# BSC-121 – Principles of Biology – Spring 2016

**** By remaining enrolled in this course, you accept the contents of this syllabus; therefore, you must ensure that you understand the contents ****

## ~CONTACT INFO ~

Dr. EMILY GILLESPIE gillespieE@marshall.edu website: http://gillespielab.weebly.com/

- Use this email only, not the messaging system within MUOnline/ Blackboard.
- Email is not texting; do not expect a response immediately. I may not respond to emails during non-business hours, and I respond according to urgency. If you don't hear from me within two business days, please stop by office hours.
- Please use email for quick questions; come to office hours for most help.
- I expect students to check the syllabus or Blackboard announcements before emailing me. During heavy email periods, I may not respond when information is otherwise available to you.
- I expect students to write professional emails, which means writing clearly and concisely, and addressing your instructors appropriately. Additionally, it is very time-consuming to sort out emails written in text-ese.
- Identify your course in the subject line (BSC-121) since I teach multiple courses.

Office: Science 364 Phone (304) 696-6467. I strongly prefer email over phone so that I can write you a thoughtful, clear response without being pressed for time.

OFFICE HOURS: **10:45am-noon Tuesday and Thursday** and **1:00pm-2:30 Wednesday**. These hours are firm unless you are in a scheduled class during all of these times—in which case, email me to set up an alternative time. If these hours prove inadequate for us, I will add more.

LECTURE MEETINGS: Science 374 Lecture Time: T,R 9:30 a.m. – 10:45 a.m.
*Note that all exams will be given in Corbly Hall 330/331*

LAB MEETINGS: Science 210 Section 204: 12:00 p.m - 1:50 p.m. Tuesday – John Barry
Section 205: 11:00 a.m. - 12:50 p.m. Wednesday – Tony Smith

## ~COURSE INFO~

COURSE DESCRIPTION: 4 credit hrs. This survey course introduces students to the biological principles common to all organisms, including evolution, biodiversity, ecology and comparative

physiology through classroom lecture and laboratory activities.

Course Prerequisite: Minimum of 21 or better on Math ACT, *or* ≥C in MTH 121 or a higher math course. A grade of C or better is recommended from BSC-120. **The course is intended for biology majors and pre-professional students, and will be taught at a level appropriate for these goals, meaning that it is heavily conceptual but reliant on underlying detail.**

| Course Outcomes | Opportunities to Practice Course Outcome | Course Outcome Assessment(s) |
|---|---|---|
| **Articulate and describe the basic biological principles common to all organisms** | In-class discussions and laboratory exercises | Examinations and quizzes |
| **Discuss and use the scientific approach to solve problems within the field of biology** | In-class discussions and laboratory experiments | Examinations, quizzes and laboratory reports |
| **Read and analyze charts, graphs, and tables conveying scientific information** | In-class discussions and laboratory exercises and experiments | Examinations, quizzes and laboratory reports |
| **Collect, interpret, present and discuss scientific data** | Laboratory experiments | Formal written laboratory report |

REQUIRED COURSE MATERIALS:

1. A comfortable way to take notes (see my Electronics Policy, below).
2. Text: Biology, 3rd edition by Brooker et al., 2013. (for home)—any format is fine.
3. Software: McGraw-Hill 'Connect' access (for home) Navigate to: http://connect.mheducation.com/class/e-gillespie-dr-gillespies-bsc-121-all-sections
4. BSC-121 Laboratory Manual by Weinstein (for lab)
5. Short Guide to Writing in Biology by Pechenik (2013) or another edition (for lab)
6. Safety goggles (for lab)
7. Access to the course management site through www.marshall.edu/muonline (also called Blackboard), where you will find various updates, announcements and materials throughout the semester. Your gradebook will be available here as well. If you cannot access the course, email me right away, because ***you are responsible for any material***

***or announcements posted there, as well as regularly making sure that your gradebook reflects your grades as you understand them.***

## ~EXPECTATIONS~

University education is a 'two-way street.' In other words, you (the student) and I (the lecturer) must work together in order for your experience to be successful. Your commitment to getting the most out of the course is critical. You will find that college courses are qualitatively different (not just more work or harder work) than high school. It is important that you embrace this difference. I can help with that.

**My responsibility to you** is to come to class prepared each and every day, and to think critically about what you need to learn in this class in order to be successful biology majors. Another part of my commitment is to be available to you for help during office hours for help with material and troubleshooting your study habits. I will also give you feedback about your progress in a timely manner. If you require more extensive help with maximizing your study habits, I will help you access more resources.

**Your responsibility to me** is to come to class prepared to participate each and every day, to study actively, to be responsible for your own learning process, and to address problems in a timely manner. It is extremely difficult to pass this course if you are disengaged, attend poorly, or fail to address what you need help with on a continuing basis.

**Electronics policy.** Laptops are permitted for note-taking *if and only if you agree to the following conditions*: 1) No charging is possible in the lecture hall due to insufficient outlets and tripping risk, 2) Your computer must be quiet, 3) You must arrive early enough to boot up and get settled before class starts, and 4) You are responsible for keeping your attention on lecture and not on other activities that may distract classmates around you. *If you cannot agree to these conditions, particularly #4, please refrain from using a laptop during class.* The same policy applies to tablets or other devices.

In general, no phones should be active during class and they should not be allowed to ring during class. If you have a situation where you might need to take an important phone call, please set your phone to 'vibrate', sit nearest the exit and leave without disturbance to attend to your issue.

I do not consent to any audio-, photo- or video-recording of my lectures for any reason. If you believe you should have an exception to this policy, you must discuss it with me in person.

**General conduct.** I expect everyone to handle themselves in a professional manner in class, and I will ask that students who cannot do this leave for the day. I expect you to be professional and

courteous in your email, during lecture/lab and during one-on-one contact with myself and your lab instructor. If you blatantly and/or frequently mistreat any person in the lecture hall or lab, you will be asked to leave immediately and disciplinary action will be sought before you are permitted to return.

My lectures are informal and I encourage you to ask questions and offer comments, without waiting to be called on. I encourage students to attempt to answer classmates' questions respectfully. I welcome questions that are slightly off-topic, as they often lead to meaningful connections to lecture material. In short, do not be intimidated by our large lecture class. I want you to be professional and considerate, but informal and interactive.

**Good Habits:**

- Read ahead AND frequently review what we've already covered. *Evidence suggests that cramming is virtually always unsuccessful*.
- Take advantage of the resources provided to you: Lecture time, office hours, on-campus tutors in the biology department, and online tools associated with your textbook.
- Ask questions in class! Students who participate actively tend to do better than those who don't. *There are no silly questions!* Your questions tell me what you need clarified right away, and often lead to interesting discussions.
- Develop a strategy that works for you: Avoid 'going through the motions'; Set aside proper study time and use it well; Set up a study group that is reliable and effective; Set aside time to attend tutoring hours or office hours.
- Be watchful of potential bad weather, etc… that might keep you at home (particularly if you are a commuter). Plan ahead to have materials with you so that you can study in the event of a major disruption to our schedule.
- If you feel overwhelmed, come see me right away. I can't help you if I don't know that you need help. Seek help long before your exam, so that you can make necessary changes to your study habits.
- Be considerate of your classmates, your lecturer, and your lab instructor. Be on time so that we can leave on time. Respect your classmates' questions. Respect their need for relative quiet during class. Respect my time and effort. Stay engaged until we dismiss each day.
- Pay attention to your health and take care of yourself! Manage your physical and mental stress. Seek help before you get completely overwhelmed. I can point you toward resources on campus.
- In short, be actively involved in your education! We're here to help, but the person who is impacted most by your progress, and is most responsible for your progress is…..YOU. Don't waste your chance.

## ~GRADING INFO~

GRADING: A=100 -90; B=89-80; C=79 -70; D=69-60; F ≤59. 'Incomplete' grades will be given only if a student has completed 75% of the anticipated coursework and in extraordinary circumstances, as determined in consultation with the Department Chair and/or Dean of Students. I will not support an Incomplete grade in the case of 'getting behind', missing an important grade, or having typical absences. Appeals for Incomplete grades will require substantial documentation before approval. Incomplete grades must be resolved as prescribed by the University.

**Connect Assignments.** One for each chapter we cover) will constitute an additional **20%** of your course grade. These are important 'low-risk/low-impact' assignments that guide your studying and allow you to test and improve your mastery well in advance of exams. These will become available as we cover the material in class, and every assignment will be available until **Monday, May 2 at midnight (11:59 p.m.)**, at which time no more quiz grades will be recorded and any un-submitted assignments will turn into zeros. This is to encourage you to review regularly, and give you unlimited opportunities to earn an excellent score. Do not wait to start the Connect assignments until late in the semester; they tend to take 2-3 hours each, mininum.

These assignments are intended to be completed on your own, without the help of any human (except Dr. Gillespie). You can use your book and notes. If you seek other students' help, 1) you are guilty of academic dishonesty and are at risk for disciplinary action, and 2) you will have a misleading perception of how well-prepared you are for your exams.

In order for your Connect grades to drop down into the Blackboard gradebook (and be counted toward your course grade), you must sync your Blackboard to Connect. *This is most easily done by simply accessing any Connect assignment one time from inside Blackboard* (rather than through the McGraw-Hill website). It is entirely your responsibility to see to this task, and I strongly suggest that you do so within the first week of classes so that if technical issues occur, they can be solved. **I reserve the right to count attempted Connect scores as zeros if you fail to sync Blackboard to Connect.**

**Lab**. **25%** of your course grade will come from your laboratory performance. You will receive a separate syllabus from your lab instructor. You are expected to read and completely understand that syllabus. Your individual scores from lab will not be posted in your MUOnline/Blackboard gradebook. Your total lab grade on Blackboard will be updated only twice: at midterm and at the end of the term. It is your responsibility to note your ever-changing lab average.

**Four lecture exams** together constitute **40%** of total course grade. You will be tested on lecture notes, videos, activities, readings from the text and any other materials covered or assigned. Please note your exam dates right away and plan accordingly (see Tentative Schedule, below), as you will receive a zero for any exam you miss for any reason. *No makeup exams will be permitted, but your lowest lecture exam will be dropped.* If you miss an exam for any reason, you

should plan to drop that zero exam score. If you miss a second exam, your cumulative final exam will count in place of that missed exam. These two allowances should accommodate any reasonable absences. **All four regular exams will be given during class time in the Corbly Hall computer lab suite (rooms 330/332). See schedule for dates.**

A **cumulative final exam** constituting **15%** of your course grade will be given on **Tuesday, May 3 at 8:00 a.m.** *There is no makeup exam available for the final exam*. If you miss the final for any reason, your only options will be to take a zero or appeal to the Dean of Student Affairs for an Incomplete grade (see above). Your final exam can replace your second-lowest exam score (lowest being dropped) if the final is higher.

***Please be aware that I do not offer bonus work, extra credit or curves to improve your grade. Your only route to a good grade is mastery of the material. Do not ask for an exception to this policy.***

ATTENDANCE: Attendance and participation in all lectures is expected. You are expected to be present for the entirety of lecture. If you feel that you cannot stay for the entire lecture, I request that you arrive early enough to find the seat nearest the door and that you leave quietly. Any material covered in your absence is your responsibility, and you should identify a student you trust who might share their notes with you in case you need to be absent. Do not email me to ask what you missed. In the case of an absence on exam day, you should plan to count that as your single dropped exam score.

**'Triggers', controversial topics and sensitive subjects:** Biology is an evidence-based, relatively dispassionate subject. We follow the evidence where it takes us and we pursue an understanding of how the natural world operates with as little influence as possible from human biases and emotions. As a discipline, we do not turn away from explanations that challenge our positions; rather, we use evidence to explore and challenge our opinions and positions.

That said, if you feel that you may not be able to handle our discussion of any topic, you are not required to remain in class. I request that you anticipate, by reading ahead, sit near the door and leave without disturbance. You are, however, completely responsible for the information covered and you should identify a classmate who is willing to provide notes to you. You will not be exempted from being examined on any factual information for any reason.

ACADEMIC ACCOMMODATION: Marshall University is committed to equal opportunity in education for all students, including those with physical, learning and psychological disabilities. University policy states that it is the responsibility of students with disabilities to contact the Office of Disabled Student Services (DSS) in Prichard Hall 117, phone 304-696-2271 to provide documentation of their disability. The DSS Coordinator will then send a letter to each of the

student's instructors outlining the academic accommodation he/she will need to ensure equality in classroom experiences, outside assignment, testing and grading. The instructor and student will meet to discuss how the accommodation(s) requested will be provided. For more information, please visit http://www.marshall.edu/disabled . I strongly encourage you to seek assistance from these resources if you have any qualifying challenge. Be aware that you must be evaluated by a qualified professional on- or off-campus prior to receiving these services, and modifications are not retroactive. I cannot make these modifications outside the direction of the Office of Disabled Student Services.

WITHDRAWAL: If you feel that you cannot complete the course, keep the Withdrawal deadline, **Mar 18**, clearly in mind. You must administratively withdraw. Do not simply stop attending (you will receive an F!)

ACADEMIC DISHONESTY—Academic dishonesty will not be tolerated, and cheating will be pursued vigorously. This includes, but is not limited to, exams, quizzes, lab papers, etc… If work is intended to be done with a group, you will receive explicit instructions indicating that you have permission to exchange work with other students. Any appearance of cheating (looking around at other people's answer sheets during exams, being caught with an electronic device on during a quiz or exam, etc…) will result in a zero on that assignment without discussion. More blatant forms of cheating will be referred for disciplinary action. If you have any questions, please ask, rather than take a chance.

UNIVERSITY POLICIES AND PROCEDURES: By enrolling in this course, you agree to the University Policies listed below. Please read the full text of each policy be going to www.marshall.edu/academic-affairs and clicking on "Marshall University Policies." Or, you can access the policies directly by going to http://www.marshall.edu/academic-affairs/?page_id=802

COURSE SCHEDULE. Below is our tentative lecture schedule for Spring 2016.

This table includes the dates, topics and chapters. In the 'Background' column, you will find topics that you should bring with you from high school courses (or from previous Marshall courses) or from earlier in this course; these topics will not be covered in detail during class, so if you are not comfortable with them, you should review prior to that lecture. During class, I may assign specific, limited topics for you to cover on your own, outside of class (e.g., a specific, additional example or a particular section in a chapter).

We will make every effort to stay on this schedule, but you will hear *in class* if changes will be made to the schedule. *Exam dates will never change*, unless classes are officially cancelled on an exam day. In case this rare event occurs, the exam will be taken on the first day back after a University cancellation. In extraordinary circumstances, I will revise the course plan significantly (i.e. significant disruption to the University schedule).

| TENTATIVE LECTURE SCHEDULE for Spring 2016 | | | | | | | |
|---|---|---|---|---|---|---|---|
| **WEEK #** | **WEEK OF** | **DAY** | **TOPIC** | **CHAPTER** | ***MAJOR* FOCUS** | ***CRITICAL* BACKGROUND** | **UNIT** |
| **1** | Jan 11 | T | Syllabus/welcome | | Syllabus will be posted on Blackboard (no hard copies) | | |
| | | R | Pre-test: CH 330/331 | | Bring a lead pencil (no pens!). No calculator necessary. | | |
| **2** | Jan 18 | T | Evolution & Pop Gen. | 23 & 24 | Natural Selection & Population Genetics Overview | Basic concepts of evolution; earth history (ch. 22) | **EVOLUTIONARY THEORY & PHYLOGENETICS** |
| | | R | Population Genetics | 24 | Population Genetics: Specific Mechanisms & consequences | Natural selection; basic evolution (ch. 23); transmission genetics (ch. 16, 17) | |
| **3** | Jan 25 | T | Origin of Species/Macro | 25 | Speciation patterns & processes; evo-devo | Evolution (ch. 23); earth history (ch. 22); developmental genetics (ch. 19) | |
| | | R | Taxonomy & Systematics | 26 | Interpreting phylogenies; methods of cladistics; taxonomic principles | Evolution & earth history (ch. 22 & ch. 23) | |
| **4** | Feb 1 | T | Taxonomy & Systematics | 26 | Molecular evolution & clocks; horizontal gene transfer | DNA/expression/ regulation (ch. 11-14); developmental genetics (ch. 19) | |

| TENTATIVE LECTURE SCHEDULE for Spring 2016 | | | | | | | |
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| **WEEK #** | **WEEK OF** | **DAY** | **TOPIC** | **CHAPTER** | ***MAJOR* FOCUS** | ***CRITICAL* BACKGROUND** | **UNIT** |
| | | R | **Exam 1** (Ch. 23-26): CH 330/331 | | | | |
| **5** | Feb 8 | T | Archaea & Bacteria | 27 | Diversity, metabolism, biotechnology | Evolution & phylogenetics unit (ch. 23-26); earth history (ch. 22) | **BIODIVERSITY OF SELECTED LINEAGES** |
| | | R | Plants & Transition to Land | 29 | Diversity & evolution; adaptations to land | | |
| **6** | Feb 15 | T | Modern Angiosperms | 30 | Diversity & evolution, relationships of plants & humans | | |
| | | R | Modern Gymnosperms | 30 | | | |
| **7** | Feb 22 | T | Fungi | 31 | Diversity & evolution, relationships of fungi & humans | | |
| | | R | Animal Diversity & Inverts | 32 & 33 | Major lineages, body plan diversity, relationships of humans and other animals | | |
| **8** | Feb 29 | T | Vertebrates | 34 | | | |
| | | R | **Exam 2** (Ch. 27, 29, 30, 31, 32, 33, 34): CH 330/331 | | | | |
| **9** | Mar 7 | T | Intro to Ecology | 54 | Climate, biomes, biogeography | Earth history (ch. 22); basic evolutionary principles | **ECOLOGY & CLIMATE CHANGE** |
| | | R | Species Interactions | 57 | Major categories of interactions | Evolution & population genetics mechanisms | |

| TENTATIVE LECTURE SCHEDULE for Spring 2016 | | | | | | | |
|---|---|---|---|---|---|---|---|
| **WEEK #** | **WEEK OF** | **DAY** | **TOPIC** | **CHAPTER** | ***MAJOR* FOCUS** | ***CRITICAL* BACKGROUND** | **UNIT** |
| **10** | Mar 14 | T | Community Ecology | 58 | Species richness & diversity; views on 'communities'; island biogeography & E.O. Wilson | Evolution; biodiversity; biomes; population genetics | |
| | | R | Biodiversity & Conservation | 60 | Extinctions; rationales for conserving biodiversity | Basic ecology; evolution; phylogenetics; biodiversity; earth history | |
| **11** | Mar 21 | T | Spring Break | | | | |
| | | R | Spring Break | | | | |
| **12** | Mar 28 | T | Years of Living Dangerously Episode 1 & Climate Change | Video | Introduction/overview to series | Basic ecology & evolution; preliminary reading | |
| | | R | ***EG at ASB Conference*** **Exam 3**(Ch. 54, 57 58, 60, YoLD video): CH 330/331 | | | | |
| **13** | Apr 4 | T | Plant Form & Function | 35 | Life cycles in evolutionary context; basic plant parts | Plant diversity (ch. 29, 30) | **COMPARATIVE PHYSIOLOGY IN PLANTS & ANIMALS** |
| | | R | Flowering Plant Reproduction | 39 | Morphology and biology of angiosperm reproduction | Plant diversity (ch. 29, 30), mitosis & meiosis (ch. 15); basic cell processes (from BSC-120) | |

| TENTATIVE LECTURE SCHEDULE for Spring 2016 | | | | | | | |
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| **WEEK #** | **WEEK OF** | **DAY** | **TOPIC** | **CHAPTER** | ***MAJOR* FOCUS** | ***CRITICAL* BACKGROUND** | **UNIT** |
| **14** | Apr 11 | T | Animal Bodies | 40 | Interactions of major organ systems | Animal diversity (ch. 32, 33, 34); basic cell process (from BSC-120) | |
| | | R | Neurobiology | 41, 42, 43 (in part) | How neurons work; evolution of animal nervous systems; sensory systems; mental health | Membranes (from BSC-120); basic animal body plans & diversity (ch. 32-34) | |
| **15** | Apr 18 | T | Animal Development | 52 | General events of development; genetic control of development | Animal diversity (ch. 32-34); developmental genetics (ch. 19) | |
| | | R | ***EG at Smokies Field Trip***<br>Plant Behavior | Video & Ch. 36 | Plant hormones; environmental stimuli & response | Cell signaling (ch. 9); basic ecology; species interactions | |
| **16** | Apr 25 | T | Immune Systems | 53 | Types of immunity; vaccines | Multicellularity (ch. 10); gene expression (ch. 12); basic cell functions (from BSC-120) | |
| | | R | **Exam 4** (Ch. ch. 35, 39, 40, 41-43, 52 and 53): CH 330/331 | | | | |

| TENTATIVE LECTURE SCHEDULE for Spring 2016 | | | | | | | |
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| WEEK # | WEEK OF | DAY | TOPIC | CHAPTER | *MAJOR* FOCUS | *CRITICAL* BACKGROUND | UNIT |
| | May 3 | T | Final Exam: 8am—CH 330/331 | all | | | |