

Morehead State University
COLLEGE OF SCIENCE
DEPARTMENT OF BIOLOGY & CHEMISTRY
BIOLOGY 171 - PRINCIPLES OF BIOLOGY
COURSE SYLLABUS - Fall 2016

Time & Place: 9:30-10:45 a.m., Tuesdays and Thursdays, Lappin Hall (LAH) 130
Mode of Delivery: Face-to-face instruction with significant Blackboard support.
Instructor: Dr. Geoff Gearner
Office: LAH 301-E
Phone: 783-2803
Office Hours: 1:00 - 3:00 p.m., Tuesdays and Thursdays, or by appt.
E-mail: g.gearner@moreheadstate.edu
Internet: <http://moreheadstate.blackboard.com> (Blackboard)

Catalog Description: BIOL 171. Principles of Biology (3-2-4); I, II, III. General biological principles, emphasis on cell structure/function, energetics, homeostasis, genetics, evolution, and ecology.

Prerequisite: Composite ACT of 20 or higher, or a "C" in BIOL 105, BIOL 160 or equivalent.

Course Objectives: Principles of Biology is the introductory biology course for students majoring in the biological and biomedical sciences. The primary course objective is to provide a foundational description of the physical, chemical, molecular, cellular, genetic and evolutionary principles upon which an understanding of life can be built. These principles are composed of specific content knowledge considered within the framework of scientific discovery. The course provides students with the opportunity to develop foundations of biological principles, improve vocabulary, develop laboratory and problem solving skills, and establish an understanding and appropriate application of the scientific method, all of which are fundamental to success in subsequent courses in the major.

The specific **Student Learner Outcomes (SLOs)** for Principles of Biology are to:

1. demonstrate a working knowledge of the basic physical, chemical, molecular, cellular, genetic and evolutionary principles of life;
2. demonstrate a comprehension and appropriate use of the vocabulary used in discussions of biological problems;
3. demonstrate the ability to think in terms of experiments or logic about each fundamental principle area;
4. demonstrate an understanding of the process of science as a way of knowing that provides natural explanations of biological phenomenon;
5. demonstrate competency in conducting laboratory exercises, both individually and as part of a group; and
6. demonstrate the ability to express him/herself clearly using specific content language about biological issues

Textbook: *Biology*, 3rd ed., by Brooker, Widmaier, Graham, and Stiling. 2014, McGraw-Hill, Boston, ISBN: 978-1-259-11283-6. This is a customized edition of the textbook!

iClicker2: This is a student remote response system that we will use during lecture. If you already own an iClicker2 or an iClicker1, you do not need to purchase another. Register your iClicker at <http://www1.iclicker.com/register-student-remote>

Attendance Policy: Role will be taken during each class meeting. Make-up exams, quizzes and other missed work will be given at the discretion and convenience of the instructor with a documented excused absence only. Refer to UAR 131.02 for the University's Excused Absence Policy and procedure to make up missed work, which can found be here: [file:///Users/msuuser/Downloads/UAR%20131.02%20Excused%20Absence%20\(2\).pdf](file:///Users/msuuser/Downloads/UAR%20131.02%20Excused%20Absence%20(2).pdf)

Drop Date: The last day to drop this class and receive a grade of "W" is Monday, **31 October 2016**.

BIOL 105: Students have the option of enrolling in BIOL 105, section 020, which will start **Monday, 10 October 2016**, if the student and the instructor feel the need to step back and participate in this preparatory course. This class will meet Monday – Friday mornings, at 8:00 a.m. If you would like to transfer to this course, the deadline to notify your instructor and avoid any registration fees is **4:30 p.m, Wednesday, 5 October 2016**.

BIOL 171 Laboratory: Lab meets during the first week of classes! The BIOL 171 Lab is located in Room 332 of Lappin Hall. Check Blackboard *prior* to the first lab meeting for the lab syllabus, the first exercise, and a pre-lab assignment.

Assessments/Grades (Course Student Learning Outcomes Course [SLOs] and General Education Student Learning Outcomes [GE] addressed are indicated parenthetically):

There will be three 100-point lecture exams and a 150-point Final Exam (SLOs1, 2, 3, 4, 6; GE 1b, 1d, 2b, 4d, 5a, 5b, 5c); daily quizzes, worksheets, etc. (cumulative total of 150 points; SLOs1, 2, 3, 4; GE 1b, 1d, 2b, 4d, 5a, 5b, 5c); three 50-point lab exams (SLOs1, 2, 3, 4, 5, 6; GE 1b, 1d, 2b, 4d, 5a, 5b, 5c); and daily lab quizzes (cumulative total of 50 points; SLOs1, 2, 3, 4; GE 1b, 1d, 2b, 4d, 5a, 5b, 5c); for a course total of **800 points**.

How the course grade for BIOL 171 is determined:

Quizzes, worksheets, etc. = 150 points total

Exam 1 = 100 points

Exam 2 = 100 points

Exam 3 = 100 points

Final Exam = 150 points

Total Lecture Points = 600 points

Weekly Lab quizzes = 50 points total

Lab Exam 1 = 50 points

Lab Exam 2 = 50 points

Lab Exam 3 = 50 points

Total Lab Points = 200 points

Total Course Points = 800 points

BIOL 171 is a 4-credit hour course, 3 credit hours for lecture and 1 credit hour for lab. The lab makes up 25% (200 points out of a total of 800 points) of the course grade. The Final Exam (covering lecture material) will have a comprehensive component to it. All of the lecture exams are primarily in multiple-choice format with the inclusion of one or two open response (essay-type) questions.

Course Grade Scale:

A = 720 – 800 total earned points

B = 640 – 719 total earned points

C = 560 – 639 total earned points

D = 480 – 559 total earned points

E = <480 total earned points

Your grades will be posted to Gradebook of Blackboard following the first lecture exam, and will be continually updated through the rest of the semester.

General Education: BIOL 171 is designated as an Exchange Course for students enrolled in the Biology and Biomedical Science Degree Programs, and upon successful completion of this course, students will have satisfied NSC1 of their General Education requirements.

Key for GENERAL EDUCATION Student Learner Outcomes (GE):

- 1b. Read college-level critical, creative, and technical texts for comprehension.
- 1d. Convey quantitative and qualitative relationships using symbols, equations, graphs, and tables.
- 2b. Recognize and effectively utilize both deductive and inductive reasoning.
- 4d. Comprehend the cycle of human growth necessary to provide sustained health & individual well-being.
- 5a. Comprehend and apply basic scientific, quantitative, and technological methods and knowledge of natural systems to the solution of scientific problems.
- 5b. Employ scientific methods and theories to analyze and address open and debated questions in the sciences
- 5c. Analyze explanations to classify them as scientific or nonscientific.

Classroom/Laboratory Note: Food, gum, drink, and tobacco products are not allowed, especially in the laboratory. The use of cell phones (including text messaging), MP3 players, and other electronic devices is not allowed; these devices must be silenced (“airplane mode” for cell/smart phones) and out of the instructor’s and student’s sight during all classroom and laboratory activities. ***The first infraction will result in a warning to the student; subsequent infractions will result in dismissal from that day’s activities and zero credit for that day’s work.*** Students may use audio recorders to record lectures.

Academic Dishonesty: Plagiarism (submitting the work of others as your own) and cheating, as well as the facilitation thereof, will result in zero credit for the assigned work, a report to the Dean of Students, and possible dismissal from the course. See pgs. 9, 28 and 80 of *The Eagle Student Handbook*, which is available at this link:

<file:///Users/msuuser/Downloads/EagleHandbook%208-14-15.pdf>

Americans with Disabilities Act (ADA) Students with disabilities are entitled to academic accommodations and services to support their access and safety. The Office for Disability Services in 109-J Enrollment Services Center coordinates reasonable accommodations for students with documented disabilities. Although a request may be made at any time, services are best applied when they are requested at or before the start of the semester. Please contact Disability Services at 606-783-5188 or e.day@moreheadstate.edu or visit their website at www.moreheadstate.edu/disability.

Campus Safety Statement Emergency response information will be discussed in class. Students should familiarize themselves with the nearest exit routes in the event evacuation becomes necessary. You should notify your instructor at the beginning of the semester if you have special needs or will require assistance during an emergency evacuation. Students should familiarize themselves with emergency response protocols at: www.moreheadstate.edu/emergency.

Keys for Success: In order to succeed in this course, you should plan to attend all lectures, take careful notes, and allow ample time to read and study the assigned material. You may use a tape recorder to record lectures. You will get more out of lectures if you can skim the assigned chapter before the lecture, then read the relevant material carefully as soon after lecture as convenient. Recopy your notes utilizing what you recorded in class, the textbook, and supplementary materials distributed in class or electronically. You should plan on spending at least two hours of study time for each hour of lecture. If you begin to fall behind, make every effort to catch up quickly; otherwise you may find yourself swamped with too much material to assimilate before an exam. Some of you may find that attending lectures and reading the text is all the support you need. Others will have

problems with some of the material. Several forms of support will be available to help you with difficulties you may experience:

1. Online course materials (lecture notes and PowerPoint slide handouts) will be available on Blackboard. Review the notes prior to class, and bring them to class with you.
2. The External Links section of Blackboard is a comprehensive and continually updated list of biology resources on the Internet.
3. I am available for individual consultation regarding any aspect of the course. If you have unanswered questions or concerns, or are in serious academic trouble, see me! You can come by my office during regular office hours or schedule an appointment.
4. The MSU [Tutoring and Learning Center](#), located in the Library Commons, Camden Carroll Library, First Floor behind Java City, 783-5105, offers tutoring services for BIOL 317 students.
5. Tri-Beta, the biology honor society, offers tutoring services at select times through the week, hosted in LAH 308A.

Logging into Blackboard: To log into the Blackboard system, first, locate your browser to <http://online.moreheadstate.edu>, and then click the **login** button. Enter your USERNAME and PASSWORD in the boxes provided. **As a student**, your **Username**: is your MSU ID number preceded by "m", *e.g.*, m0123456; and your **Password** is the last 4 digits of your Social Security number + all 4 digits of your birth year; *e.g.*, 12341998. Students without a Social Security Number should substitute with "1234". You should now be logged into the Blackboard main page under the **My MSU** tab. Since you were automatically enrolled in Blackboard when you enrolled in BIOL 171, you will see it listed in the **My Courses Plus** box (click on **2016FA Courses** to expand the list). Spend some time navigating the Blackboard site to familiarize your self with this online environment.

Use of Technology: Students enrolled in BIOL 171 will be expected to use computer technology to search the Internet for topic-related information, access course materials on Blackboard, and to prepare lab reports. Students will utilize modern laboratory equipment and instrumentation such as the microscope, pH meters, spectrophotometer, liquid handling equipment, centrifuges, thermocyclers, and electrophoretic equipment to conduct laboratory exercises. The instructor will use multimedia technology to enhance lecture presentations.

How to E-mail a Professor: Avoid vague subject lines; open your message with (*e.g.*), Dear Dr. Gearner; let the professor know who you are and what class you are in; get right to the point with your message and be specific; use complete sentences and proof read your message; don't use emoticons/emojis, shorthand, text-speak, all caps, *etc.*; say thanks and sign off with your first and last name.

What You Should Know:

1. Attend all class and lab meetings for this course and all of your other courses.
2. Ask for help when needed.
3. Surround yourself with fellow students who are also dedicated to academic success.
4. Your instructor is dedicated to student success, but it is the student who is personally responsible for achieving success.
5. To the student who accepts the responsibility and makes the commitment, your instructor is readily available outside of class time for assistance and consultation.
6. All grading and evaluation of course work is absolutely objective and utterly free of personal bias.
7. Your instructor does not tolerate excuses (other than those heretofore mentioned); therefore, do not miss class, quizzes, labs, review sessions, or exams. To do so will negatively affect your grade.
8. Personal responsibility, hard work, commitment, persistence, attention to detail, time management, and preparedness are hallmarks of successful students. Embrace these characteristics if you intend to succeed.

Tentative Lecture Schedule

DATE	TOPICS	TEXT REFERENCE
16 August	Cellular Organization & the Flow of Genetic Information;	Pgs. 66-73, 244-245
18 August	Chemical Foundations I: Atomic Structure	Pgs. 21-33
23 August	Chemical Foundations II: Water & pH	Pgs. 33-40
25 August	Chemical Foundations III: Carbon & Functional Groups	Pgs. 42-46
30 August	The Biomolecules I: Carbohydrates & Nitrogen bases	Pgs. 46-49; 60-62
1 Sept.	The Biomolecules II: Amino Acids & Proteins	Pgs. 52-60
6 Sept.	The Biomolecules III: Lipids & Membranes	Pgs. 49-52, 98-103
8 Sept.	EXAM I	
13 Sept.	The Functional Cell & Protein Secretion	Pgs. 66-94
15 Sept.	Membrane Function & Cellular Transport	Pgs. 105-115
20 Sept.	Cellular Energetics & ATP	Pgs. 118-129
22 Sept.	Photosynthesis I	Pgs. 155-171
27 Sept.	Cellular Respiration	Pgs. 137-151
29 Sept.	Metabolic Regulation of Glucose Utilization	Pgs. 181-188
4 Oct.	EXAM II	
11 Oct.	Signal Transduction & the Cell Cycle	Pgs. 298-301
13 Oct.	Chromosome Structure & Mitosis	Pgs. 230-232; 303-308
18 Oct.	Mutations, Cell Cycle Aberrations and Cancer	Pgs. 283-295
20 Oct.	Meiosis & Gamete Production	Pgs. 308-318
25 Oct.	Genetics I: Mendellian Genetics	Pgs. 322-330
27 Oct.	Genetics II: Non-Mendellian Genetics; Human Genetics	Pgs. 330-346
3 Nov.	EXAM III	
8 Nov.	DNA Structure & Replication	Pgs. 212-230
10 Nov.	Gene Expression I: Transcription & RNA Processing	Pgs. 236-243
15 Nov.	Gene Expression II: Translation & The Genetic Code	Pgs. 243-254
17 Nov.	Gene Expression III: Regulation of Gene Expression	Pgs. 267-276
22 Nov.	PCR, DNA Sequencing & DNA Fingerprinting	Pgs. 406-410; 415-416
29 Nov.	Taxonomy, Cladograms & Phylogenetic Trees	Pgs. 515-530
1 Dec.	Darwin, Wallace & Bates	Pgs. 460-472
6 Dec.	FNAL EXAM: Tuesday, 8:00 a.m. - 10:00 a.m.	