



BIO 101 Syllabus, Fall 2016

Discipline Prefix:	BIO	Course Number:	101	Course Section:	57B/57BL
Course Title:	General Biology !				
Credit Hours:	4	Contact Hours:	Lecture 3 hours. Lab 3 hours. Total 6 hours per week	Semester:	Fall 2016
Meeting Days/Time/Location:	Lecture and Lab: Mon-Fri, 8am – 10:30am, Warsaw 173				

Instructor Information:

Name:	Stephanie McClain	Office Location:	Warsaw 208
Office Hours:	Mon-Fri: 10:30am – 3pm Contact instructor for specific tutoring needs.		
Email:	smcclain@cbgs.k12.va.us	Phone:	(804)333-1306
Instructor Response Time to Email:	Email is the preferred method of contact for study related questions. Students can expect a response within 24-48 hours on normal business days, Monday through 3:00pm on Friday. Messages delivered late Friday-Sunday will normally receive a response by Monday evening.		

Course Information:

VCCS Course Description:	BIO 101 focuses on foundations in cellular structure, metabolism, and genetics in an evolutionary context. Explores the core concepts of evolution; structure and function; information flow, storage and exchange; pathways and transformations of energy and matter; and systems biology. Emphasizes process of science, interdisciplinary approach, and relevance of biology to society. Part I of a two-course sequence. 4 credits
This course will fulfill the requirement for:	This course fulfills a science requirement for the General Education Certificate and the Associate of Arts and Science Transfer Degree. Please consult with your academic advisor about the transferability of this course.
Prerequisites:	Readiness to enroll in <u>ENG 111</u> plus completion of developmental math unit 3 required or placement in unit 4 or above.

Exam Date:	Week of Dec 12-16	Withdrawal Date	Dec 6, 2016
Method of Instruction:	<p>Lecture, discussion, text readings, videos, analysis of current events, experimental design, laboratory exercises, scientific research, and computer simulations are all used to cover the material and foster an engaging learning environment.</p> <p>Schoology: Students are expected to login to Schoology to see announcements, grades, lecture power point notes, links, and other documents.</p> <p>Email: If any academic concerns or Instructor-Student communication is needed after normal class hours, the Instructor will contact the student by email. Students are also expected to check their student email regularly.</p> <p>Laboratory Assignments and Procedures: As noted below, lab counts 30% of the course grade. In addition to hands-on experimental work, assignments include quizzes and written and oral reports. For your safety in lab, please: (1) wear closed-toe footwear and tie long hair back; (2) do not eat, drink, or chew gum. Instructor will provide further information during lab.</p> <p>Student Responsibilities: Reading the text and class notes before class is strongly recommended to prepare the student to participate and maximize his/her learning. Pertinent questions and discussion during lecture are encouraged. The student is expected to keep up with his/her course work, and if necessary, consult with the instructor as needed during office hours for additional help.</p>		
Instructional Materials:	Text: Russell, P., McMillan, B.. 2011. Biology: The Dynamic Science. Brooks/Cole, Belmont,CA. 1306 pgs.		
Course Objectives:	<p>The students successfully completing BIO 101 should be able to:</p> <ol style="list-style-type: none"> 1) Define the characteristics common to all life forms. 2) Apply the scientific method to design an experiment including techniques to analyze and interpret the data obtained. 3) Use basic chemical principles as applied to biology (including molecular structure, chemical bonds and reactions, pH, and unique properties of water). 4) Describe the four major biological macromolecules, their respective building blocks, and their respective functions in living systems. 5) Describe and explain the function of structures that are characteristic of prokaryotic and eukaryotic cells; explain cellular transport mechanisms. 6) Compare and contrast cellular respiration and photosynthesis; explain the role of enzymes in energy transformations. 7) Compare and contrast the cellular processes of mitosis and meiosis. 8) Explain the transmission of genetic information; apply Mendelian principles to solve problems in human genetics. 9) Describe the molecular structure and replication of the genetic material; explain the roles of DNA and RNA in gene expression. 10) Define evolution and describe the mechanisms through which it occurs (including natural selection, mutation, migration and random genetic drift); explains the diversity of life on earth through the processes of speciation and extinction. 		

Within each content area, the 6 VCCS Core Concepts of Biology listed below will be discussed and incorporated.

- I. Pathways and Transformations of Energy and Matter
- II. Information Flow, Exchange, and Storage
- III. Evolution
- IV. Structure and Function
- V. A Systems Approach to Biology
- VI. The Process of Science

Student Learning Outcome 1- Pathways and Transformations of Energy and Matter

Students will be able to explain the processes by which energy enters living organisms and what happens as it passes between and through all levels of the biological hierarchy. Students will also be able to compare and contrast the processes by which matter moves through and between organisms/levels of organisms.

Student Learning Outcome 2- Information Flow, Exchange and Storage

Students will be able explain how information is stored in biological systems, how it is accurately replicated, and how the information is processed and used by individual cells/organisms. Students should also be able to explain how that information flows between generations and the patterns of inheritance that result. Students should also be able to describe the application of these concepts.

Student Learning Outcome 3- Evolution

Students will be able to explain the process of evolution by natural selection, including molecular influences and how that process has affected all life forms in the past and continues to do so today. Students should also be able to explain historical examples and current examples. Students should be able to summarize the evidence for evolution and modifications made to the basic Darwinian explanation.

Student Learning Outcome 4- Structure and Function

Given different the levels within the hierarchy of science in general and biology in particular, students will be able to analyze the interrelationships between structural elements at that level and the functions performed. Students will also be able predict the resulting changes that may occur when a structural element of a hierarchy is changed.

	<p>Student Learning Outcome 5- A Systems Approach to Biology Given any biological system, students should be able explain how the parts of the system interact to make the functioning system a whole entity. Students should also be able to describe the emergent properties at any level within a biological system. Students should have experience applying the scientific process by using a model or simulation to describe a system and predict/demonstrate how changes in the model affect the system.</p> <p>Student Learning Outcome 6- Process of Science Students will be able to explain the process by which science seeks to understand the world around us. This area should include the design of a hypothetical experiment to test a hypothesis either given to the student or derived by the student from observations provided. Students should be able to identify the role of observation in this process.</p>																								
Grading and Evaluation:	<p>Grades are posted in Schoology and will be reviewed with students normally within 7 days. Marking period grades will be based on evaluations, classwork/homework, laboratory work, and participation. See percentages below. The semester grade will be based on marking period 1 (45%), marking period 2 (45%), and the exam (10%).</p> <table><tr><th colspan="2">Approximate Distribution</th><th colspan="2">Final Course Grade</th></tr><tr><td>Evaluations</td><td>40%</td><td>90-100</td><td>A</td></tr><tr><td>Classwork/Homework</td><td>20%</td><td>80-89</td><td>B</td></tr><tr><td>Lab Grade/Activities</td><td>30%</td><td>70-79</td><td>C</td></tr><tr><td>Field Trip & Class Participation</td><td>10%</td><td>60-69</td><td>D</td></tr><tr><td></td><td></td><td>Below 60</td><td>F</td></tr></table>	Approximate Distribution		Final Course Grade		Evaluations	40%	90-100	A	Classwork/Homework	20%	80-89	B	Lab Grade/Activities	30%	70-79	C	Field Trip & Class Participation	10%	60-69	D			Below 60	F
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Honor Code:

RCC does not condone academic dishonesty. The complete policy may be reviewed at <http://www.rappahannock.edu/catalog/student-handbook/academic-honesty/> Faculty are required to report violations of the policy and include clearly in the Syllabus how the violation will be handled.

Consequences for academic dishonesty: see Chesapeake Bay Governors School Student/Parent Handbook

Students have the right to due process and to appeal as defined in the sections on Student Disciplinary Procedure and Student Grievance and Academic Due Process in the student handbook.

Other: CBGS students must also refer to the guideline in our Student/Parent Handbook.

Special Requests:

It is important to RCC that all students have a learning environment that is conducive to their needs. Therefore, any student who feels that they may need some type of accommodation in order to make this class a successful setting, should go to the Counseling Office for information about applying for services and accommodations. You will need to provide current documentation of your disability and recommended accommodation for that disability.

For additional information refer to “Student Services” on the RCC website and look for:

<http://www.rappahannock.edu/student-services/counseling-services/students-with-disabilities/>

Course Policies and Other Information:

Attendance Policy:	Make every effort to be in class each day. CBGS students must also follow the policies outlined in the Student/Parent Handbook.
Testing Policy:	Exams will be delivered in class. Students will be notified in advance about testing arrangements, or notified through Schoology for any unexpected changes (e.g., due to inclement weather). It is the student’s responsibility to notify the Instructor if any special accommodations are needed for testing.
Other:	

High Risk Program Policies (If applicable; this DOES NOT apply to Science, Health Programs, or PE classes)

Faculty teaching high risk program courses will inform students that they are enrolled in a high risk program course.

Complying with college safety policies and procedures is the responsibility of all students. Safety is a part of the student’s grade as evidenced through course instruction, evaluation, and practice. Students enrolled in college identified high risk programs are subject to the policies identified below. Violation of these policies and procedures is considered a conduct violation which will be reported and result in disciplinary action. Faculty teaching in high risk programs have the authority to enforce these policies and procedures in program courses.

- Students will receive course specific safety training and must pass a course specific safety test prior to beginning laboratory activities. Additional safety tests may be given during the semester as required by course content.
- Students must be familiar with safety equipment located in the labs and in the immediate vicinity of labs.
- Students must follow safety procedures regarding clothing, safety glasses, shoes, etc. as required by specific guidelines provided by the course instructor.

- Students may not work in laboratories without supervision. An instructor must be present at all times. If the instructor must leave the lab, all students must take a break and leave the lab.
- Students must leave the lab in a clean and organized manner as directed by the course instructor.
- Students must read the RCC conduct code and sign a statement that they have read and understood the conduct code, consequences, and implications for safe conduct in the laboratory.

Course Specific Consequences for Safety Violations (if applicable):	
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Title IX:

Rappahannock Community College is committed to providing an environment that is free from harassment and discrimination based on any status protected by law. This institution promotes and maintains educational opportunities without regard to race, color, sex, ethnicity, religion, gender, age (except when age is a bona fide occupational qualification), disability, national origin, or other non- merit factors. More information on Title IX can be found at www.rappahannock.edu by searching for "Title IX." For questions related to Title IX, please contact RCC Title IX Coordinator, Lorraine A. Justice, at 804-333-6737 or titleix@rappahannock.edu. To ensure that all members of our campus community are educated about Title IX, you will receive an email to complete the complete Title IX training. Each member of the RCC community to include students, faculty, and staff will receive a personalized email to complete the training provided by Campus Answers. If you do not receive the email or have questions, please contact your Title IX Coordinator, Lorraine Justice at 804-333-6737 or by email at titleix@rappahannock.edu or Dr. David Keel, Dean of Student Development at 804-758-6730 or by email at dkeel@rappahannock.edu.

Learning Sequence:

Unit	o Topics
1: The Science of Biology	<ul style="list-style-type: none"> o Safety o Scientific Method, Graphing o Measurements, SI units, Dimensional Analysis o Levels of Organization o Scientific Literature
2: Cellular Biology	<ul style="list-style-type: none"> o Atoms, Bonding o Biochemistry o Water o Cell Structure and Function

- o Cell Membranes, Transport

3: Energetics

- o Enzymes
- o How cells make ATP
- o Photosynthesis
- o Respiration

4: Heredity

- o Cell Cycle, Mitosis, and Meiosis
- o Mendelian Genetics
- o DNA and Protein Synthesis
- o Biotechnology

5: Evolution and Biodiversity

- o Genetic Basis for Evolution
- o Natural Selection
- o Population Evolution
- o Classification
- o Overview: Prokaryotes through Vertebrates

Rappahannock Community College Course Policies and Procedures can be found at
<http://www.rappahannock.edu/policy/course-policiesrcc/>.

Teach Act Copyright Notice "The materials provided for this course are only for the use of students enrolled in this course for purposes associated with this course, and may not be retained or further disseminated."