BIO 101 Course Syllabus
Concepts of Biology/Fall 2018
(Dr. Joshua Corrette-Bennett)

COURSE DESCRIPTION: Biology 101 serves as a general survey course designed for education majors and students making the transition to the biology or molecular biology majors. This course also fulfills the Westminster Scientific Discovery IP lab-sci.ence requirement. (Students who identify themselves as Exploratory are certainly welcome to take this course to sample the extraordinary field of biology and determine if they want to continue in this discipline, but it does not fulfill any requirements for the biology or molecular biology majors.) Students will explore ways of observing and thinking about fundamental biological processes common to many living organisms (cells, genetics, ecology, evolution, etc.) using a combination of lectures, laboratory exercises, and assignments. Various resources will be utilized for learning about and understanding biological concepts as well as developing study skills, analytical skills, and critical reasoning. A laboratory is included with the course for the purpose of utilizing and developing observational and active learning skills, during which time the students will be taught how to apply the scientific method. This will require the application of critical thinking and deductive reasoning skills. The goal of this course is to provide students with a foundation of knowledge, skills, and ways of learning about the world from a biological perspective in order to become better learners and instructors and learn how to make informed decisions regarding current and future scientific discoveries.

Instructor: Dr. Joshua Corrette-Bennett
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Office Phone: 724-946-7208
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Office hours: MW 1pm-2:30pm; TR 11am-12:15pm
If I am not in my office during scheduled times I am probably somewhere nearby (another faculty member’s office, a research lab, etc.) and will return momentarily. Please be patient and wait by my office door for 5-10 minutes until I return. If I do not return in a timely manner, please leave a note on my door so I can contact you asap. If I am absent from my office during my office hours, I will leave a note on my door indicating where I have gone. You can always reach me by e-mail (preferable) or leave a message on my answering machine; I do not use text messaging. If it is a medical or family emergency and not during business hours, you can contact me at my home number: 724-657-1416.

REQUIRED:

(Each lab exercise will be placed onto D2L prior to each lab.)
COURSE OBJECTIVES: Our world is increasingly influenced by scientific discoveries and applications. The primary objectives of this class is to provide students with a fundamental understanding of scientific discovery in the life sciences, the process by which these discoveries are made (scientific method), important concepts (facts, theories, cells, inheritance, etc.) and the skills necessary to achieve goals in any discipline or field (reading, inquiry-based learning, critical evaluation, inductive and deductive reasoning, writing, etc.). Students who successfully complete this course will:

2. demonstrate the ability observe, evaluate, reason, communicate. Means of assessment – Labs and lab exercises, presentations, exams.
3. demonstrate an understanding and appreciation of basic concepts within each of the following areas of the life-sciences: cells (the basic unit of life), reproduction and heredity, evolution and ecology, and the origins and classification of life. Means of assessment – exams, quizzes, formal labs, lab notebooks, presentation.
4. demonstrate a basic understanding of the scientific process or method. This approach makes use of inductive and deductive reasoning. It is frequently used in every-day life, but often mistakenly for “destiny” or “fate”. Means of assessment – labs and lab reports.
5. demonstrate proficiency with a variety of laboratory, library, computer, and internet-based skills. Means of assessment – presentations, seminars, seminar summaries.
7. recognize that science is a process, not a list of facts waiting to be discovered. As you and your environment change, the process of scientific inquiry changes with it. Means of assessment – lab exercises,

CLASS STRUCTURE & ETIQUETTE: Each week there will be 3 one-hour sections, lecture/discussion format (TR 9:20am-10:50am; HSC 369) and 1 three-hour lab/research section (R 2-5pm; HSC 315). Please bring each of the following to lectures: required textbook, lecture notebook, and any assigned readings. Students are expected to print off each lab prior to the lab (as it becomes available) and bring it with them to lab. Assignments in lecture and/or lab may require the use of multiple resources so students are expected to bring the required textbook, their lecture notebook, and any assigned readings to lab.

Tobacco products are not permitted in the building. Unauthorized use of electronic devices is not allowed in the classroom or laboratory (e.g., cell phones, MP3 devices, tablets, lap tops, etc). When a student’s cell phone rings/buzzes during class/lab, or a student answers their cell phone or engages in text messaging during class/lab, they disrupt the learning environment. Points will be deducted from their total class grade for any of these distractions (1 point for the first occurrence; 2 points for the second; 4 points for the third; etc.) I will only make exceptions to this rule if you tell me that you are waiting for a call prior to that class and it pertains to a medical or family emergency. Students are more than welcome to bring a laptop or tablet to lecture and lab but are not allowed to connect to the internet unless instructed to do so. If a student has software or files opened other than what is necessary for class, I will ask the student to close them immediately. If a student is caught doing this a second time, 1 point will be deducted from their total grade for each infraction.

DISABILITY STATEMENT: Westminster College actively strives for the full inclusion of all our students. Students who desire some form of accommodation for a diagnosed learning disability or physical problem must inform the Director of Disability Resources, Faith Craig, located in 414 Thompson-Clark Hall (724-946-7192; craigfa@westminster.edu) as well as their instructors at the beginning of each semester (within two weeks) as to the nature of the disability and type of accommodation requested. If the disability or physical problem is diagnosed during the semester, students should inform both the Director of Disability Resources and their instructors immediately of the problem and accommodations needed. The Director of Disability Resources will assist the student in evaluating the disability and facilitate communication between the instructors and the student in considering special accommodations. The ability to accommodate and type of accommodation provided will depend on when the student makes the College aware of the disability, the needs of the student, the circumstances of the student’s classes, and the resources of the College.
ATTENDANCE POLICY: I will be taking attendance throughout the semester. You are allowed a maximum of 3 absences from lecture, regardless of the reason (college sponsored event, or not). For each additional absence, excused or unexcused, 2 points will be deducted from your participation grade. Arriving to or departing from class 10 or more minutes late/early without prior notification will be considered an absence. You are responsible for any material covered if absent from class, regardless of the reason. Notes must be obtained from classmates. Handouts or assignments must be obtained from me during my office hours. If you have questions and need help regarding material missed during an absence, I will be more than happy to sit and discuss the material with you during my office hours or another time outside of class that is convenient for both of us, but I can only be of help if you have read and thought about the material. That means you must come to help sessions prepared.

Attendance for exams and labs is required. Conflicts between these and college sponsored activities or events must be identified by the student prior to the exam or lab and reported to me at least two days prior to the absence. Any exams that conflict with other college sponsored activities must be taken prior to the scheduled exam date. Any absences from lab must be approved by me and must be made-up that week by attending the other lab section offered that week. Absences due to illness must be reported to the health center and made up within a timely manner (for specifics, see the course policy at the end of this document).

EXAMS: There will be four exams throughout the semester, each worth 125 points. The final exam will only cover material from the fourth quarter of the semester. Study guides will be handed out prior to the first two exams of the semester. You will be required to make a study guide for the third exam of the semester and it will be graded. (It will be worth 5% of the exam grade). The study guide must be in outline format. Material covered in lab will only be included on exams if the material was also covered in lecture.

LABS & LAB REPORTS:
Labs - The best way to learn the process of scientific inquiry is by doing scientific inquiry - a "hands on" approach or active learning. A number of the laboratory exercises in your lab manual introduce you to concepts, but then utilize the "inquiry method" rather than the standard "cookbook science" method. The inquiry method requires you, the student, to make observations or identify problems, propose one or more hypotheses, design experiments, analyze and evaluate the data, and then draw conclusions. It is in your best interest to read the labs a day or two prior to the scheduled lab period because various assessment tools (e.g., pre-quiz, post quiz) will be used to determine student preparation, understanding, and application of concepts and skills from the lab. Students who come to lab prepared for lab are the ones who derive the most benefit from these exercises. Occasionally, a lab will be used for analysis of a video.

Lab Reports - Lab reports consist of a worksheet for writing down important observations, calculations, analyses, and evaluation of data collected during the lab. This must be completed and handed in prior to leaving the lab, otherwise credit will not be earned for the assignment. If a student is unable to attend lab due to conflicts with an authorized college-sponsored event, the student must contact the instructor and make arrangements with the instructor of the alternative lab section prior to the week of the lab. (Refer to make-up policies that can be found after the course schedule.)

SPECIAL TOPIC PRESENTATION:
Each student will present a 10 minute report on a special topic in biology. Topics will coincide with lecture and lab material. Guidelines on presenting the material and dates for presentations will be made available following the mid-term break.

SEMINARS: Throughout the semester, you will have the opportunity to attend a number of colloquia given by biology faculty or professionals in the field of biology. You are required to attend two (2) of these and then write a 300-400 word summary/reaction paper that (1) identifies the significance or importance of the topic presented (2-4 sentences), (2) includes a brief summary of the seminar (no more than 200 words) and (3) concludes with a personal reaction/evaluation of that seminar (no more than 150 words). Attendance at these seminars will be worth a total of 60 points (30 points each summary/reaction paper). The paper must be completed and submitted to the appropriate D2L dropbox within one week of attending the seminar.
ASSESSMENT and DISCRETIONARY POINTS: A total of 100 points can be earned throughout the semester as assessment quizzes (announced and unannounced), group exercises, and participation. (Attendance is expected and not included as participation. Participation requires verbal communication and contributions to class and lab discussion.)

COURSE GRADING:
Lecture Exams (4; 125 pts ea.)........ 500 points
Lab Reports (12; 20 pts ea.)........... 240 points
Special Topic Presentation........... 100 points
Seminars (2; 30 pts ea.).............. 60 points
Assessment and Discretionary... 100 points
Total = 1,000 points

A...... 93% or greater C+...... 77% - 79.95% D...... 60% - 62.95%
A-...... 90% - 92.95% C...... 73% - 76.95% F...... below 60%
B+...... 87% - 89.95% C-...... 70% - 72.95%
B...... 83% - 86.95% D+...... 67% - 69.95%
B-...... 80% - 82.95% D...... 63% - 66.95%

ACADEMIC INTEGRITY: Academic integrity is one of the cornerstones of any academic community and an essential component of the scientific process. Much of the progress achieved over the past two centuries by various scientific disciplines, such as physics, chemistry, engineering and biology, is a direct result of academic rigor and integrity. Scientific theories such as gravity, cell theory, atomic theory and evolution are constructed from the observations and experimentation of many individuals, all relying on the accuracy and authenticity of previous work and each other's work.

Violations of academic integrity are included, but not limited to, those found in the College catalog, along with the process, consequences and stipulations. While the academic community and scientific process is severely undermined by any of these violations, the biology department would like students to pay particular attention to the categories of "plagiarism" and "providing false information". Failure to acknowledge or document your sources is called plagiarism and will be handled in accordance with Westminster's academic integrity policy. Plagiarism covers any material used for assignments mentioned above (textbooks, journal articles, lab partners or fellow students, internet sites, other faculty, etc.). If a student must use the words of another person, credit must be given to that source or person (i.e. direct quotes, paraphrasing of statements or ideas, thoughts or concepts that are not "common knowledge"). Research shows that studying in groups is one of the most productive ways of learning. This can mean explaining a difficult concept to a friend or asking for help with explanations. It can also mean asking a friend to edit your completed assignment for mistakes. While faculty and the administration strongly encourage student collaboration and the use of all available resources when studying or researching topics, it is important that the student (1) properly acknowledge the origins of their information and (2) process this information in a way that allows them to reach their own conclusions and express concepts in their own words. In order to achieve these goals, the student must learn proper citation of scientific resources, must have a thorough understanding of the material, and be willing to accept and learn from constructive criticism. We believe that you, the student, have the ability to think for yourself and form your own conclusions. (You shouldn't be paying thousands of dollars just to learn how to cut and paste or pay someone even more to write it for you.) Westminster's policy on academic integrity is clearly stated in the College catalog http://www.westminster.edu/acad/pdf/undergraduate_catalog.pdf.

Providing false or fabricated information is another serious violation of scientific integrity (lab notebooks, formal lab reports). Obtaining laboratory results from another source or person and/or fabricating results will result in a minimum penalty of zero for the assignment or a failing grade for the course. Any written
assignments or formal lab reports may be submitted to Turnitin.com for the purpose of confirming originality. Academic dishonesty applies to any student participating in activities listed in the College catalog either for their own or for another’s benefit. Other forms of academic dishonesty that are not tolerated by this discipline include, but are not limited to:

A. Lending of one’s work to another so that he/she may turn it in as his/her own.
B. Claiming to have attended a seminar or colloquium when one has not actually done so (or attempting to receive attendance credit when one has come significantly late or has left significantly early)
C. Stealing class materials from students, the professor, or the library and inhibiting others from using library materials or other resources necessary for the class.
D. Any inappropriate, disruptive, and/or aggressive behavior toward any other student in the classroom (e.g., threatening, bullying, intimidating.)

Tentative Lecture Schedule:

<table>
<thead>
<tr>
<th>Date</th>
<th>Day</th>
<th>Text Reading/Lecture Topic</th>
<th>Lab Session Topic/Manual</th>
</tr>
</thead>
<tbody>
<tr>
<td>8/28</td>
<td>T</td>
<td>Introduction, Expectations, Syllabus; Chp. 1 (1.1-1.4)</td>
<td></td>
</tr>
<tr>
<td>8/30</td>
<td>R</td>
<td>Chp. 2: Life's Chemical Basis Chp. 8: DNA Structure &amp; Function</td>
<td>Lab 1 - Scientific Methodology (Also read textbook 1.5 - 1.7)</td>
</tr>
<tr>
<td>9/4</td>
<td>T</td>
<td>Chp. 8: DNA Structure &amp; Function</td>
<td></td>
</tr>
<tr>
<td>9/6</td>
<td>R</td>
<td>Chp. 8: DNA Structure &amp; Function Chp. 9: From DNA to Protein</td>
<td>Lab 2 – DNA Isolation and Analysis</td>
</tr>
<tr>
<td>9/11</td>
<td>T</td>
<td>Chp. 9: From DNA to Protein</td>
<td></td>
</tr>
<tr>
<td>9/13</td>
<td>R</td>
<td>Chp. 3: Molecules of Life</td>
<td>Lab 3 – Sickle Hemoglobin Analysis</td>
</tr>
<tr>
<td>9/18</td>
<td>T</td>
<td>Exam I</td>
<td></td>
</tr>
<tr>
<td>9/20</td>
<td>R</td>
<td>Chp. 4: Cell Structure</td>
<td>Lab 4 - Prokaryotic and Eukaryotic Cells</td>
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<tr>
<td>9/25</td>
<td>T</td>
<td>Chp. 4: Cell Structure</td>
<td></td>
</tr>
<tr>
<td>9/27</td>
<td>R</td>
<td>Chp. 5: Metabolism</td>
<td>Lab 5 - Enzyme Kinetics</td>
</tr>
<tr>
<td>10/2</td>
<td>T</td>
<td>Chp. 6: Photosynthesis Chp. 7: Releasing Chemical Energy</td>
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</tr>
<tr>
<td>10/4</td>
<td>R</td>
<td>Chp. 7: Releasing Chemical Energy</td>
<td>Lab 6 – Metabolic Pathways</td>
</tr>
<tr>
<td>10/9</td>
<td>T</td>
<td>Exam II</td>
<td></td>
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<tr>
<td>10/11</td>
<td>R</td>
<td>Chp. 11: How Cells Reproduce</td>
<td>Lab 7 – Cell Cycle &amp; Mitosis</td>
</tr>
<tr>
<td>10/16</td>
<td>T</td>
<td>Chp. 12: Meiosis &amp; Sexual Reproduction</td>
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<tr>
<td>10/18</td>
<td>R</td>
<td>Chp. 13: Patterns in Inherited Traits</td>
<td>Lab 8 – Basic Genetics</td>
</tr>
<tr>
<td>10/23</td>
<td>T</td>
<td>Chp. 14: Human Inheritance</td>
<td></td>
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<tr>
<td>10/25</td>
<td>R</td>
<td>Chp. 16: Evidence of Evolution</td>
<td>Lab 9 - Skull Comparison</td>
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<tr>
<td>10/27-30 Sat-T</td>
<td>Midterm Break (No classes)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11/1</td>
<td>R</td>
<td>Chp. 16: Evidence of Evolution Chp. 17: Processes of Evolution</td>
<td>(No lab this week)</td>
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</tbody>
</table>
Student Responsibilities:

1) Be front center in every class. The student is to sit towards the front of the room and constantly remain involved in the class activities.

2) Attend at all lectures and laboratories. Failure to attend a lecture or laboratory session will greatly reduce your understanding of the material. Absence from a lecture or laboratory session will result in a significant grade reduction unless arrangements were made in advance.

3) Be attentive in class and in lab. Focus on the material or task at hand, not social events.

4) Complete all reading assignments. This does not simply entail the mechanical reading of your text/lab assignment. You are expected to take notes, record your own questions, answer study questions given in the assignment, and prepared to enter into class discussions.

5) When questions develop after class or during study, the student should make a concerted effort to find an answer for the question. The answer may be obtained from your texts, fellow students, or from the instructor. This does NOT mean firing off a barrage of e-mails and expecting detailed answers. It DOES mean using office hours and attending review sessions

6) Attend weekly review sessions to supplement your understanding of the course materials. These sessions are offered to assist you. You should come bearing questions, not like an empty vessel waiting to be filled.

Instructor Responsibilities:

1) The instructor will be prepared for each lecture and laboratory session, and will have carefully read the assignment and be mentally prepared for class.

2) The instructor will be available for individual help by appointment. Either see office hours or schedule a meeting time.

3) The instructor will return exams in a timely manner (within one or two lecture periods). The educational value of an exam is maximized by feedback. After the exam is returned, the student is expected to review questions and answers outside of class and lab time so as to reinforce the concepts covered on the exam.

BIO 101 MAKE-UP POLICY
Attendance of lectures is not mandatory, but we will be covering significant amounts of material each day so it is in your best interest to attend lectures. If a student misses lecture for any reason, the student is responsible for material we covered in class. This means reading appropriate sections from the book, getting lecture notes from one or two other students in the class, and identifying things that are not clear. If you have an excused absence (see the College catalog), see me as soon as possible with questions about the material and I will spend as much time as needed answering your questions. Any missed quizzes or graded assignments completed during lecture can only be made up if the student provides a valid excuse (see college catalog) within 48 hours of returning to campus or getting out of the health center or hospital. If a valid excuse is not provided or is not considered valid by the instructor, that assignment will count as a zero.

Exams are required. Any absence from an exam due to a college-sponsored activity must be identified by the student, explained to the instructor, and the exam must be taken prior to the regularly scheduled exam time and at a time that is convenient for both the student and the instructor. Making up an exam due to an unexpected absence caused by a medical or immediate family (parent, siblings, grandparents, children, guardian) emergency requires a formal excuse (for medical) or permission from the Academic Dean, and the exam must be made up within 48 hours of returning to campus. Any requests to make up the missed exam due to something that is a medical or immediate family emergency and is made 48 hours after the exam or after being discharged from a medical facility will not be honored.

Labs are required. Any absence from a lab due to a college-sponsored activity or medical emergency must be identified by the student, and the student is responsible for identifying an alternative lab for make-up (sometime during that same week) and contacting the instructor of that lab section. If a student fails to identify a conflict and/or does not make arrangements for a make-up lab in a timely manner, the student will either receive a zero for that lab. Making up a lab due to an unexpected absence caused by a medical or immediate family emergency (parent, siblings, grandparents, children, guardian) requires a formal excuse (for medical) or permission from the Academic Dean, and the lab must be made up before the subsequent lab period. If a student does not make an effort to arrange a make-up with their instructor or attend an alternative section in the required time, the student will earn a zero for that lab. Any requests to make up the missed lab due to something that is a medical or immediate family emergency and is made 48 hours after the lab or after being discharged from a medical facility will not be honored. Any lab assignments or research articles handed in after the due date and without a college-approved excuse will be penalized 5% of total possible points for each day late (1 minute late = 1 day late) and will earn a zero after seven days late. Students who miss a lab assessment quiz will be allowed one make-up at the instructor’s discretion, but the student must initiate the request and the make-up quiz must be completed before the next lab.

Attending two seminars is required. Because there are multiple seminars throughout the semester, there is no excuse for not being able to attend two. Students who do not attend the required number of seminars will earn a zero for each required seminar missed.

SUGGESTIONS FOR DOING WELL IN THE COURSE:

- If you’ve had biology before, some of what we cover will be more or less familiar to you, but read and **study** the chapters anyway and keep up with the assignments. We move quickly and it is easy to get behind. **It is important to prepare for, and attend, each class session.**

- Review lecture material prior to each class. This does not mean reading every word of the chapter. It does mean reading the headings and subheadings and reviewing the diagrams and tables in an orderly manner to prepare your mind for what’s to come.

- Study where you are free from distractions (e.g. noise, TV, roommates). To study means to concentrate, understand, and **commit certain material to memory**. Memory can be facilitated by understanding concepts, repeating words and ideas out loud, and writing them repeatedly. Occasionally take a break, walk around and reward yourself for your efforts.
• Record good notes (class and lab). If you have difficulty with this, check your notes with one or more students in the class. Don’t hesitate to ask other students or the professor questions—it will probably help other students in the class, too.

• Come by to see me early on in the course whenever you have any questions or problems with understanding the textbook, readings, or my lectures. Remember, I am here to help and guide you, but not do it for you.

• Plan ahead for a test. Spend at least 4-7 days in preparation and then get a decent night’s sleep before a test.

• Test yourself or have others test you as you study. Cover your notes and quiz yourself or each other as you study.

• Demand more from yourself in terms of time, effort, and engagement than your instructor.