required Texts and Materials

The Cell: A Molecular Approach, 9th Edition

Recommended/Optional Texts and Materials

Genes by Benjamin Lewin (Pearson Editions).

Molecular Biology of the Cell by Bruce Alberts *et al*.7th edition. (Garland Science

Additional Study Aids: The Cell: a Problem Approach by Wilson and Hunt (Editor Garland Science)

Course Student Learning Outcomes

The table below shows the following relationships: How each student learning outcome will be practiced and assessed in the course.

Course student learning outcomes	**How students will practice each outcome in this course**	**How student achievement of each outcome will be assessed in this course**
Students will be exposed to various aspects of Gene expression and regulation events	Regular Tests and Journal-club type assignments (given by BSC550 students only) will be used for in-depth discussions of specific issues related to the material presented during more "formal" lectures.	Evaluation of regular tests and grading of Journal-club presentations. **Presentations:** **BSC550**: Additional Journal-club type presentation scored by students (25% of score) and instructor (75% of score)
Students will attend lectures	Attendance, discussions.	In-class tests, Journal-club (Graduate students only)
Students will develop an in-depth	Understanding of the class material is more important	

Course student learning outcomes	How students will practice each outcome in this course	How student achievement of each outcome will be assessed in this course
understanding of the various molecular aspects of gene regulation	that simple memorization. Students are expected to become proficient in the field of modern Molecular Biology.	
Students will receive information relevant to advanced graduate degrees and careers in Biology, Medical Science, and research	This course is designed to give students a solid background in understanding the importance of the general processes involved in cellular functions, including regulation of gene expression, protein modifications and their functions. My objective in teaching this course is to ensure that students learn the necessary tools to understand the current research in the fields related to various aspects of molecular biology. Students are expected to read and understand the concepts that have emerged from many years of research, and most importantly to **think** about the material.	

Course Requirements/Due Dates

This course format is, at this time, expected to be face-to-face; If the University policies change during the semester, we will use 100% synchronous online course meetings (OC)]. In that case, students must attend virtually through Teams (Invitations will be sent). **Tests will be given in the classroom.**

Lecture exams: There will be three in-class exams, including the "final." The score averaged over all exams (Test #1, Test #2,Test #3 and Final Test) will be the basis for the BSC450 final grade (maximum possible 300 points). For BSC 550, an

additional 100 points will be possible through the Journal-Club presentation (see page 5 for details)

Journal-club presentations will be prepared individually or by a group of two to four students (depending on the number of students registered). The selected recent **research** article (from a peer-reviewed scientific publication) will have to be approved by the instructor **(at least two weeks before the actual presentation**). The topic needs to be relevant to Molecular Biology. Before the presentation, each student will have to turn in a written document describing her or his individual contribution to the preparation. **Failure to provide the document will result in an automatic 10-point penalty per student**. Students doing rotations in laboratory or performing research ***cannot*** select an article directly related to the topic of their current research. Not respecting this statement will result in an automatic "0" for the presentation. A grading sheet (see page 10) will be provided for evaluation (A subset of students and the instructor will grade the presenters). The grading scale goes from 0 to 5, and after evaluations, will be tabulated and adjusted to a 100-point scale. The student evaluations combined will account for 25% of the grade and the instructor's evaluation will account for the 75% remaining. Copies of evaluations (anonymous for student's, including comments) will be available, upon request, in my office.

The test material will be made available on Blackboard at the time of the exam. **Tests will be given in writing with possibly a component provided through Blackboard and Teams (if required) in the classroom and therefore students will have to bring a laptop computer or a tablet compatible with the use of Blackboard and Teams.**

Plagiarism will not be tolerated. It will be automatically sanctioned by an "F" in the class, dismissal, and report to Academic Affairs.

Grading Policy

BSC450	**BSC550**
First test **25%**	First test **22.5%**
Second test **25%**	Second test **22.5%**
Third test **25%**	Third test **22.5%**
Final test: **25%**	Final test: **22.5%**
	Presentation/review **10%**

Additional Graduate (BSC550)/ Honors assessment: Presentation

A journal-club type presentation or a review will account for 10% of the final grade. It will be based on a recent primary research article selected by the students and approved by the instructor, or for a review, a topic agreed upon. For an oral presentation, the criteria used for evaluation are described in the "Evaluation Sheet" provided on page 5. If the number of students registered for the class is too large, the presentations will be done individually or in groups (2-3), depending on

the number of students registered. If groups are presenting, each presenter will be evaluated individually based on contribution (preparation of slides) and most importantly ability to answer questions. The grading scale goes from 0 to 5, and after evaluation, will be tabulated and adjusted to a 100-point scale. The student evaluations combined will account for 25% of the grade and the instructor's evaluation will account for the 75% remaining. Copies of evaluations (anonymous for student's, including comments) will be available, upon request, in my office.

Grade assignment

A = 100-90 B = 89-80

C = 79-70 D = 69-60

F < 59

Students will not be allowed to 'makeup' test absences, except in exceptional circumstances and with prior notice (unless medical/family emergency) **to be approved by the instructor** (see section on "Grading Policy" below for details)**. Extra credit** is **not** offered in this course.

Additional information, if required, will be transmitted by e-mail (student will have to provide a working Marshall University e-mail address).

Grading Policy: The point total listed above is final; there will be no opportunity for any extra credit, other than that potentially included in an exam. If you disagree with the grading, your exam copy will be available in my office to be looked at and discussed. If you still disagree with the grading, please provide me a copy of your explanation/justification in writing within one week of the time the grade was posted on WebCT or given to you in the form of an individual e-mail message (which ever comes first). You must notify me **within three weekdays** after a test if you missed it and have an acceptable excuse to be eligible for a make-up exam. The makeup test will likely be different from the regular test. *All grades must be appealed in writing* (please use e-mail, see: http://www.marshall.edu/student-affairs/gradeappeal.htm). THERE WILL BE NO EXCEPTIONS TO THESE RULES.

Students must complete 75% of work and exams before they are entitled to an incomplete.

Generative Artificial Intelligence (AI) Policy for Use in the this Course

Option 1 is Open Use – Generative AI is permitted/encouraged in the course with proper attribution

Attendance/Participation Policy

1. By enrolling in this course, YOU AGREE TO THE UNIVERSITY POLICIES listed above and below. Please read the full text of each policy by going to www.marshall.edu/academic-

affairs and clicking on "Marshall University Policies." Or you can access the policies directly by going to http://www.marshall.edu/academic-affairs/?page_id=802

Academic Dishonesty/ Excused Absence Policy for Undergraduates/ Computing Services Acceptable Use/ Inclement Weather/ Dead Week/ Students with Disabilities/ Academic Forgiveness/ Academic Probation and Suspension/ Academic Rights and Responsibilities of Students/ Affirmative Action/ Sexual Harassment.

2. ATTENDANCE POLICY*:* Attendance is expected. Students are responsible for all activities and announcements that occur during class and are responsible for any material missed. Missed information should be obtained from classmates.

   Excused absences (see details on page 6 of the syllabus) If virtual classes are implemented, this section may not be relevant as stated.

   Policies can be reviewed. Students are expected to be on time for lectures and exams. Arrival or loging in (if authorized by me) for an exam after the first person has handed in their exam will result in you not being allowed to take the exam.

   Unexcused absences (see University Policies on page 5 of the syllabus)

   - Three unexcused absences will result in notification from your instructor.
   - A fourth absence will result in
     - Automatic one letter grade deduction in the course
     - Mandatory meeting with instructor to discuss an improvement plan to make up missed information/projects at the discretion of the instructor.
   - A fifth removes the possibility of an improvement plan. Grade decrease stands.
   - Subsequent unexcused absences will result in additional letter grade deductions.

3. COMPUTER LITERACY: Course materials and course announcements are located on MUOnline (http://www.marshall.edu/muonline). Notify me *immediately* if you cannot access this.

4. WITHDRAWAL: The last date for withdrawal from a Fall semester individual course is 03/25/2022. Failure to officially drop the course through the Registrar by the date will result in you receiving a grade for the course.

5. ACADEMIC DISHONESTY *in any form will not be tolerated*. All written assignments, laboratories reports, quizzes, and exams are to be independent efforts of each student (see Policy 1). Ignorance of the policies is not an excuse (see link to student handbook above).

6. STUDENTS RESPONSIBLY:

   - *Students are responsible for reading the appropriate assigned material from the textbook, posted readings, and/or handouts*.
   - *Students are required to stay on task during the lecture and laboratory exercises.* Students may be asked to work in groups during class time.
   - *Students are required to bring paper and a writing utensil to class for in-class assignments.*
   - Communications from the instructor *regarding changes in schedule* will come via your **MU email**, back-up through **Blackboard mailing system** (special announcements), MUOnline and/or during lectures. The standard MU e-mail system will also be used as primary source of communication. ***It is your responsibility to check both* your MU email, Marshall Blackboard mailbox and MUOnline announcements periodically**.

- *Electronic communications to the instructor must include: "BSC450/550" in the title,* your full name and are to be written in a professional manner.

7. RECORDS: *Grades will not be given or directly discussed over the phone or E-mail.* You must be present during class to collect graded assignments, if necessary. Students should keep all returned materials so that their relative standing in the course can be known at any time. All grade appeals must be done formally in writing and with 10 days of the returning of the graded item to the student.
8. ELECTRONIC DEVICES: All electronic devices (laptops, handheld computers, instant messaging devices, PDAs, cell phones, pagers, data-bank watches, etc.) must be turned off during class unless they are explicitly being used for a course activity by the direction of Dr. Georgel. *Failure to comply with this policy may result in your dismissal from that lecture period and loss of attendance credit for that class.* Audio or video recordings of lectures are not permitted without prior consent of Dr. Georgel.

University Policies

By enrolling in this course, you agree to the University Policies. Please read the full text of each policy (listed below) by going to MU Academic Affairs: University Policies. (URL: https://www.marshall.edu/academic-affairs/policies/)

- Academic Dishonesty Policy
- Academic Dismissal Policy
- Academic Forgiveness Policy
- Academic Probation and Suspension Policy
- Affirmative Action Policy
- Dead Week Policy
- D/F Repeat Rule
- Excused Absence Policy for Undergraduates
- Inclement Weather Policy
- Sexual Harassment Policy- Title IX prohibits the harassment of students based on sex, which includes pregnancy, childbirth, and related conditions. This includes that students will not be penalized for taking medically necessary leave related to pregnancy, childbirth, or related conditions. Marshall's Title IX Office may be contacted at TitleIX@marshall.edu
- Students with Disabilities (Policies and Procedures)
- University Computing Services Acceptable Use Policy

Course Schedule

Tentative Course Outline/Weekly Schedule: Dates and Topics are subject to change.

Week	Class Topic	Book Chapter*
1	Introduction Discuss syllabus and presentation set-up	1 and 2

2	General cellular building blocks	2
3	Heredity, Genes and DNA	4
4	Modulation of gene expression	4-5
4	**Test #1 (9/13/24) possibly (9/20/24)**	
5	Genome organization, replication DNA repair	5
6	Genome organization, replication DNA repair	5-6
7	RNA processing, example of presentation	7
8	Protein Synthesis	8
8	**Test #2 (10/11/24) possibly (10/18/24)**	
9	Protein processing and regulations	8
9	Protein sorting and transport	10
10	End of chap. 8	9
11	**Test #3 (11/8/24)**	
12	The nucleus	9
12	Cancer/ Cell Signaling or Epigenetics (CSE)	15
13	End CSE + BSC 550 Presentations, if any	
14	Thanksgiving Break	
15	Pre-Finals Week	
Date /Time	***FINAL EXAM* on 12/10/24 from 10:15am-12:15pm**	

*: The chapter numbers vary from edition to edition. The titles will be similar, but the numbers may be different.

Fall 2024 Final Exam Schedule

EXAM HOUR	MONDAY DEC 9	TUESDAY DEC 10	WEDNESDAY DEC 11	THURSDAY DEC 12	FRIDAY DEC 13
8:00 AM until 10:00 AM	Classes meeting at 8:00 MWF	Classes meeting at 9:30 TR	Common Finals CHM 111, 211, 212, 355, AND 356	Classes meeting at 8:00 TR	Classes meeting at 9:00 MWF
10:15 AM until 12:15 PM	Classes meeting at 10:00 MWF	Classes meeting at 11:00 MWF	Common Finals PHY 201, 203, 211, AND 213	Classes meeting at 11:00 TR	Classes meeting at 12:00 MWF
12:45 PM until 2:45 PM	Classes meeting at 2:00 or 2:30 MWF	Classes meeting at 12:30 TR		Classes meeting at 2:00 TR	Classes meeting at 1:00 MWF

This syllabus is subject to modifications.

Note: If you are an observant member of a religion that has a holiday conflicting with a lecture or a lab sometime during the semester, **please see Dr. Georgel during the first week of class** so that we can ensure that you do not miss any assignments or class notes. This syllabus is issued for the convenience of the student and does NOT

constitute a legally binding contract between the student and the instructor. The instructor reserves the right to change the lecture sequence, topics and exam dates during the course of the semester (except for the Final exam), and any such changes will be announced orally in class. The measurement used to assign letter grades is your performance during the exams.

Suggestions and Comments: I welcome and appreciate your input for improving the course. Please, contact me (georgel@marshall.edu) with your comments and suggestions.

EVALUATION SHEET FOR BSC 456/556 PRESENTATION

SPEAKER _____ EVALUATOR _____

DIRECTIONS: For each section, assess the speaker's performance using the increment range shown:
Excellent = 4.5-5.0 Above Average = 4.0-4.4 Average = 3.0-3.9
Below Average = 2.0-2.9 Unsatisfactory < 2.0

EVALUATION

TREATMENT OF TOPIC:
Ability to synthesize, assimilate and condense major concepts from recent papers used as reference: COMMENTS: _____ X2

ORGANIZATION OF TALK AND BACKGROUND DEVELOPMENT:
Adequate background material for a diverse audience; organization of main points, adequate length of presentation to develop concepts (suggested length of talk: 40 min). COMMENTS: _____ X2

QUALITY AND PRESENTATION OF ILLUSTRATIONS:
Effective use of illustrated material, clarity and brevity of tables, charts, photos, and diagrams; quality of visuals. COMMENTS: _____ X2

ABILITY TO FIELD QUESTIONS:
Listening to and answering the questions that are asked; clarity of answers; ability to "think on feet". COMMENTS: _____

SPEAKING SKILLS:
Composure, voice projection, grammar, pronunciation. COMMENTS: _____

OVERALL COMMENTS PRESENTATION (**score required in this section as well**):
Evaluation of all sections of the evaluation sheet. COMMENTS: _____

TOTAL: _____