

Course Title: Mechanistic Biology

Course Number: G303

Credits: 10

Course Directors: Mary Baylies, PhD

Course Prerequisites: Experimental Biology; Open to first year Cancer Biology PhD students only

Grading Policy: Letter Grade

Course Description and Learning Objectives

The objective of Mechanistic Biology is to teach what is understood about how cells are constructed and maintained and how groups of cells collaborate to achieve normal development. In this class a research paper is dissected every day with one of our GSK faculty members who is at the cutting edge of their research field.

Over 11 weeks the class will consider:

- Genome biology, gene expression, and proteins
- Cellular architecture: from the cytoskeleton to organelles
- Cell cycle control, cell division, and cell death
- Cell signaling
- Developmental Biology and Stem Cells.

Course Structure

The course meets daily from 9:30 am – 12:30 pm for eleven weeks. Changes to that schedule are posted on the course grid and communicated to students via email.

Teaching Fellows

Teaching Fellows, drawn from senior GSK students and the postdoctoral community at MSK, are present in the course sessions. Their role is to act as an additional source of information/assistance, to help keep the discussion sessions moving, to conduct a review session, and to observe and grade the students on their participation. Each Teaching Fellow covers about two weeks of the course. Additionally, the Teaching Fellows will prepare a minimum of 3 questions from their section for the student problem set.

Assignments and Methods for Assessing Student Achievement

Take Home Exams (67%)

Students will be evaluated on their grasp of the concepts learned in class by completing take-home problem sets. Each problem set will include 5 questions that are worth 20 points each. The questions will include cases studies or interpretation of journal articles.

Class Participation and Attendance (33%)

Each student will be responsible for presenting at least one journal article. They must highlight the relevant background of the paper and its importance and caveats. All other students are expected to have come to class having thoroughly read the pre-assigned journal articles. They

must also engage in the journal discussions by asking and answering relevant science questions.

All students are expected to attend the GSK Core Class regularly. A student must notify the Senior Registrar/Curriculum Specialist and teaching fellow prior to class if he or she is going to be absent. This notice should be sent by email to mcdonagd@sloankettering.edu. A student is allowed a total of 3 absences for all sections of the core course over the course of semester. Any absences in excess of 3 will result in 4 percentage points being subtracted from a student's participation grade PER ABSENCE.

Basis for Grade Determination

Students will receive a final letter grade based on their class participation (33%) and performance on the take home problem sets (67%). The final letter grade will be determined using the following grading scale:

Letter Grade	Range
A	85-100
A-	82-85
B+	78-81
B	75-77
B-	72-74
C+	68-71
C	65-67
C-	62-64
F	<62

The problem sets will be sent out via email before 3:00 pm on the date specified in the course schedule; they will be due 7 days later, by 3:00 pm. Late submissions may not be accepted and could impact the final grade for the course.

Course Evaluation

Students are expected to complete surveys regarding the lectures and overall course via their student portal. This feedback will be used to evaluate the effectiveness and relevance of the topics and provide direction for the subsequent iterations of the course.

Academic Dishonesty, Plagiarism and Artificial Intelligence

The Policy can be found in the [Student and Faculty Handbook](#) linked on the GSK Website.

Course Schedule

The course schedule can be found on Moodle.