**The University of Kansas**

**Department Ecology and Evolutionary Biology**

**Principles of Organismal Biology, Honors**

**BIOL 153 – Spring 2022 (3 credits)**

**Tuesday, Thursday 9:30-10:45**

**LEEP2 G415**

**Instructor**: Mark E. Mort (memort@ku.edu)

**Office hours**: By appointment, and also Friday 9 AM – 10 AM (via Zoom)

**Undergraduate Teaching Assistants**:

* Brooklyn Campbell
* Danny Campbell
* Kruti Nataraj

We will ***meet in-person for class each Tuesday and Thursday from 9:30 – 10:45 AM***. However, we all will need to ***remain flexible*** and it is possible that we may need to hold class virtually periodically. If you are ***not feeling well, do NOT come to class***, but please do inform Dr. Mort and your team members.

**Overview and philosophy:** Knowing how organisms are related to each other, how they are constructed, and how they have adapted to life is basic to an understanding of biology. Our goal is to integrate knowledge of the evolutionary patterns and processes that have resulted in today’s organisms, the biodiversity and history of those organisms, and their anatomy, physiology, development, and ecology. We hope to make this as valuable and enjoyable as possible! *We benefit from your input* and encourage you to share constructive ideas about the course content and organization *throughout* the semester.

**Course-level Learning Outcomes:** Upon completing this course you will be able to:

1. Explain the sources of genetic variation within populations and discuss the evolutionary mechanisms that cause these changes.
2. Define evolution and apply the principles of evolution to explain patterns of biodiversity on Earth.
3. Explain how complex networks of interactions form and operate to maintain homeostasis at various levels of biological organization (i.e., organisms to ecosystems).
4. Locate and identify features that define major lineages of life on Earth (e.g., animals, plants, fungi, prokaryotes).
5. Apply the scientific method to explore real world (case studies) examples of biology in everyday life.

**This is an inclusive class room:** At KU, we are committed to creating an “inclusive learning” environment where you will be treated with respect and dignity and where ***all individuals*** are provided equitable opportunity to participate, contribute, and succeed. In BIOL 153, all students are welcome regardless of race/ethnicity, gender identities, gender expressions, sexual orientation, socio-economic status, age, disabilities, religion, regional background, Veteran status, citizenship status, nationality and other diverse identities that we each bring to class.

The success of an inclusive classroom relies on the participation, support, and understanding of you and your peers. Please speak up and share your views and understand that you are doing so in a learning environment in which we all are expected to engage respectfully and with regard to the dignity of all others.

**Required course materials:**

* **Textbook:** Biology: How Life Works, 3rd Edition, Morris et al., W.H. Freeman and Co. This is in *Achieve*.
* **Canvas** (ku.instructure.com) is our hub for official course materials. All official announcements, help documents, worksheets, quizzes, and your gradebook will be here.
* **Communicate promptly for assistance.** It is your responsibility to address technical issues in time to avoid losing points, but reach out for help as soon as possible if you have problems! If you have technical problems with any assignment, check the online help doc right away and you can likely fix it yourself or will be directed to who to contact for help.

**Class conduct:**

* **Academic integrity:** Academic integrity is a central value in higher education. Sanctions related to academic misconduct can be found at: http://policy.ku.edu/governance/USRR#art2sect6. Academic work must be represented truthfully as to its source and accuracy and obtained by fair and authorized means. Academic misconduct can result in a zero on the work &/or failure in the course.
* **Respect for fellow students and the teaching team:** In BIOL 153, all students are welcome regardless of race/ethnicity, gender identities, gender expressions, sexual orientation, socio-economic status, age, disabilities, religion, regional background, Veteran status, citizenship status, nationality and other diverse identities that we each bring to class. We encourage participation from all members of class and expect that ***everyone will be treated with respect***! Your success at KU and beyond is enhanced by the creativity of thought found in inclusive and diverse classrooms.

**Students with disabilities** that may affect their performance in the course should inform the Student Access Center and Dr. Mort during or before the first week of classes. Notifications are managed through Access Online and accommodations are individualized for each student. Student Access Center: 22 Strong Hall, 785-864-4064, access@ku.edu, http://www.access.ku.edu/.

**Additional support:** KU has *many* programs to help you have a successful and healthy college experience – academically and personally. Please see the student resource sheet on Canvas for a partial list of what is available, and feel free to reach out to Dr. Mort or Student Affairs (studentaffairs@ku.edu).

**Course withdrawal:** *February 6* is the last day to withdraw without a *W* on your transcript. *April 17* is the last day to withdraw. See https://registrar.ku.edu/spring-2023-academic-calendar for more info.

**Daily Readings:** On the syllabus and listed each day in Canvas you will see the required readings for each day. You can follow the link at the top of your Canvas course to access the eText. Please complete the readings before taking the pre-class quizzes.

**Tentative semester schedule:***The schedule and policies of this course may change due to extenuating circumstances or in response to class discussions. Any changes will be announced!*

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| **Class #**  | **Date**  | **Topic(s)**  | **Readings**  | **Class Preparation**  |
| 1  | January 17  | Course logistics; iClickers, etc. What is life? What is evolution? | N/A  |  N/A |
| 2 | January 19 | Case Study 1: Biology of Skin Color | N/A | N/A |
| 3  | January 24  | Mechanisms of evolution  | 20.1 —20.5  | Pre-class quiz 1  |
| 4  | January 26  | Species and speciation  | 21.1 —21.3  |   |
| 5  | January 31  | Speciation (cont.), Evolution of life on Earth | Chapter 22  | Pre-class quiz 2  |
| 6  | Feb. 2  | Phylogenetic systematics  | Chapter 22  | Complete Primer 1 – Phylogenetic Tree Basics (Canvas)  |
| 7  | Feb. 7  | Building and interpreting a phylogenetic tree. | Complete Primers 2 & 3 (Canvas) | Pre-class quiz 3  |
| 8  | Feb. 9  | Origin and diversity of life on Earth.  | Chapter 2.6, 24.1—24.3  |  |
| 9  | Feb. 14  | Synthesis 1  | TBD  | Pre-class quiz 4  |
| **Exam 1 – Feb 15; 5:50 PM – 7:50 PM. Room: Gray-Little 1146** |
| 10  | Feb. 16  | Case Study 2 [snow day In 2023] | N/A  | N/A  |
| 11 | Feb. 21  | Case Study 2 (HIV) - Origin of Eukaryotes. Snapshot of diversity other than fungi, animals, and plants | 25.1—25.3; Figs. 25.4, 25.7, 25.20; 25.21 | Pre-class quiz 5 |
| 12  | Feb. 23  | Being multicellular, Biology and diversity of Fungi  | 26.1 & 26.3; 32.1 —32.3 |   |
| 13  | Feb. 28 | Animals Vs Plants; origin and evolution of animals | 26.4; 40.1 – 40.2  | Pre-class quiz 6  |
| 14 | March 2 | Animal diversity | 42.1 —42.5 |  |
| 15  | March 7  | Synthesis 2  |  TBD | Pre-class quiz 7  |
| **Exam 2 – March 8; 5:50 PM – 7:50 PM.** **Room: Gray-Little 1146** |
| 16  | March 9  | Case Study 3  |  N/A |  N/A |
| **March 13 – 19 Spring Break – Have fun and be safe!**  |
| 17  | March 21 | Plant structure and reproduction  | 27.1 – 27.2; 28.1 – 28.3  | Pre-class quiz 8  |
| 18  | March 23  | Plant diversity | 31.1 – 31.4 |  |
| 19  | March 28  | Transport 1 – moving things in, out and within organisms | 27.3 – 27.5  | Pre-class quiz 9  |
| 20  | March 30  | Transport 2 – moving things in, out and within organisms | 37.1– 37.4 |  N/A |
| 21  | April 4  | Homeostasis  | Homeostasis module 33.3; Figs. 36.5, 36.6, 29.19  | Pre-class quiz 10  |
| 22  | April 6 | The animal renal system  | 39  |   |
| 23 | April 11 | Synthesis 3 |  | Pre-class quiz 11 |
| **Exam 3 – April 12; 5:50 PM – 7:50 PM. Room: Gray-Little 1146**  |
| 24 | April 13 | Case study 4 | N/A | N/A |
| 25  | April 18  | Sensory systems | 34.1—34.3, 34.5; 29.5 | Pre-class quiz 12  |
| 26  | April 20  | Organismal defense | 30.1 —30.2; 41.1 — 41.2 |  |
| 27  | April 25  | What is ecology?  | 44.1—44.3; Case 8  | Pre-class quiz 13  |
| 28  | April 27  | Evolution of behavior  | 43.1 — 43.3  |   |
| 29  | May 2  | How do species interactions build and break ecosystems?  | 45.1 — 45.3  | Pre-class quiz 14  |
| 30  | May 4  | How do humans impact the environment?  | 46.1 — 46.2; 48.1 — 48.2  |   |
| **May 5, 2022 Stop Day**  |
| **Final Exam – May 8, 2022 – 7:30 – 10:00 AM. Room: LEEP2 G415** |

 **Points and Grades:** You will have many opportunities to earn points during the semester. An overview of the various assignments and their relative contribution to your final grade are listed below.

1. **Pre-class Assignment:** Prior to each class you will be required to complete a short, online quizzes based on the readings for that class meeting. These quizzes will be worth ***2.5 points each*** and will comprised of 5-10 multiple choice questions. *These assignments are* ***open book*** *and you can take the quizzes as* ***many times as you wish with your highest score counting****.*

1. **In-class Participation:** Our class meetings will be highly interactive with numerous opportunities for small group collaborative problem solving and responding to questions posed during lecture via iClicker. You can earn ***up to 5 points per class*** for being engaged and participating in these activities; some of these points will be for participating, but several times throughout the semester 1 - 2 questions per class will be graded for correctness.

1. **Case studies:** During the first week of class and onclass meetings following exams will have no required preparation reading or pre-class quizzes. Instead, we will meet and work in our teams through several case studies that will help introduce the next set of topics that we will be learning in class. Teams will submit a single worksheet and may earn up to ***20 points per case study***.

1. **Lecture Exams:** There will be three collaborative-two stage exams lecture exams during the semester. For each collaborative exam there will be an ***individual*** **portion** of the exam (~50 mins). Following the individual exam, you will work with your team on the ***collaborative******portion*** (~50 mins) of the exam. During this time, members of each team will discuss and collaborate on formulating answers, and will submit a single set of answers on which the team agreed before the end of the testing period.

The final score for each exam will be calculated by adding **80% of the individual exam** score and **20% of the collaborative exam** score.

1. **Final Exam:** The final exam will be in-person on *May 8, 2022 from 7:30 – 10:00 AM* in room LEEP2 G415. The final exam will also be collaborative with the final exam score is calculated by adding **80% of the individual exam** score and **20% of the collaborative exam** score

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| **Contribution of Assessments to Final Lecture Grade**  |
| **Assessment**  | **Points Each**  | **Total Points+**  |
| 1. Pre-class Assignments\* [12] | 2.5  | Up to 30 pts. (~4.6%)  |
| 2. In-Class Participation\* [24] | 5  | Up to 120 pts. (~18.5%)  |
| 3. Case study worksheets [4]  | 20  | 80 pts. (~12.3%)  |
| 4. Lecture Exams [3] | 100  | 300 pts. (~15.3% each)  |
| 5. Final Exam  | 120  | 120 pts. (~18.5%)  |
| **Total Points**  |  | **650**  |
| + *Points listed are the maximum that may be earned in each category.* \*There will be 14 Pre-class and 26 non-case study class meetings. To accommodate students needing to miss class, your two lowest *pre-class assignments* and two lowest *in-class participation(s*) will be dropped.  |

**Grading Scheme:** We will not be using a +/- grading scheme.

1. = 89.5% - 100%
2. = 79.5% - 89/4%
3. = 69.5% - 79.4%
4. = 59.5% - 69.4%

F = below 59.4%