

## BIOLOGY OF HUMAN CANCER -- MCB 132 – FALL 2019

Three hours of lecture and one hour of discussion per week [4 units]  
Prerequisites: Biology 1A, 1AL, 1B, MCB102 (or 100A or CHEM135).  
May be taken concurrently: MCB104 or MCB110.

### Lectures:

Tu, Thu 2:00 - 3:30 PM, **100 GPBB**

**Discussion sections:** (Note: no discussion sections first week)

|                             |                              |
|-----------------------------|------------------------------|
| 101: Mon 1:00PM - 2:00PM    | 175 Barrows (Annika)         |
| 102: Mon 2:00PM - 3:00PM    | 30 Wheeler (Annika)          |
| 103: Tues 10:00AM - 11:00AM | 150D Moffitt Library (Jesse) |
| 104: Tues 11:00AM - 12:00PM | 124 Wheeler (Jesse)          |
| 105: Wed 9:00AM - 10:00AM   | 83 Dwinelle (Tim)            |
| 106: Wed 10:00AM - 11:00AM  | 179 Dwinelle (Tim)           |

### Web-site:

<http://bCourses.berkeley.edu>. Log on with your CalNet ID and click the MCB 132 Fall2019 tab.

### Text:

The Biology of Cancer, R.A. Weinberg, 2nd edition (Garland Science, 2014)

### Instructors:

#### **Michel DuPage**

Office hour location: 347 LSA

Phone: 664-5085

e-mail: [dupage@berkeley.edu](mailto:dupage@berkeley.edu)

Office Hours: Tuesdays 3:30 - 5 PM (or by appointment)

#### **Kunxin Luo**

Office hour location: LKS 1st floor lobby

Phone: 643-3183

e-mail: [kluo@berkeley.edu](mailto:kluo@berkeley.edu)

Office Hours: Thursdays 3:30 - 5 PM (or by appointment)

#### **Lin He**

Office hour location: LKS 1st floor lobby

Phone: 642-9562

e-mail: [lhe@berkeley.edu](mailto:lhe@berkeley.edu)

Office Hours: Thursdays 3:30 - 5pm (or by appointment)

### GSIs:

Annika Martin

e-mail: [annika\\_martin@berkeley.edu](mailto:annika_martin@berkeley.edu)

Office Hours and location: Thursdays 12:30PM- 2PM; LKS 1st floor lobby

Timothy Campbell

e-mail: [tcampbell@berkeley.edu](mailto:tcampbell@berkeley.edu)

Office Hours and location: Tuesdays 12 PM – 2PM; LKS 1st floor lobby

Jesse Garcia Castillo

email: [jesse\\_garciacastillo@berkeley.edu](mailto:jesse_garciacastillo@berkeley.edu)

Office Hours and location: Mondays 10AM – 12 PM; LKS 1st floor lobby

**MCB 132 – FALL 2019 – SCHEDULE**

| Wk | Date       | Lec | Lecturer | Topic  | Textbook Chapter |
|----|------------|-----|----------|--|------------------|
| 1  | Thu Aug 29 | 1   | LH       | Introduction to cancer                           | 2                |
| 2  | Tue Sept 3 | 2   | MD       | Experimental approaches to cancer                | 2                |
|    | Thu Sept 5 | 3   | MD       | Tumor viruses                                    | 3                |
| 3  | Tue Sep 10 | 4   | MD       | Oncogenes I                                      | 4                |
|    | Thu Sep 12 | 5   | MD       | Oncogenes II                                     | 4                |
| 4  | Tue Sep 17 | 6   | MD       | Growth factors and their receptors               | 5                |
|    | Thu Sep 19 | 7   | MD       | Ras and Growth factor receptor signaling         | 5, 6             |
| 5  | Tue Sep 24 | 8   | MD       | Cancer and DNA tumor viruses                     | 3                |
|    | Thu Sep 26 | 9   | KL       | Tumor suppressors I                              | 7                |
| 6  | Tue Oct 1  |     |          | MIDTERM 1  |                  |
|    | Thu Oct 3  | 10  | KL       | Tumor suppressors II                             | 7                |
| 7  | Tue Oct 8  | 11  | KL       | Cell cycle regulation; Rb; the restriction point | 8                |
|    | Thu Oct 10 | 12  | KL       | P53  | 9                |
| 8  | Tue Oct 15 | 13  | KL       | Regulation of apoptosis                          | 9                |
|    | Thu Oct 17 | 14  | KL       | Telomeres and telomerase                         | 10               |
| 9  | Tue Oct 22 | 15  | KL       | Genomic instability I                            | 12               |
|    | Thu Oct 24 | 16  | KL       | Genomic instability II                           | 12               |
| 10 | Tue Oct 29 | 17  | LH       | Tumor progression I                              | 11               |
|    | Thu Oct 31 |     |          | MIDTERM 2  |                  |
| 11 | Tue Nov 5  | 18  | LH       | Tumor progression II                             | 11               |
|    | Thu Nov 7  | 19  | LH       | Cancer Stem Cells                                | 11               |
| 12 | Tue Nov 12 | 20  | LH       | Tumor invasion and metastasis I                  | 14               |
|    | Thu Nov 14 | 21  | LH       | Tumor invasion and metastasis II                 | 14               |
| 13 | Tue Nov 19 | 22  | LH       | Tumor stroma interaction                         | 13               |
|    | Thu Nov 21 | 23  | LH       | Cancer therapy I                                 | 16               |
| 14 | Tue Nov 26 | 24  | LH       | Cancer therapy II                                | 16               |
|    | Thu Nov 28 |     |          | THANKSGIVING                                     |                  |
| 15 | Tue Dec 3  | 25  | MD       | Tumor immunology and immune therapy I            | 15               |
|    | Thu Dec 5  | 26  | MD       | Tumor immunology and immune therapy II           | 15               |
| 16 | Dec 9 - 13 |     |          | REVIEW WEEK                                      |                  |
|    | Tue Dec 17 |     |          | FINAL EXAM (9:00 AM - 11:00 AM )                 |                  |

## MCB 132 - GRADING AND COURSE POLICIES - FALL 19

### GRADING

#### 1. Midterms and Final

**Midterm 1** will have questions based on material covered in Lectures 1 - 8. It will be worth **110 points**.

**Midterm 2** will have questions based on material covered in lectures 9 - 16. It will be worth **120 points**.

Midterm 1 and Midterm 2 will be held during normal class hours.

The **final examination** is **NOT** accumulative and will be worth **130 points** (materials covered in lectures 17-26).

The final will be held on **Tuesday December 17** (9:30-11:00 am). Please check the "schedule of classes" for location. **We cannot reschedule the final for students who have other exams on the same day: so check the final exam calendar in the online schedule .**

### ADVICE FROM INSTRUCTORS

A biochemistry/molecular course, either MCB 102, MCB100A or Chem135 is required and must be completed before enrolling in MCB132 this semester. MCB104 or MCB 110 may be taken concurrently.

This is a challenging course. The single most important element in doing well with this material is keeping up to date. Reviewing your notes before the next lecture and looking at the assigned reading the same day as the lecture has proven to make an enormous difference in the final result. Do not hesitate to ask the instructors questions. Reviewing the material only before exams is a very poor strategy, since each lecture in turn uses the material in previous lectures. Since we assume you have mastered the previous material, it is easy to get left behind.

PLEASE ASK QUESTIONS IN SECTION AND OFFICE HOURS. We will be happy to answer them. The best time to ask them is after reviewing your notes just after each lecture. Email should only be used for administrative purposes.

### COURSE MECHANICS

1. **No electronics during lectures:** We do not allow the use of laptop, iPhone, iPad or other electronic devices in the classroom during lectures. The lecture slides will be available prior to the lectures as PDF files on the bCourse website. You can print them out and bring to the lecture if you wish.

2. **Missed midterms:** The two Midterms and the Final are on announced firm dates. Grades will be posted as soon as possible in announced locations. **There are no make-ups for any of the midterms or final. Students will not be penalized for missing midterms if BOTH of the following conditions are met:**

a. The student makes the request in writing, no later than 2 days after the date of the midterm, and provides acceptable reasons for missing the exam. The request should be supported by appropriate documentation, eg a doctor's note. Examples of acceptable excuses for a missed examination are serious illness or accident or a serious illness or death in the immediate family. **You should NOT schedule professional or medical school interviews on midterm dates. Attending a sport event, family activities or a wedding is not an acceptable excuse.**

b. The midterm that was missed is completed satisfactorily as a take-home problem set, which can be completed with the aid of notes and texts. This will be due in the hands of the relevant instructor no later than 5 p.m. of the third day after the midterm was given. To be completed satisfactorily, the student's score on the take-home test must be at or above the class median for the examination. If the exam is completed satisfactorily and the excuse was acceptable, the missed exam will not count against the student's final grade, i.e. the student's final grade in the course will be based on his/her performance on the other midterm and the final examination. If the missed exam is not completed satisfactorily as a problem set, or if the excuse was not acceptable, a score of zero will be assigned, and this zero score will be averaged with the student's scores on the other examinations when the final grade is determined.

An incomplete will be granted if the final is missed for an acceptable and documented reason and if the student is performing at the passing level or better.

**A student is only permitted to miss one midterm at most. The final exam cannot be missed (no take-home option available).**

3. **Grading system:** We will use a hybrid between standards-referenced grading (absolute grading) and norm-referenced grading (grading on a curve), and a letter grade is assigned based on the total scores of two midterms and the final exam. Historically, approximately 28% of the students received As, 30-35% Bs, 30-35% Cs, and 10% D-F.

4. **Regrading:** The Midterms will be handed back and may be subject to regrading if substantial errors are found. Midterms must be completed in ink. Contact your GSI, and only during his/her office hours, with your request for regrading of questions. All requests must be submitted in writing with a detailed explanation of the specific questions and items you are contesting. You should be aware that other questions may be regraded and that your score could therefore decrease. The final exam cannot be regraded. Midterms are routinely xeroxed before they are handed back and if an alteration is found on an exam question for which regrading is requested, the student will automatically be assigned a zero for that entire test and the Office of Student Conduct will be notified. Copying another's answers during an exam and other forms of cheating will result in the same penalties. The Final cannot be handed back as it is part of your record, but can be examined on request the next semester.

5. **Incompletes:** See Professor He as soon as possible if you wish to request an incomplete. These requests are rarely granted and only for exceptional cases of prolonged illness or truly exceptional family emergencies that extend over long periods of time. An incomplete will also be given if a student is unable to attend the final exam because of an incapacitating illness or accident or a serious illness or death in the immediate family. Documentation will be required for all such requests. An incomplete can only be assigned if the work that has been completed is of passing quality. If an incomplete has been granted you can obtain an "I" Grade Report Form and instructions on their use from the staff in 2083 VLSB.

6. **Letters of recommendation:** Any of the three instructors may be approached for a letter of recommendation and are willing to provide a written evaluation for this purpose. So that we may prepare effective evaluations we ask that you follow the procedure outlined here. Be sure to attend at least 2 of the instructor's office hours. In addition, ask your GSI to write a draft letter and email it to the instructor. Please send a copy of your complete transcript, your CV (resume), your statement of purpose, the signed career center confidentiality waiver form, and any recommendation forms that need to be completed to the GSI. You must waive the right of access to the letter.

7. **Testing accommodations:** Students with disabilities who wish to request testing accommodations should make their request to the Disabled Students' Program (DSP) as early as possible in the semester, so that we can make appropriate proctoring arrangements. It may not be possible to honor requests made at the last minute.

## **8. Safe, Supportive, and Inclusive Environment**

Whenever a faculty member, staff member, post-doc, or GSI is responsible for the supervision of a student, a personal relationship between them of a romantic or sexual nature, even if consensual, is against university policy. Any such relationship jeopardizes the integrity of the educational process.

Although faculty and staff can act as excellent resources for students, you should be aware that they are required to report any violations of this campus policy. If you wish to have a confidential discussion on matters related to this policy, you may contact the Confidential Care Advocates on campus for support related to counseling or sensitive issues. Appointments can be made by calling [\(510\) 642-1988](tel:5106421988).

The classroom, lab, and work place should be safe and inclusive environments for everyone. The Office for the Prevention of Harassment and Discrimination (OPHD) is responsible for ensuring the University provides an environment for faculty, staff and students that is free from discrimination and harassment on the basis of categories including race, color, national origin, age, sex, gender, gender identity, and sexual orientation. Questions or concerns? Call [\(510\) 643-7985](tel:5106437985), email [ask\\_ophd@berkeley.edu](mailto:ask_ophd@berkeley.edu), or go to <http://survivorsupport.berkeley.edu/>.