

This is a draft of our Fall 2021 syllabus, and the information may be revised by the instructor.
 A final syllabus will be posted via Canvas before September 2021.

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Course Description

This course is intended for Biological Sciences majors and graduate students with an interest in cell and molecular biology. This course will provide an in-depth study of the genetic mechanisms governing animal development, cellular proliferation, and cellular death. We will highlight the genetic mechanisms underlying these cellular behaviors, how they contribute to development of the whole organism, and how genetic variations can disrupt these processes and lead to cancer.

Students of this course will learn how animal development is investigated using model organisms, and how that research is translated to an understanding of human cancers. Students will use genetic logic, deduce the function of gene products, and gain insight into how biological systems function. This course includes discussion of the experimental methods and emerging technologies that advance our understanding of development and cancer.

Reading materials and media will be provided on the Canvas site for this course. It is expected that students augment their class-time learning with home study.

Learning Outcomes

Upon completion of this course students will be able to:

1. Understand how genetic screens are used to identify genes that regulate animal development, cellular proliferation, and cellular death
2. Use genetic analysis to deduce how genes function together within a genetic pathway
3. Understand how genetic variations in humans can cause developmental disorders and cancer development
4. Understand how emerging technologies are used to advance our understanding of development and cancer
5. Critically read and evaluate primary research articles in the fields of developmental biology and cancer genetics

General Information

- Course Instructor:** Claire de la Cova, PhD
 Email: delacova@uwm.edu
 414-251-6195
 Office: Lapham Hall N409
 Office Hours: Friday 9:00-11:00am or appointment
- Instruction mode:** In-person
 Canvas course site: <https://uwmil.instructure.com/courses/421816>
- Meeting schedule:** Tuesdays, Thursdays, 12:30-1:45pm
 (See lecture and exam schedule on page 2)
- Location:** Lapham Hall, Room 252
- COVID pivot plan:** If in-person instruction is halted by UWM policy, then this course will be taught synchronously online via Canvas.

Lecture and Exam Schedule

Week	Tuesday	Thursday
Week 1		9/2: Syllabus and course intro
Week 2	9/7: Lecture. Genetic model organisms	9/8: Lecture. Animal development
Week 3	9/14: Lecture. Insights from mutants	9/16: Reading primary literature Small group discussion
Week 4	9/21: Lecture. Genetic screens	9/23: Genetic screens, mutants Small group discussion
Week 5	9/28: Lecture: "Cloning" of mutants	9/30: Types of genetic evidence Small group discussion
Week 6	10/5: Exam 1	10/7: Lecture. Cell proliferation
Week 7	10/12: Lecture. Development of cancer	10/14: Types of mutations in cancer Small group discussion
Week 8	10/19: Lecture. Oncogenes	10/21: Oncogenes Small group discussion
Week 9	10/26: Lecture. Tumor suppressors	10/28: Tumor suppressors Small group discussion
Week 10	11/2: Lecture. Genomic technologies	11/4: Exam 2
Week 11	11/9: Lecture. Apoptosis (cell death)	11/11: Lecture. Cell death mutants
Week 12	11/16: Lecture. Epistasis, "pathways"	11/18: Epistasis and "pathways" Small group discussion
Week 13	11/23: Lecture: Genome-wide screens	11/25: Thanksgiving Break
Week 14	11/30: Genome-wide screens Small group discussion	12/2: Graduate Presentations
Week 15	12/7: Graduate Presentations	12/9: Graduate Presentations
Final	Exam 3 (Time window TBA)	

For each small group discussion and graduate presentation (shaded in blue), students are expected to complete assigned readings provided in Canvas.

Student Learning Resources

Assigned reading and media

All assigned readings and media are provided via the BIO SCI 498 Canvas site. Posted course materials are property of UWM and/or copyrighted and are for students' personal use only.

Additional suggested reading (optional)

For students who desire a supplemental textbook resource, I suggest two texts below. These are not required for students to purchase. Some of our assigned readings will come from chapters in these texts; these readings will be provided to students via Canvas.

- **Genetic Analysis: Genes, Genomes, and Networks in Eukaryotes** by Philip Meneely.
I recommend this text for topics on model organisms, genetic screens, mutations, and epistasis
Two editions of this text are available new/used, including:
2nd Edition, ISBN: 0199681260 (Cost ranging from \$18 for rental to \$36 used)
- **Molecular Biology of the Cell** by Bruce Alberts, et al.
I recommend this text for topics on animal development, cell proliferation, and apoptosis
Several editions of this text are available online or new/used, including:
6th Edition, ISBN: 0815344325 (Cost ranging from \$40 for eTextbook to \$80 used)

Recorded lectures

Our class sessions will be audio-visually recorded and available on Canvas.

Assessments and Grading

Grade Computation:	<u>Undergraduate (U)</u>	<u>Graduate (G)</u>
Exam 1	20%	20%
Exam 2	20%	20%
Final exam	20%	20%
Small group discussion	40%	30%
Graduate presentation	--	10%
Total	100%	100%

Exams:

- **Content:** All exams will strongly emphasize content presented during lecture. Students will find that their success in exams will require both regular attendance and note-taking.
- **Format/grading:** Exams will consist of multiple choice; fill-in-the-blank, true/false, short answer, or essay questions. Partial credit may be given on short answer and essay questions.
- **Delivery:** In-person.
- **Exam policies:**
 - Exams are "open book." What does this mean? Students may use their hard-copy lecture notes, readings, and textbooks during the exam. However, students may not use internet devices, including phones, laptops, tablets, etc.
 - Students found collaborating, plagiarizing, or otherwise cheating will receive an exam score of zero. For a more detailed description of cheating and plagiarism, please read the UWM guide for students copied at the end of this syllabus.

Small group discussion:

- **Content:** Small group discussions will focus on topics in an assigned reading. Students are expected to complete readings before the discussion. To assist discussion, students will worksheet or set of questions with their group members.
- **Format/grading:** All small group discussions will take place in-person. The small group discussion grade relies on student participation. Participation includes: completing assigned reading before the discussion, asking/answering questions, active discussion with your

group members, completing the assigned group activity, and potentially, presentation of your group's discussion to the class.

Attendance:

- To avoid a conflict with the attendance policy in our UWM COVID statement (see below), I will not grade student attendance. However, please consider that this is an interactive discussion-based course. (Why bother to enroll if not to attend?)

Graduate presentations:

- Graduate students enrolled in BIO SCI 498G will complete a 30-minute presentation on a primary research article. The instructor will provide additional assignment information. All students (graduate and undergraduate) are expected to attend the class meetings during graduate presentations.

Final Course Grade: ****Please read this before contacting instructor with questions ****

Final letter grades for the semester are determined based on a curve reflecting your performance relative to the rest of the class. In order to not reduce any student's grade, the curve will maintain a minimum grade as shown below.

92.5-100%	A	79.5-82.4%	B-	67.5-69.4%	D+
89.5-92.4%	A-	77.5-79.4%	C+	62.5-67.4%	D
87.5-89.4%	B+	72.5-77.4%	C	59.5-62.4%	D-
82.5-87.4%	B	69.5-72.4%	C-	Less than 59.4%	F

FAQs and UWM COVID syllabus statement

- I am sick and unable to attend a class meeting. What should I do?**
Contact me as soon as possible. To see and hear content from missed class meetings, students will have access to recorded sessions in Canvas. For those unable to participate in a small group discussion, I will assign a make-up assignment. Please read the UWM COVID statement below.
- I am sick and unable to take an exam. What should I do?**
Contact me as soon as possible. Please be aware that make-up exams may not have the same questions as those taken by the rest of your class. Please read UWM COVID statement below.
- I know I'll be absent for a future class meeting/exam. What should I do?**
If you will be absent for reasons other than illness, contact me at least 1 week before the meeting/exam. Please be aware that I cannot schedule a make-up exam to occur at a time earlier than the original exam. Make-up exams may not have the same questions as those taken by the rest of your class.
- I need an accommodation to successfully take the exams. What should I do?**
Please make requests for exam accommodations through UWM's Accessibility Resource Center. The **ARC website**: <https://uwm.edu/arc/>

UWM COVID syllabus statement

Below is an abbreviated UWM COVID syllabus statement. To read the full statement, please visit <https://uwm.edu/cetl/covid-19-syllabus-statements/>

Panther Community Health and Safety Standards

Students who test positive for/are diagnosed based on symptoms with COVID-19 should complete this form: https://cm.maxient.com/reportingform.php?UnivofWisconsinMilwaukee&layout_id=4.

Attendance Policy

Do not attend your in-person class if you have COVID-19, if you are experiencing symptoms consistent with COVID-19, if you have been in close contact with others who have symptoms, if you need to care for an individual with COVID-19, or have other health concerns related to COVID-19.

Students who miss class due to the above conditions will not be penalized for their absence and will not be asked to provide formal documentation from a healthcare provider.

If you are unable to attend class, take the following steps.

- Notify me in advance of the absence or inability to participate, if possible.
- Participate in class activities online and submit assignments electronically, to the extent possible.
- Reach out to me if illness will require late submission or other modifications to deadlines.
- If remaining in a class and fulfilling the necessary requirements becomes impossible due to illness or other COVID-related circumstances, contact me to discuss other options.

As your instructor, I will trust your word when you say you are ill, and in turn, I expect that you will report the reason for your absences truthfully.

Synchronous Online Class Recording

Our class sessions will be audio-visually recorded for students who are unable to attend in person and for students who are unable to attend at the scheduled time. Students who participate during an in-person class session are agreeing to have their audio/video or image recorded.

Web Links to University Policies and Resources

1. **Students with disabilities.** <http://uwm.edu/arc/>
2. **Religious observances.** <https://apps.uwm.edu/secu-policies/storage/other/SAAP 1-2. Accommodation of Religious Beliefs.pdf>
3. **Students called to active military duty.** <http://uwm.edu/active-duty-military/>
4. **Incompletes.** <https://apps.uwm.edu/secu-policies/storage/other/SAAP 1-13. Incomplete Grades.pdf>
5. **Discriminatory conduct.** Discriminatory conduct will not be tolerated by the University. <https://apps.uwm.edu/secu-policies/storage/other/SAAP 5-1. Discriminatory Conduct Policy.pdf>
6. **Title IX/Sexual Violence.** Title IX is a federal law that prohibits sex discrimination in education program or activities, and UWM policy prohibits such conduct. <https://uwm.edu/sexual-assault/>.
7. **Academic misconduct.** Cheating on exams or plagiarism are violations of the academic honor code and carry severe sanctions. <https://uwm.edu/deanofstudents/conduct/academic-misconduct/>
8. **Complaint procedures.** Students may direct complaints to the head of the academic unit or department in which the complaint occurs. <https://apps.uwm.edu/secu-policies/storage/other/SAAP 5-1. Discriminatory Conduct Policy.pdf>
9. **Grade appeal procedures.** <https://apps.uwm.edu/secu-policies/storage/other/SAAP%201-10.%20Grade%20Appeals%20by%20Students.pdf>
10. **LGBT+ resources.** <http://uwm.edu/lgbtrc/>
11. **Smoke and Tobacco-Free campus.** <https://apps.uwm.edu/secu-policies/storage/other/SAAP 10-8. Smoke and Tobacco-Free Campus Policy.pdf>

12. **Final Examinations.** [https://apps.uwm.edu/secu-policies/storage/other/SAAP_1-9. Final Examinations.pdf](https://apps.uwm.edu/secu-policies/storage/other/SAAP_1-9_Final_Examinations.pdf)

UWM Guide for Students

The guide below is from: http://uwm.edu/deanofstudents/conduct/conduct_procedures/academic-misconduct/. UWM expects each student to act with integrity in their academic performance. Failure to do so may result in discipline under rules published by the Board of Regents (UWS 14). The most common forms of academic dishonesty are cheating and plagiarism.

Academic integrity means honesty concerning all aspects of academic work. Students are encouraged to consult with faculty for:

- Correct procedures for citing sources of information, words, and ideas.
- Ways to properly credit collaborative work on projects or study groups.
- Strategies for planning and preparing for exams, papers, projects, and presentations.
- The appropriate means to report cheating when it is observed.

Cheating includes:

- Obtaining and using unauthorized material, such as a copy of an examination before it is given.
- Submitting material that is not yours as part of your course performance, such as copying from another student's exam, or allowing a student to copy from your exam.
- Using information or devices not allowed by the faculty; such as using formulas or data from a computer program, or using unauthorized materials for a take-home exam.
- Fabricating information, such as data for a lab report.
- Violating procedures prescribed to protect the integrity of an assignment, test, or other evaluation.
- Collaborating with others on assignments without the faculty's consent.
- Cooperating with or helping another student to cheat.
- Other forms of dishonest behavior, such as having another person take an examination in your place; or, altering exam answers and requesting the exam be re-graded; or, communicating with any person during an exam, other than the exam proctor or faculty.

Plagiarism includes:

- Directly quoting the words of others without using quotation marks or indented format to identify them; or,
- Using sources of information (published or unpublished) without identifying them; or,
- Paraphrasing materials or ideas of others without identifying the sources.

Internet Plagiarism

Students are responsible for abiding by the internet policies of UWM and the UW System. For more information, view the [Acceptable Use Policy for UWM](#).