

BIOLOGY 1B COURSE SYLLABUS – Fall 2019

Course Description: This course is a general introduction to organismal diversity, ecology, and evolutionary biology. It is intended for students majoring in the biological sciences, but it is open to all qualified students. Students must take both Biology 1B and 1A/1AL to complete the General Biology sequence. Either course can be taken first or second.

Course Website: <http://ib.berkeley.edu/courses/bio1b/> This website contains lecture and lab schedules and contact information.

bCourses: Lecture schedules and readings, and pre-lab readings and assignments, are posted to the Files section of the course bCourses site. Grades and important announcements will also be posted to bCourses. Please make sure your personal bCourses settings are configured to receive announcements by email. Check the bCourses homepage for important links and information.

Lectures: Monday, Wednesday, Friday 8-9 AM in 2050 VLSB. Lecture is simulcast in the adjacent rooms 2040 and 2060 VLSB. Please use side rooms if you arrive late or if there are no more seats available in 2050. All students enrolled in Biology 1B, regardless of lecture section, are encouraged to find a seat in 2050 VLSB. Lecture points include three midterms and the cumulative final exam. Lecture exam points are 60% of the overall course grade.

Labs: Concurrent enrollment in one four (4) hour laboratory section per week is required. There will be 11 lab sessions this semester. Weekly lab quizzes (lowest dropped) and assignments are 40% of the overall Biology 1B grade.

Do not enroll in other courses scheduled for the same time as Biology 1B lecture, labs, or exams. Lab attendance is mandatory. Exams will not be offered at any time other than the published exam times. See the list of exam dates on the course site and in bCourses.

Professors: *All office hours are on the course calendar and are held in 2011 VLSB. Check the online calendar for times.*

- Mary Power (Ecology), email: mepower at berkeley dot edu
- John Huelsenbeck (Evolution), email: johnh at berkeley dot edu
- Bruce Baldwin (Organismal Biology), email: bbaldwin at berkeley dot edu

Course Contacts:

Academic Coordinator (academic issues, lab concerns):

- Joshua Povich, email: Biology1B at berkeley dot edu

Administrative Coordinator (enrollment, lab attendance, student athletes, DSP):

- Brett Boltz, email: Biology1B at Berkeley dot edu

Contact Course Coordinators or see course bCourses site for full course policies.

Ecology lectures, Bio 1b, Fall 2019: Mary Power, Instructor, Aug. 28-Sept. 27

In the Ecology section of Bio1b, we will explore spatial and temporal variation in Earth's environments, how plants, animals and microbes respond to and affect this variation, and how webs of the direct and indirect interactions linking biota and physico-chemical factors manifest as "ecosystems". We will study species interactions, including competition, predation, parasitism, mutualism, and indirect interactions mediated through interaction webs. We will look at how the study of ecology can inform us about environmental consequences of land and water use, climate change, population growth, and other important topics we hear about in the news every day.

Ecology Lecture – Date Topic

Readings in Campbell Biology 10th and 11th editions

1) Wednesday 8/28 Questions and methods in scientific ecology

- Sections 1.1 - 1.3, Unit 8 Researcher profile 11th edition version
- start of Chapter 52 up to (but not including) Section 52.1, and
- "Dispersal and Distribution" from 52.4 to the end of Chapter 52, including the Chapter Review

2) Friday 8/30 Large scale patterns of ecological control: Climate, microclimates and biome Sections 52.1 – 52.3

Monday 9/2: Labor Day holiday – No lecture

3) Wednesday 9/4 Conditions and resources for life in aquatic and terrestrial habitats Sections 52.4 – 52.5

4) Friday 9/6 Organismal ecology: behavior, movements, life histories and habitat selection Section 53.4

5) Monday 9/9: Population ecology Sections 53.1 – 53.3

6) Wednesday 9/11: Factors that limit or regulate populations – Section 53.5 to the end of Chapter 53, including the Chapter Review

7) Friday 9/13: Species interactions: competition, predation, parasitism, herbivory, detritivory and mutualism – Start of Chapter 54 – Section 54.1

8) Monday 9/16: Ecological communities: Food webs, food chains and species interaction strength Section 54.2

9) Wednesday 9/18: Disturbance and succession Section 54.3

10) Friday 9/20: Biogeography and spatial ecology – Section 54.4 to the end of Chapter 54, including the Chapter Review

11) Monday 9/23 Ecosystem ecology: Energy flow and material cycling – Start of Chapter 55 – Section 55.4, and 56.4)

12) Wednesday 9/25 Ecosystem state changes and global change Section 55.5 through the end of Chapter 55

Ecology Lecture Review – TBA

13) Friday 9/27 Global change ecology – Chapter 56, including the Chapter Review (on Final Exam, but not on Midterm))

Friday 9/27, 7PM, Midterm 1 – Ecology, Locations TBA

Evolution lectures, Bio 1b, Fall 2019: John Huelsenbeck, Instructor, Sept. 30 – Oct. 30

Office Hours: MWF 9:00–10:00AM, 2011 VLSB

NOTE: Dates below may not be accurate due to cancelations and the adjusted schedule. Please follow the lecture numbers to match with posted lecture notes. Match to the webcast by counting from the first (9/30) lecture).

*Suggested readings are from *Campbell Biology*, 10th and 11th Editions.

Date	Lecture Title	Suggested reading*
9/30/19 (M)	Lecture 1: Darwin and the <i>Origin</i> I	Ch. 22
10/2/19 (W)	Lecture 2: Darwin and the <i>Origin</i> II	
10/4/19 (F)	Lecture 3: Population Genetics I	Ch. 14–16, 21, 23
10/7/19 (M)	Lecture 4: Population Genetics II	
	Lecture 5: Population Genetics III	
	Lecture 6: Natural Selection	
	Lecture 7: Phylogenetics I	Ch. 26
	Lecture 8: Phylogenetics II	
	Lecture 9: Sexual reproduction and the cost of sex	
	Midterm 2 – Including material through the 10/25 lecture, Lecture 9	
	10/28 – Evolution Lecture Review	
	10/30/19 – Midterm 2, 7PM	
TBA	Lecture 10: Sexual Selection	Ch. 23
TBA	Lecture 11: Species & Speciation I	Ch. 24
TBA	Lecture 12: Fossil Record	Ch. 25
TBA	Lecture 13: Human Evolution	Ch. 34.7

Organismal Biology lectures, Bio 1b, Fall 2019: Bruce Baldwin, Instructor, Nov. 1 – Dec. 6

Readings for Campbell, 10th edition are given above those for Campbell, 11th edition

Lecture 1: 11/1 – Introduction to plants and fungi

10th edition: 575–583, 587–589, 648–650 // 11th edition: 579–587, 591–594, 652–654

Lecture 2: 11/4 – Fungal diversity and reproduction

10th edition: 651–661, 810–811, 604–607, 255–257 // 11th edition: 655–665, 815–816, 608–611, 257–259

Lecture 3: 11/6 – Importance of fungi / origins of photosynthesis

10th edition: 661–666, 589–593, 528–529 // 11th edition: 665–670, 593–597, 532–533

Lecture 4: 11/8 - Diversity, reproduction, and importance of “algae” / introduction to land plants

10th edition: 593–601, 602–604, 612–621 // 11th edition: 597–605, 606–608, 616–625

Mon. 11/11 – University Holiday: Veteran's Day

Lecture 5: 11/13 - Origin of land plants / “bryophytes” & ferns

10th edition: 622–629 // 11th edition: 626–633

Lecture 6: 11/15 – Gymnosperm diversity & reproduction / seed evolution

10th edition: 630–637 // 11th edition: 634–641

Lecture 7: 11/18 – Angiosperm flowers & pollination

10th edition: 638–639, 641–643, 820–821, 815–816, 827–829 // 11th edition: 642–643, 645–647, 822–823, 820–821, 831–833

Lecture 8: 11/20 – Angiosperm reproduction & dispersal

10th edition: 640–641, 816–819, 822–823, 824–826 // 11th edition: 644–645, 821–825, 826–827, 828–830

Lecture 9: 11/22 – Angiosperm diversity / seed morphology & germination / anatomy (begin)

10th edition: 642–647, 823–824, 752–759 // 11th edition: 646–651, 827–828, 756–763

Lecture 10: 11/25 - Introduction to plant morphology & anatomy / shoot primary growth & modifications

10th edition: 760–761, 763–765, review 753–757 // 11th edition: 764–765, 767–769, review 757–761

Org. Biology Lecture Review – TBA

Wed.-Fri. 11/27 - 11/29 – University Holiday: Thanksgiving

Lecture 11: 12/2 – Secondary growth of stems / the root system

10th edition: 765–768, 761–763, 855, 754, 781–782, 786, 787 (Fig. 36.8), 806–810

11th edition: 770–772, 766–777, 859, 758, 785–786, 790–791, 810–815

Midterm 3: Tuesday 12/3 7PM

Lecture 12: 12/4 – Sap transport

10th edition: 781–795 // 11th edition: 785–799

Lecture 13: 12/6 – Plant hormones

10th edition: 840–849 // 11th edition: 844–853

Biology 1B Lab Schedule – Fall 2019

9/9 – 9/12	Lab 1: Natural Selection
9/16 – 9/19	Lab 2: Population Biology & Interspecific Competition
9/23 – 9/26	Lab 3: Ecosystems of California
9/20 – 10/3	Lab 4: Bioindicators of Strawberry Creek
10/7 – 10/17	Lab 5: Microevolution of Rock Pocket Mice
10/21 – 10/24	Lab 6: Phylogenetics of Primates
10/28 – 10/31	Lab 7: Macroevolution of the Horse
12/4 – 12/7	Lab 8: Introduction to Green Plants
12/12 – 12/18	Lab 9: Introduction to Land Plants
12/19 – 12/25	Lab 10: Reproduction in Flowering Plants
12/2 – 12/5	Lab 11: Morphology & Anatomy of Flowering Plants