Welcome to Bios 222, Cell Biology. Jacques Monod once said that “Anything found to be true of E. coli must also be true of elephants." He was referring to the fact that cells are the basic unit of life. But more importantly he was pointing out that many of the day-to-day operations of cells are carried out via the same chemical processes in all organisms using a genetic program that is shared by all living things. Of course there are exceptions and the living world continues to evolve. But that makes it all the more fascinating that so much has stayed the same. Unlike bacteria, where all the functions of life happen in a single cell, multicellular organisms divide up the responsibilities for life processes between cells that are so specialized they cannot function on their own. That requires precise coordination to enable an organism to function as an integrated unit. In this course we will cover the basic operations that are shared by all cells as well as the specialized adaptations of cells seen in multicellular organisms (mostly animals).

Our goal is to provide you with a fundamental background in modern cell biology. We will emphasize the thinking process in cell biology, including experimental concepts. Facts may be updated and technology may improve, but the scientific method will persist. If you have a basic understanding of how facts are obtained (experiments), you will be in a better position to acquire new knowledge. Topics related to cell biology appear in the news almost daily and what you learn in this course will help you to evaluate and judge new information as it appears. Prerequisite(s): BIOS 100 and CHEM 112 and CHEM 114

Instructors:

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Additional course materials: Lecture handouts and other supplementary instruction material will be posted on Blackboard prior to each lecture. It is important that you regularly visit the Bios 222 Blackboard site to obtain the most up-to-date information and announcements. Note that the prerequisites for this class are Bios 100, Chem 112, and Chem 114. Therefore, we assume that all students will be familiar with introductory biology and chemistry; this knowledge will be required for Bios 222.

Office hours: Questions that are likely to be shared by many class members should be asked in class, so everyone benefits from the answer. Dr. Warpeha and Dr. Dubreuil will also be happy to informally answer specific questions for a few minutes after lectures. Students may arrange office appointments with either instructor or the teaching assistant.
assistant during a mutually convenient time. Additional office hours will be established at the first class and then announced on Blackboard.

**Attendance:** Attendance is expected at all scheduled lectures. Exams will be based largely on material discussed in class.

**Electronics:** all electronics except calculators must be put away during exams.

**Exams and quizzes:** There will be a total of four exams and eight short-answer quizzes. Exams and quizzes will focus on material covered since the prior exam. Quizzes are “pop quizzes” with no set schedule. Exams will consist of multiple choice questions (which will be electronically graded) and short answer questions.

Missing an exam or quiz will result in a score of zero for that exam or quiz. There are no make up quizzes. Make-up exams may be given if the exam was missed due to illness, mandatory religious obligations recognized by UIC, or official pre-excused university activities. An official medical certificate or an affidavit will be required. If you miss an exam, or expect to, you must contact the instructor as soon as possible. If you have a question about your score or think a grading mistake has been made, you must contact course staff as soon as possible – ideally within a day or two after the grades are posted.

Students must bring their UIC iCard to each exam.

**Cheating:** We will not tolerate any cheating or dishonesty in this class. If caught the penalties for academic dishonesty can be severe, and may result in dismissal from the University. If cheating is suspected, grading of examinations and/or quizzes will be delayed and students will be referred to the Dean of Students office for adjudication.

**Students with disabilities:** Students with disabilities must inform the instructor of the need for accommodations. Those who require accommodations for access and participation in this course must be registered with the Disability Resource Center. Please contact ODS at 312/413-2183 (voice) or 312/413-0123 (TTY) to discuss accommodations for the course.

**Grading:** Each student’s final score will be computed from the points earned in four exams and eight quizzes. The exams will each comprise 20% of the final score and will not be cumulative. The four exams add up to 80% of the final class grade. We will drop the lowest quiz grade, the points from the remaining seven quizzes will make up 20% of the final grade.

Final grades for this class are curved, but historically break down to >85% = A; 75-84% = B; 65-74% = C; and 55 – 64% = D. However, a final curve will not be computed until after the last exam. It will be based on the final point totals of exams and quizzes. In general, students who receive a score at or near the class average receive a C.

**January 22, 2016** is the last day to complete late registration, add a course(s) or make section changes, drop individual courses via Student Self-Service, without receiving W (Withdrawn) grade on academic record, or submit a ‘Withdraw from Term’ request via Student Self-Service and receive 100% cancellation of tuition and fees. Students interested in these options should consult with an LAS College advisor (996-3366).
Schedule:

Jan 12  Introduction to course and cells  Chapter 1
Jan 14  Introduction to cell chemistry  Chapter 2
Jan 19  Energy in the cell  Chapter 3
Jan 21  Protein structure and function  Chapter 4
Jan 26  Proteins (continued)  Chapter 4
Jan 28  Membranes  Chapter 11
Feb. 2  Membranes (continued) / Review
Feb 4  EXAM 1
Feb 9  Membrane transport  Chapter 12
Feb. 11  Energy from food  Chapter 13
Feb. 16  Mitochondria, energy production and ATP  Chapter 14
Feb 18  Photosynthesis and energy production
Feb. 23  Cytoskeleton structure and function  Chapter 17
Feb. 25  Cytoskeleton: Microtubules  Chapter 17
March 1  Cytoskeleton: Actin/review
March 3  EXAM 2
March 8  Intracellular compartments and transport  Chapter 15
March 10  Intracellular compartments and transport  Chapter 15
March 15  Cell Communication/signaling  Chapter 16
March 17  Cell Communication/signaling  Chapter 16
March 22  SPRING BREAK
March 24  SPRING BREAK
March 29  Cell Communication/signaling  Chapter 16
Mar 31  Tissues and cellular interactions  Chapter 20
April 5  EXAM 3
Apr  7  Cell cycle  Chapter 18
Apr 12  Cell cycle  Chapter 18
Apr 14  Regulation of proliferation  Chapter 18
Apr 19  Regulation of proliferation  Chapter 18
Apr 21  Programmed cell death  Chapter 20
Apr 26  Cancer biology  Chapter 20
Apr 28  Cancer biology  Chapter 20
May 4-8  Final Exam (During final exam week - exact date and time will be announced later)

Note: Jan. 12 – Mar 3: Dr. Dubreuil;  Mar 8 – May 8: Dr. Warpeha