

Materials Required Daily:

- Campbell & Reece 2008, 8th ed., Benjamin Cummings
- wirebound notebook
- Folder or binder (for handouts & assignments)
- pen

INTRODUCTION: Biology is the study of heritability and change among organisms. Instantaneously, biology pervades all aspects of organismal experience, including your own -- not least because the concerns of biology extend from those of chemists up through all greater levels of scale to those of astronomers studying the behavior of Earth and its solar system.

KAP Biology is a full-year college-level course. As such, it demands consistent discipline of each student, especially staying abreast of assignments and recognizing and applying inter-relations you're now expected to assimilate among all biological sub-disciplines to which you will be introduced at a college tempo. There is LOTS of reading (syllabus follows) and, to reach your full potential here you must not fall behind. Throughout the year, you will undertake one dozen or more research projects and advance your abilities in formal scientific writing in reporting on investigations. Frequent quizzes reward those who stay abreast of assignments and, to help you prepare for work at the university level, a significant fraction of your grade will derive from outcomes on major tests administered at intervals of several weeks.

CLASS POLICIES: We expect and require of one another pre-class preparation, on-time daily arrival, alert reflection, and active participation. Work to support one another reciprocally and help to create a relaxed group of unusually high-achievement in learning about life. Listen closely, participate reliably, and, always, take notes. I will facilitate progress (and equal opportunity) by requesting raised hands at times. Generally, however, I mix lecture with open discussion – a process to depend importantly on your alertness, enthusiasm, initiative, collaboration, and mutual respect.

You are responsible for –

- Everything discussed during class time
- All readings' major concepts, hypotheses, & findings
- Completion & timely submission of research assignments
- Meaningful daily participation in class
- Compliance with ONE over-arching rule: When anyone else speaks, you do not.

Provide initiative.

Audit others thoughtfully.

Respond respectfully. Until June. We require respect, expect cooperation, and ask and hope for support from one another. Contribute constructive feedback, challenge with alternative ideas, offer criticism politely and receive it gracefully, without undue anxiety or embarrassment. Open, mutually supportive exchange is a central element of great scholarship and all genuine progress.

TARDINESS and UNEXCUSED ABSENCE: Lateness due to late previous dismissal is excused by a note from the prior teacher. You'll be TARDY when > 1 minute but < 9 minutes late for class. An unexcused absence occurs whenever one is > 9 minutes late without a written excuse from a teacher. > 3 tardies or > 1 unexcused absence will take points away from ongoing quarter grades.

EXCUSED ABSENCE: It **WILL** be *your* responsibility to discover material covered and assignments missed during excused absences. Two days are allowed from one's return per day of excused absence to turn in missed assignments **UNLESS** *you* make other arrangements with me. To provide you opportunity to grow, I do not chase students down to help them monitor and fulfill responsibilities. More than any other single thing, *this* teaching & learning is what will help you to perform at a high level from Day One in college.

ASSIGNMENTS, DUE DATES, and CREDIT:

FULL CREDIT: Completed assignment turned in on arrival to class on or before its due date.
 LATE: Even directly after class, or later that same day: maximum grade: 50%.
 UNSUBMITTED: By end of semester: 0%.

THE IMPORTANCE OF SUBMITTING LATE ASSIGNMENTS: Imagine scoring 90% on 4 of 5 research assignments, forecasting an A-minus for that grade portion. Next calculate your average if the 5th score comes in late (50%) vs. allowing it to go entirely unsubmitted (0%). [82% vs 72%]

THE HOMEWORK PASS: One major assignment per semester may be submitted without penalty as much as one week after its due date. Assignments "passed" more than one week become late *and* consume the homework pass.

HONOR CODE: All assignments may and, in fact, *should* be discussed among classmates. But, you are expected *always* to submit written material that is **entirely your own independent and original work**. Any breach of this honor code, *via* any unauthorized sharing of writing, including plagiarism of published work, shall register as a failed assignment & be reported to administrators. (I shall teach you what plagiarism is.)

COMPONENTS OF GRADING:

Quarter Grade

Quizzes: 25% almost every week's first day; some unannounced

Tests: 25% announced one week in advance

Written assignments 25% research reports, essays, & term papers

PAD your grade! 25% **P**articipation, **A**ttendance, & **D**isruption: assessed fortnightly

1st-semester grade 40% each quarter grade + 20% final exam

2nd-semester grade 50% quarter 3 grade + 50% quarter 4 grade

Year-long Grade 40% sem-1 + 45% sem-2 + 15% cumulative final exam

Dates	Campbell (8 th ed.) Chapter	Topic	Experiential Learning Elements
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INTERIM 1

Aug 26-27	1	Science as Process	Core ideas, variation, selection, methods, objectives
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ORGANISMAL DIVERSITY

Aug 30-Sep 03	26, 32	Phylogeny, Tree of Life, Animals	LAB 1: Independent research project on campus
Sep 07-10 (4d)	34	Vertebrate Diversity	
Sep 13-17	33	Invertebrate Diversity	LAB 2: Ohio Turtle Phylogeny
Sep 20-24	29	Plant Diversity I: Land Colonization	
Sep 27-Oct 01	30	Plant Diversity II: Seed Plants	LAB 3: Invert. Sampling: Berlese Extraction / Dich. Keys
Oct 04-08	31	Fungi	

EVOLUTION & ECOLOGY

Oct 12-15 (4d)	22, 25	Darwinism & History of Life	LAB 4: What Forest? Dendrology, leaves, diversity
Oct 18-22	23	Evolution of Populations	LAB 5: Population genetics lab

INTERIM 2

Oct 25-29	24	Species Concepts & Origins	LAB 6: Evolutionary time line
Nov 01-05	52, 51	Biosphere & Behavioral Ecology	LAB 7: Agonistic Behavior in <i>Betta splendens</i>
Nov 08-12	53, 54	Population & Community Ecology	
Nov 15-19	55, 56	Ecosystems & Conservation Biology	LAB 8: Ecological footprints & fish development

BIOCHEMISTRY & CELL PHYSIOLOGY

Nov 22-23	2, 3	Life's Chemical Context & Water	LAB 9: Sciurid trapping, measurement, marking
Nov 29-Dec 03	4, 5	Carbon & Biomolecules	
Dec 06-10	6, 27, 28	The Cell, Bacteria, Archaea, & Protists	LAB 10: Diffusion / Osmosis (AP lab)
Dec 13-17	7, 11	Membrane Function & Cell Communication	
Jan 04-07 (4d)	8	Introduction to Metabolism	
Jan 10-14		Semester 1 Final Exam	

INTERIM 3

Jan 18-21 (4d)	9, 10	Cellular Respiration & Photosynthesis	LAB 11: Mendelian Dihybrid Cross, Fast Plants
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CELL BIOLOGY & MENDELIAN GENETICS

Jan 24-28	12, 13	Mitosis & Meiosis	LAB 12: Mitosis in Onion Root Tissues
Jan 31-Feb 04	14	Mendelian Genetics	LAB 13: Chromatography & Photosensitive Plant Pigments
Feb 07-11	15, 16	Molecular Basis of Inheritance	LAB 14: Crossing Over in <i>Sordaria</i> fungus (sporangia)
Feb 14-17 (4d)	17, 18	Genes, Proteins, Prokaryotes, Eukaryotes	Mid-winter Break: 18-21 Feb.
Feb 22-25 (4d)	19, 20	Viruses & Biotechnology	LAB 15: DNA, restriction enzymes, gel electrophoresis

ORGANISMAL BIOLOGY & PHYSIOLOGY

Feb 28-Mar 04	35, 36	Plant Growth, Structure, & Function	LAB 16: Transpiration (AP lab)
Mar 07-10 (4d)	37, 38, 39	Plant Nutrition, Reproduction, Behavior	

INTERIM 4

Mar 14-18	40, 41	Animal Nutrition, Structure, & Function	LAB 17: Circulatory system (AP lab + chap 42 reading)
Apr 05-08 (4d)	43, 44	Excretory & Immune Systems	
Apr 11-15	45, 47	Animal Development & Chemical Signals	LAB 18: Aquarium trout fry: water-born predator cues
Apr 18-22	48, 49, 50	Neurons, Nervous Systems, Behavior	Pinker: <i>How the Mind Works</i> ; LAB 19: Sciurid marking
Apr 25-29	TBD	TBD	TBD