



**Bio 272: CELL & MOLECULAR BIOLOGY**  
**Fullerton College, Fall 2017**  
**Jo Wen Wu, Ph.D.**

CRN 11002 meets Mon Wed 7:30 am – 10:30 am.  
 CRN 11004 meets Mon Wed 10:50 am – 1:50 pm.

Wk	Date	Lecture Topic (Chapter)	Laboratory	Quiz
1	Aug 28	Nature of Molecules (2) Chemical Building Blocks (3)	Wed: Micropipettes, Serial Dilutions	Background Survey Functional Groups Carbohydrates
2	Sep 4	<b>Sep 4: No School</b> Microscopes and Cell Structure (4) <b>Sep 10: Deadline to Drop w/o "W"</b>	No Lab	Amino Acids
3	Sep 11	Membranes & Cell Transport (5) Enzymes (6)	Wed: Membrane Diffusion Project	Mitosis
4	Sep 18	<b>Wed: EXAM 1</b>	Mon: Microscopy Measurements	Meiosis
5	Sep 25	Chromosomes (13) DNA & RNA (14)	Wed: HeLa Chromosomes Student Presentations	Cell Cycle Genetics Problems
6	Oct 2	Protein Synthesis & Sorting (15) Biotechnology (17)	Genetic Engineering Project	DNA / RNA
7	Oct 9	<b>Wed: EXAM 2</b>	DNA Gel Electrophoresis and Analysis	Mutations Protein Sorting
8	Oct 16	Genetics (12)	<i>Genetics Problem Solving</i>	Biotechnology
9	Oct 23	Jo Wu at conference)	Lab Solution Calculations	
10	Oct 30	How Cells Divide (10) and Regulation (10B)	Student Presentations	Enzymes CoTransport
11	Nov 6	Sexual Reproduction and Meiosis (11) <b>EXAM 3</b>	Protein Extraction and Quantitation	
12	Nov 13	How Cells Obtain Energy (7)	Wed: Protein Purification by Chromatography	
13	Nov 20	How Cells Obtain Energy (7) Photosynthesis (8) <b>Nov 19: Deadline to Drop with "W"</b>	Wed: Enzyme Kinetics Project	
14	Nov 27	Cell Communication (9)	Analysis of Data Graphs	
15	Dec 4	<b>Wed: EXAM 4</b>	Mon: Microdissection and Prep of Drosophila Chromosomes	
16	Dec 11	<b>Wed: Cumulative Final Exam</b>	Mon: Lab Exam, Student Presentations	

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Office: Rm 411-11,

Office Phone: 714-992-7459

**Study Sessions and Appointments (tentative):** M W 2-5 pm, Room TBA

<http://www.signupgenius.com/go/5080e4eada82ea64-study>





## **Bio 272: CELL & MOLECULAR BIOLOGY**

**Fullerton College**

**Jo Wen Wu, Ph.D.**

**Fall 2017 Syllabus (Aug 28- Dec 16)**

### **CONTACT INSTRUCTOR**

**Jo Wen Wu, Ph.D.**, Fullerton College, 321 East Chapman Ave, Fullerton, CA 92832-4055.

Office: 411-11 (first floor, southeast corner of Science building)

**Email:** [jwu@fullcoll.edu](mailto:jwu@fullcoll.edu) with subject: Bio 272.

Voice messages: 714-992-7459.

**Make Appointments at** <http://www.signupgenius.com/go/5080e4eada82ea64-study>

(or use this QR code)



### **COURSE DESCRIPTION:**

Three hours of lecture/discussion and three hours of lab per week. Integrated lectures and labs are designed to 1) develop a strong foundation in biological facts, concepts, and theoretical models, 2) extend the student's ability to solve scientific problems through data collection and analysis, and 3) provide training in a variety of laboratory techniques and instrumentation used in modern biology. Discussion topics which are supported by laboratory experiences include (a) the molecular basis of life, (b) gene expression, (c) cell structures, (d) enzyme kinetics, (e) cell cycle regulation, and (f) classic genetics. Designed for Biological Sciences majors in transfer programs. (CSU) (UC) (Degree Credit) CSU GE, IGETC

### **STUDENT LEARNING OUTCOMES:**

Upon successful completion of BIOL 272 F Cellular and Molecular Biology, the students will be able to

- demonstrate an understanding of the major concepts in cell and molecular biology, and the experimental approaches taken to address them.
- design, perform and analyze simple experiments in cell and molecular biology.

### **COURSE OBJECTIVES:**

Upon completion of this course, the student will be able to:

- A. Demonstrate an understanding of major concepts in cell biology, molecular biology, and biochemistry by providing clear diagrams and written explanations.
- B. Relate the structures and functions of cellular components.
- C. Demonstrate an understanding of how cellular components interact.
- D. Relate cellular processes to organismal physiology.
- E. Differentiate and explain the metabolic pathways of how energy is used and generated in cells.
- F. Formulate and synthesize the concept of a functional cell including molecular components and key cell processes.
- G. Apply the course concepts to medical conditions and societal concerns.
- H. Apply the scientific method to biological questions, which includes generating hypotheses and designing experiments.
- I. Design, set up and conduct experiments.
- J. Generate data, create data sets, graph appropriately and objectively analyze data.
- K. Evaluate the results of experiments.

### **REQUIRED MATERIALS:**

- Textbooks (I use a variety of sources, I will have a couple of textbooks available to loan)
- Main Textbook = Biology, 10<sup>th</sup> ed (Raven) – same as the Bio 170 textbook
- Suggested = World of the Cell (Becker) OR Essential Cell Biology or Molecular Biology of the Cell (Alberts)
- Lecture powerpoint handouts will be available on MyGateway for your convenience.
- Lab instructions will be available on MyGateway – print a paper copy or use an electronic file in lab
- Lab composition book, calculator, ruler, pen, optional color pencils, USB Flash drive, scantron #882
- Access to email, internet, Word, Excel, Powerpoint, Team laptop computer (install LoggerPro, Cnd3, Image J)

## CLASS FORMAT:

Classes will vary between 3-hour labs, lectures, or a combination of both. You are expected to wear closed-toe shoes EVERYDAY, just in case we have to adjust the lab schedule. You will be asked to leave the classroom (and lose class points) if you are wearing flip-flops.

This course requires much conceptual understanding and critical thinking applications of the material, not just straight memorization. I reserve the right to make minor adjustments to assignments during the semester.

**BIO 272 COURSE GRADE:** Course grade is compiled from both lecture and lab activities.

**GRADING SCALE: A > 90%; B > 80%; C > 70%; D > 60%.**

Category	Total
Exams	900
Quizzes & Problem Sets (best 10)	100
Lab Participation & Notebook	100
Lab Skills, Lab Reports, Powerpoint	100
<b>TOTAL</b>	<b>1200 points</b>

- **LECTURE PORTION OF COURSE:** As I will be using materials, figures and examples from several textbooks, be sure to come to lectures and take your own detailed notes. Lecture powerpoints are available to download and print.
- **EXAMS** (Unit 1 is worth 100 pts, all other exams are 200 points):
  - Unit exams consist of multiple-choice, data analysis, diagram drawings and essay questions. Essays are written in ink but drawings can be in pencil.
  - The required cumulative final exam is composed of factual, conceptual and application problems from lecture material, as well as lab equipment rules and data interpretations.
  - If you have a verifiable absence (funeral notice, hospital admission slip, police report, etc.), then you will be allowed to take one exam as arranged.
  - Bring photo ID, calculator, pen, pencil, and good eraser to every exam.
- **QUIZZES and PROBLEM SETS (10 points each, top 10 scores):** Quizzes will be given in various formats. If you are not in class during the quiz, you will not receive a quiz score.
- **LAB NOTEBOOK will include PARTICIPATION and DATA ANALYSIS:** You must show me your lab data for the day (be written out in pen) and get my signature at the end of every lab period to get lab participation points. There are no make up lab experiments, unless you can attend the other lab section on the same day. Lab notebook may help determine your course grade if you are on the borderline. **LAB PENALTY:** Penalty points are deducted for not wearing appropriate close-toe shoes, safety violations and for not following directions.
- **LAB SKILLS (5 points each)** You will be tested for hands-on mastery of specific techniques - including micropipetting accuracy, loading sample into agarose gel electrophoresis system, using cuvettes and digital spectrophotometer, focusing a slide on compound light microscope at high power, measuring cells with microscope ocular scale and micrometers, making solutions, conducting protein concentration assay, making and interpreting standard curves, purifying protein by column chromatography, and accuracy of serial dilutions.
- **POWERPOINT:** You will be required to research a current news story related to course topics, prepare a Powerpoint (5-10 slides) and present to the class. Your presentation date will be chosen by lottery during the first week.
- **EXTRA CREDIT: A maximum of 20 bonus points can be counted towards your course grade. This includes** answering exam bonus questions, winning class games, attending study sessions, seminars and workshops.
- **CHEATING:** Cheating (as defined by Dr. Wu) is using someone else's work as your own, using unauthorized materials during exams, stealing papers for others to use, or sharing your exams/written work with others. If you turn in someone else's work (even portions), then you both get zero for that assignment. For anyone caught cheating, stealing and copying on exams --- the least severe punishment is immediate failure from the course. Depending on how elaborate your cheating scheme is, you may be expelled from Fullerton College and have this incident marked on your college transcript.

## **CAMPUS POLICIES**

### **STUDENT RIGHTS AND RESPONSIBILITIES:**

Students are expected to be knowledgeable of the guidelines, policies and procedures in the [2016-2017 Fullerton College Catalog \(PDF 4.84 MB\)](#), which can be downloaded at <http://www.fullcoll.edu/catalog>. Only a few policies are listed here. All pages refer to the 2016-2017 catalog.

### **ABSENCES:**

While an instructor may drop a student who has poor attendance, if a student wishes to drop a class, it is the student's responsibility to log onto MyGateway and drop. Failure to officially withdraw from a class may result in a grade of "F," or "NP" being assigned.

### **ACADEMIC HONESTY POLICY AND STANDARDS OF STUDENT CONDUCT AND DISCIPLINE POLICY:**

Fullerton College has specific policies regarding academic dishonesty (cheating, misconduct, plagiarism, and collusion). The policies may be found on page 26 of the [2016-2017 catalog](#) and **will be strictly enforced at all times**. In many cases, academic dishonesty will result in failing the course, a documented proof placed in your academic records, and your name and infraction reported to the appropriate administrators. Moreover, academic dishonesty may ultimately result in expulsion from the College.

All students are expected to adhere to the Standards of Student Conduct and Discipline Policy as described on page 30 of the [2016-2017 catalog](#) at all times. The Standards of Student Conduct and Discipline Policy **will be strictly enforced at all times**. In accordance with the requirements for due process of law, the College shall follow the established procedures as outlined, including but not limited to removal, suspension, or expulsion.

### **AMERICANS WITH DISABILITIES ACT (ADA) STATEMENT:**

Fullerton College is committed to providing educational accommodations for students with disabilities upon the timely request by the student to the instructor. Verification of the disability must be provided. The Disability Support Services office functions as a resource for students and faculty in the determination and provision of educational accommodations.

### **DISABILITY SUPPORT SERVICES (DSS):**

Any student who feels he or she may need an academic accommodation based on the impact of a disability should discuss this with the instructor and contact Disability Support Services at 714-992-7099 or visit DSS in Room 842 of Building 840. The services provided by DSS are described on page 40 of the [2016-2017 catalog](#). To ensure the health and safety of all students, those who feel they may need evacuation assistance in the event of an emergency should speak with the instructor as soon as possible.

### **EMERGENCY RESPONSE:**

If required to evacuate a classroom/building, the instructor will lead you to a clear and safe area away from the building. Take all personal belongings with you. During some emergencies, it may be necessary to stay inside the classroom. If this is required, please remain seated and listen to the instructor. Please maintain order during any emergency, and always look out for your own safety and the safety of your classmates.

### **STUDENT WAIT TIME FOR INSTRUCTOR**

If the instructor, due to unforeseen emergencies, does not arrive at the scheduled start time for class, students are to remain in class for fifteen minutes, unless otherwise notified by the Division. If you do not receive notification to wait for your instructor to arrive, you may leave after fifteen minutes with no penalty for absence or assigned work due for that class.

## **CAMPUS SUPPORT SERVICES**

### **ACADEMIC SUPPORT CENTER:**

The Academic Support Center at Fullerton College offers various forms of services to students including free tutoring, workshops, group tutoring, writing consultation, and computer access to assist students in their academic development and success. The Academic Support Center includes three centers located in the LLRC, each designed to address specific student needs. The Math Lab is also available in the LLRC and provides similar services for students directed at Math.

Math Lab	Room 807	(714) 992-7140	<a href="http://math.fullcoll.edu/mathlab.html">http://math.fullcoll.edu/mathlab.html</a>
Skills Center	Room 801	(714) 992-7144	<a href="http://skills.fullcoll.edu/">http://skills.fullcoll.edu/</a>
Tutoring Center	Room 806	(714) 992-7151	<a href="http://tutoringcenter.fullcoll.edu/">http://tutoringcenter.fullcoll.edu/</a>
Writing Center	Room 801	(714) 992-7153	<a href="http://writingcenter.fullcoll.edu/">http://writingcenter.fullcoll.edu/</a>

**ASSOCIATED STUDENT CARE BANK**, (714) 992-711

**CAREER AND LIFE PLANNING CENTER**, <http://careercenter.fullcoll.edu>

**CAMPUS SAFETY PHONE NUMBER:** Call 714-992-7080 to contact Campus Safety. During an emergency dial 714-992-7777. There are many Emergency Phones throughout the campus that will immediately connect with a Campus Safety Officer. Feel free to ask for escort to the parking lots during evening hours.

**COMPUTER LABS:** <http://fcnet.fullcoll.edu/complabs.htm>

Use your FCnet account information to log in. You will need to purchase Printing Credit at the FC Bookstore and show your receipt, so that you can print in the computer labs.

**EXTENDED OPPORTUNITY PROGRAM AND SERVICES (EOPS):** <http://eops.fullcoll.edu/>

The Extended Opportunity Program & Services (EOPS) is dedicated to recruit and successfully retain college students of educationally and socioeconomically disadvantaged backgrounds.

**FC FOUNDATION:** <http://www.fullertoncollegescholarships.com/>

Apply for scholarships and grants for continuing and transfer students from November to February. Please note that there are general scholarships awarded by the Foundation Office and others awarded by FC Divisions (to their majors).

**FOOD BANK.** <http://fcoodbank.fullcoll.edu/>

**LIBRARY:** 714-992-7039 <http://library.fullcoll.edu/>

You will need a current campus ID to check out library books.

**TEACHER PREPARATION,** <http://teacherprep.fullcoll.edu>

**TRANSFER ACHIEVEMENT PROGRAM.** [Tap.fullcoll.edu/](http://Tap.fullcoll.edu/)

**TRANSFER CENTER** (<http://transfer.fullcoll.edu/>) and **CADENA CULTURAL CENTER:** <http://cadena.fullcoll.edu/>

These two centers provide services that enhance awareness of campus diversity, facilitate transfer to colleges and universities, and promote student development and lifelong learning. Check the calendar often for special events, application deadlines, workshops, and visits with university representatives.

**TUTORING AND SUPPLEMENTAL INSTRUCTION.**

- FC Tutoring Center in room 806 (walk-in and by appointment) <http://tutoringcenter.fullcoll.edu/>
- Science PAL for Biology, Chemistry, Physics in room 415-P (schedule posted at <http://http://goo.gl/8R4nHw>)
- Online 24/7 tutoring (5 hours per term) <http://tutoringcenter.fullcoll.edu/>

**UMOJA PROGRAM,** <http://umoja.fullcoll.edu>

**VETERANS RESOURCE CENTER,** Room 518: <http://veterans.fullcoll.edu/>



## BIO 272 Weekly Study Plan

Name:

Email:

Cell Phone for Texts:

Did you submit the Bio 272 Fall 2017 Background Survey already at <https://goo.gl/forms/8P00P2ECNKetLsZT2?>

**Please fill in the courses that you are taking this term and the hours that you work.**

**Mark all of the study hours for each class (need 2 hours for each 1 hour lecture).**

**Highlight the hours that you plan to study for Bio 272.**

	MON	TUES	WED	THUR	FRI	SAT	SUN
5 am							
6 am							
7 am							
8 am							
9 am							
10 am							
11 am							
12 noon							
1 pm							
2 pm							
3 pm							
4 pm							
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