
Biol. 495

Molecular Genetics

Fall Semester
Snell Hall 3106
TR 8-9:20 AM & web.

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Learning Objectives and Outcomes

This course will focus on the molecular mechanisms that operate in the expression of the blueprint of life.

The three main concepts flowing throughout this course are:

1. gene expression
2. regulation of gene expression
3. genome diversity and similarities

The central question that, when answered thoroughly, ties these concepts together is:

How can two different species be so different morphologically when they are nearly identical in their genetic makeup?

By the end of this course you will be able to answer this question in the context of the three main concepts.

Requirement

As students, you are responsible for reading the assigned text **before attending class**. Most chapters are around 20 pages with a nice list of Key Terms and Key Concepts as well as a Summary. After reading the chapter return and review the Key Terms and Concepts to see if you understand them. If you have questions, write them down and bring them to class or post them on the discussion board. I will answer questions at the beginning of each class period and then review what I think the main topics are for the chapter. We will then use this knowledge in a broader discussion of the topics.

Exams

You will be given four exams, worth 100 points each, on the dates shown in the Class Schedule above. The exams will be administered on WKU's Blackboard site. The exams will be available only during the days shown above and will cover the chapters listed next to the exam.

Required Text

Lewin's Essential Genes,
3rd Edition, by Krebs,
Goldstein & Kilpatrick,
2010, Jones & Bartlet,
ISBN 978-1-4496-1265-
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Schedule

<u>Date</u>	<u>Topic</u>	<u>Chapter</u>
August		
27	Introduction	
29	Genes are DNA	1
September		
3	Genes code for prot	2
5	Interrupted Gene	4
10	Genome Content	5, 6
12	Clusters & Repeats	7
17	Genome Evolution	8
17-23	Exam 1	
19	Chromosomes & Chromatin	9, 10
24	Replication & Cell Cycle	11
October		
1	Replication	12, 13
3	Extrachromosomal Replication	14
8	Recombination	15
15	Repair Systems	16
17	Transposons & Retroviruses	17
22	Immune variation	18

Realize that the Blackboard site shuts down each morning, between 2:35 AM and 3:45 AM CST for backup, so, you should avoid trying to take tests during this time period.

All midterm exams are closed-book exams. The Exam format may include essay, true/false, fill-in-the-blank, multiple choice, matching, diagrams, and other types of questions. --"I wasn't near a computer" or "my computer crashed" is not a reason for not taking the exam and then expecting credit.

You can take the Exams more than once. A different exam will come up each time that you take it. All Exams are "closed book"; no notes, study guides or web pages may be used during exams. You will have at least a one weekend in which to take the Exam. The **Exams are timed**. There is a penalty for going over time. Once you open an Exam you must complete it.

Make-up exams will be given only under the following circumstances:

- Illness with excuse from a Physician
- Death of a close relative
- Prior arrangement with the Instructor

Grading

Syllabus	5 points
Chapter assignments @ 10 points each	up to 280 points
Exams @ 100 points each	400 points
Project	100 points
Project evaluation	15 points
<u>Course Summary Report</u>	<u>100 points</u>
Total	900 points

Assignments

Each chapter may have an assignment associated with it worth up to 10 points. These assignments should be done individually. Late assignments will be penalized. Most assignments will be due at the beginning of the class period following the lecture in which the chapter was assigned. Online students will have all assignments scheduled for the week due the Monday following the week in which they were assigned.

A final project will be presented as posters during the scheduled final exam period and you will be responsible for not only your own presentation but also evaluating the presentations of others in the class. You will work in groups of two. Online students will also present their work on a discussion board set up for that purpose and will also evaluate each others work.

22-28 Exam 2

24 Prok. Transcription	19
29 Euk. Transcription	20
31 RNA Processing	21, 23
5 mRNA	22

November

7 Translation	24, 2
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7-12 Exam 3

12 Operon	26
14 Phage Strategies	27
19 Euk. Transc. Reg.	28
21 Epigenetics	29
26 Project Intro.	30

21-25 Exam 4

26 -Dec9 Work on Project

December

13 8-10 AM Final Project Presentation.
In-class students present Dec. 8, 8-10 AM.

On-campus online students must attend final.
Off campus online students need to have presentation up on Blackboard Discussion area by Dec. 10, 8 AM.

Grading

You are responsible to see that exams and assignments are submitted on time! Grades will be assigned as a percentage of the total points:

- A = 90% -100%
- B = 80 - 89.99%
- C = 70 - 79.99%
- D = 60 - 69.99%
- F = Below 60%

The Course Summary Report will be an essay that addresses a single overarching question: "How can two different species be so different morphologically when they are nearly identical in their genetic makeup?"

Academic Integrity

It is expected that each student will do his/her own work at all times and contribute equitably in all group projects.

Academic Misconduct - Dishonesty, in any form (cheating on quizzes or exams, plagiarism, copying another's assignment answers, etc.) will result in a failing grade. Students are to answer all questions in their own words. Cutting and pasting answers from online or other sources is not acceptable and will result in a failing grade.

Students with Disabilities

In compliance with University policy, students with disabilities who require academic and/or auxiliary accommodations for this course must contact the Student Accessibility Resource Center located in Downing Student Union, 1074. SARC can be reached by phone number at 270-745-5004 [270-745-3030 TTY] or via email at sarc.connect@wku.edu. Please do not request accommodations directly from the professor or instructor without a Faculty Notification Letter (FNL) from The Student Accessibility Resource Center.

Title IX Discrimination, Harassment and Sexual Misconduct Policy:

Western Kentucky University is committed to supporting faculty, staff and students by upholding WKU's Title IX Sexual Misconduct/Assault Policy (#0.2070) at

<https://wku.edu/eoo/documents/titleix/wkutitleixpolicyandgrievanceprocedure.pdf> and Discrimination and Harassment Policy (#0.2040) at https://wku.edu/policies/hr_policies/2040_discrimination_harassment_policy.pdf.

Under these policies, discrimination, harassment and/or sexual misconduct based on sex/gender are prohibited. If you experience an incident of sex/gender-based discrimination, harassment and/or sexual misconduct, you are encouraged to report it to the Title IX Coordinator, Andrea Anderson, 270-745-5398 or Title IX Investigators, Michael Crowe, 270-745-5429 or Joshua Hayes, 270-745-5121.

*Please note that while you may report an incident of sex/gender based discrimination, harassment and/or sexual misconduct to a faculty member, WKU faculty are "Responsible Employees" of the University and **MUST** report what you share to WKU's Title IX Coordinator or Title IX Investigator. If you would like to speak with someone who may be able to afford you confidentiality, you may contact WKU's Counseling and Testing Center at 270-745-3159.*

Response Required

When you have finished reading this syllabus, you must send an email to your instructor with "Biol. 495 Syllabus Assignment" in the subject line.

You should indicate in the body of the email your commitment to abide by the policies outlined in this syllabus.

You should sign the email with your full name.

Course Withdrawals

If you wish to withdraw from the course you should do so by the dates mandated by the University. Be sure you are aware of these dates because credit for the course will not be changed after the university designated time. You also cannot drop the class or Withdraw after the designated time. Be aware that it is YOUR responsibility to drop the class. Do not assume that I will do this for you