

GBS 708 – Genetics

2 Credit Hours | Fall 2020 | August 24 – September 25, 2020 |

*all lectures and discussions are remote, via Zoom

Course Director: Dr. David Schneider | dschneid@uab.edu

Course Co-Director: Dr. Rui Zhao | ruizhao@uab.edu

Course Manager: Jessica Watts | jessicawatts@uab.edu

Course TA: Sade Williams Clayton | sadewill@uab.edu

*Instructors are available via email or zoom to answer questions

GBS Vision Statement:

“Demonstrating world-class excellence in all areas of biomedical research through the achievements of our students.”

GBS Mission Statement:

“Driving biomedical discovery through interdisciplinary training and innovative research.”

GBS Core Competencies:

GBS offers a wide array of courses, seminars, journal clubs, research opportunities, and professional development that are designed to support the growth and development of our students. The following list consists of desirable competencies for our students to achieve while in this course:

- Content-Specific Conceptual Knowledge
- Critical Thinking and Data Evaluation
- Communication Skills
- Career Exploration and Preparation
- Responsible Conduct of Research

Course Objectives:

The purpose of this course is to provide foundational knowledge to students as they prepare for graduate education and beyond. This course will equip students with a basic understanding of molecular genetics. The lectures are organized to follow the central dogma of molecular biology. Similarities and differences between prokaryotic and eukaryotic genetic systems will be described throughout the course.

Grading:

Homework (15%): Each week students will be assigned homework questions which include experimental design and/or short answer on the topic. The questions will include material from the entire week of lectures. Students may use outside resources to complete the assignment. Homework assignments will be due through Canvas no later than 5PM on the Wednesday of each week. During Thursday’s discussion, students will be chosen at random to present their findings and discuss implications to their field of interest. These discussions will be live via zoom, and will be moderated by the lecturer(s) and a graduate assistant.

Participation (10%): Students are expected to be active participants in each live homework discussion. For effective exchange of information, active discussion and participation are required when homework questions are discussed. Any unexcused absence will result in forfeit of participation points.

Quizzes (75%): Students will complete five closed-note quizzes. Each quiz will consist of a series of multiple choice questions that require the student to remember fundamental aspects of the biological question and synthesize connections between key aspects of the topic(s).

Instructional Method:

Remote: This class will be conducted virtually using a combination of live and recorded content through Canvas, Zoom, and other tools using the Canvas Learning Management system. Students should reserve the days and hours listed in the Class Schedule for live course elements. Students will not attend class on-campus.

Practical Notes:

- GBS 708 will utilize Canvas, UAB's learning management system, for all course material, lectures, and quizzes.
- Recorded lectures will be posted to Canvas week by week, by at least 8PM on Sunday.
- Lecture materials can be viewed asynchronously, throughout the week of the topic. Specific dates are assigned to lecture topics below, but the lecture material is viewable all week.
- Participation in live Q&A is not required, but is a resource to help clarify questions or areas of interest that the student may have for a specific topic.
- Application & Implications are required each week for participation credit.
- Quizzes will have a 1-hour time limit and must be started between 8AM and 11AM CDT on the Friday of each week.
- Assessment/grading of homework will be completed by individual lecturers and the overall average accessed by the course directors at the end of the course.
- The default grading method for the Fall 2020 semester will be the normal letter grade method, and UAB is encouraging students to continue taking courses for a letter grade where possible. Letter grades will be assigned A = 100-90 B = 80-89 C = 79 or lower
- The university is providing a Pass/Fail option in case there are circumstances and/or challenges students are encountering related to the ongoing pandemic that might make a Pass/Fail grade a better option. If students are not remaining with the default letter grade method for any of their courses, they must select the Pass/Fail grading method for each course individually. This selection is made toward the end of the semester. Once a student selects the option for a Pass/Fail grading method for a particular course, that decision is not reversible regardless of their performance on remaining assessments.

Recommended Textbook:

Molecular Biology of the Cell, 6th Ed. (Alberts et al) ISBN: 9780815344322

DATE	SESSION TOPICS/ACTIVITIES	LECTURER
8/24/2020	Genome Organization and Elements	Strong
8/25/2020	Mendelian Genetics and Inheritance	Strong
8/26/2020	Live Q&A	Strong
8/27/2020	Application & Implications (HW discussion required)	Strong
8/28/2020	Quiz #1	
8/31/2020	DNA Replication	Bjornsti
9/1/2020	DNA Repair	Bjornsti
9/2/2020	Live Q&A	Bjornsti
9/3/2020	Application & Implications (HW discussion required)	Bjornsti
9/4/2020	Quiz #2	
9/7/2020	Labor Day	
9/8/2020	Fundamentals of transcription and gene regulation	Schneider
9/9/2020	Live Q&A	Schneider
9/10/2020	Application & Implications (HW discussion required)	Schneider
9/11/2020	Quiz #3	
9/14/2020	mRNA modifications (capping, slicing, poly-A)	Zhao
9/15/2020	Translation	Schneider
9/16/2020	Live Q&A	Zhao/Schneider
9/17/2020	Application & Implications (HW discussion required)	Zhao/Schneider
9/18/2020	Quiz #4	
9/21/2020	Regulatory RNAs (RNAi, micro-RNA, lnc-RNA)	Zhao
9/22/2020	RNA modifications (snoRNA, m6A)	Zhao
9/23/2020	Live Q&A	Zhao
9/24/2020	Application & Implications (HW discussion required)	Zhao
9/25/2020	Quiz #5	

Disability Support Services:

UAB is committed to providing an accessible learning experience for all students. If you are a student with a disability that qualifies under the Americans with Disabilities Act (ADA) and Section 504 of the Rehabilitation Act, and you require accommodations, please contact Disability Support Services (DSS) for information on accommodations, registration and required procedures. Requests for reasonable accommodations involve an interactive process and consists of a collaborative effort among the student, DSS, faculty and staff.

To Register for Disability Support Services - Contact DSS at (205) 934-4205 (voice) or (205) 934-4248 (TDD). You must present documentation verifying your disability status and the need for accommodations. After DSS receives your completed documentation, you will meet individually with a member of the DSS staff to discuss your accommodations. It is best to register with DSS when you apply to UAB, as it may take 2-3 weeks to review your request and complete the process. For more information about Disability Support Services or to make an appointment, please feel free to contact the office directly at the Hill Student Center, 1400 University Boulevard, Suite 409, Birmingham, AL 35294; via email: dss@uab.edu; or visit their [website](#) for more information.

If you are registered with Disability Support Services, **it is the student's responsibility to contact the course instructor** to discuss the accommodations that may be necessary in this course. Students with disabilities must be registered with DSS and provide an accommodation request letter before receiving academic adjustments. Reasonable and timely notification of accommodations for the course is encouraged and provided to the course instructor so that the accommodations can be arranged. Additional information about the process is available on the UAB [website](#).

Title IX:

The University of Alabama at Birmingham is committed to providing an environment that is free of bias, discrimination, and harassment. If you have been the victim of Sexual discrimination, harassment, misconduct, or assault we encourage you to report the incident. UAB provides several avenues for reporting. For more information about Title IX, policy, reporting, protections, resources and supports, please visit [UAB's Title IX Policy](#) and [UAB's Equal Opportunity and Anti-Harassment Policy](#).

COVID-19 Adjustments for Students:

Attendance will be a part of your grade in this course. All absences for COVID-19-related illnesses will be excused. Students concerned about their attendance as a result of COVID-19 should register with Disability Support Services.

UAB Disability Support Services (DSS) has established a process for UAB students to request temporary adjustments based on the impact of COVID-19. The process is similar to the traditional DSS registration procedures for accommodations based on disability. However, these requests will be referred to as "COVID-19 Related Temporary Adjustments". On the DSS website, there is a section (next to the traditional DSS application process) titled "Request COVID-19 Temporary Adjustments" where students can read the process and click to complete an application.

On the application, the student must complete an attestation and identify which of the following category(s) applies to their situation. Students will be allowed to submit documentation to support their requests.

- I am 65 or older
- My medical provider has determined that I am an individual who is considered high risk according to Centers for Disease Control and Prevention
- I care for or reside with an individual who has been determined to be high risk according to Centers for Disease Control and Prevention
- I have tested positive for COVID-19
- I am requesting adjustments for another reason

Any questions regarding this process should be referred directly to dss@uab.edu. For qualifying students, DSS staff will create a Notification of Temporary Adjustment Letter (PDF format) which will be provided to students. Students will share this letter, as needed, with instructors to request adjustments.