RANGER COLLEGE

RANGER, TEXAS

COURSE SYLLABUS

BIOLOGY for SCIENCE MAJOR I

Biol 1406

4 credit hours

INSTRUCTOR:

Will Stewart

INSTRUCTOR: Will Stewart
EMAIL: wstewart@rangercollege.edu
OFFICE: Olney High School
PHONE: 940-564-5637

HOURS:	MONDAY:	2:50 - 4:30 PM
	TUESDAY:	2:50 - 4:30 PM
	WEDNESDAY:	2:50 - 4:30 PM
	THURSDAY:	2:50 - 4:30 PM
	FRIDAY:	2:50 - 4:30 PM

The above schedule and procedures in this course are subject to change in the event of extenuating circumstances.

I. Texas Core Curriculum Statement of Purpose

Through the Texas Core Curriculum, students will gain a foundation of knowledge of human cultures and the physical and natural world, develop principles of personal and social responsibility for living in a diverse world, and advance intellectual and practical skills that are essential for all learning.

II. Course Description

Fundamental principles of living organisms will be studied, including physical and chemical properties of life, organization, function, evolutionary adaptation, and classification. Concepts of cytology, reproduction, genetics, and scientific reasoning are included.

III. Required Background or Prerequisite

Passing score on TSI Assessment Test Reading section is recommended.

IV. Required Textbook and Course Materials

"Concepts of Biology" by OpenStax College. April 2013.
ISBN-10 1938168119 , ISBN-13 978-1-938168-11-6
This is a free online pdf and ebook available at openstaxcollege.org

The textbook for this course is provided by Lumen Learning. There is no separate book to purchase. It can be accessed in Blackboard.

V. Course Purpose

Courses in the life and physical sciences focus on describing, explaining and predicting natural phenomena using the scientific method. These courses involve the understanding of interactions among natural phenomena and the implications of scientific principles on the physical world and on human experiences.

VI. Learning Outcomes

Upon successful completion of this course, students will:
Describe the characteristics of life.
Explain the methods of inquiry used by scientists.
Identify the basic requirements of life and the properties of the major molecules needed for life.
Compare and contrast the structures, reproduction, and characteristics of viruses, prokaryotic cells, and eukaryotic cells.
Describe the structure of cell membranes and the movement of molecules across a membrane.
Identify the substrates, products, and important chemical pathways in metabolism.
Identify the principles of inheritance and solve classical genetic problems.
Identify the chemical structures, synthesis, and regulation of nucleic acids and proteins.
Describe the unity and diversity of life and the evidence for evolution through natural selection.

VII. Core Objectives

This course meets the following of the six Core Objectives established by Texas:

- ☒ **Critical Thinking Skills (CT) –** Creative thinking, innovation, inquiry, and analysis; evaluation and synthesis of information
- ☒ **Communication Skills (COM) –** effective development, interpretation and expression of ideas through written, oral, and visual communication
- ☒ **Empirical and Quantitative Skills (EQS) –** The manipulation and analysis of numerical data or observable facts resulting in informed conclusions
- ☒ **Teamwork (TW) –** The ability to consider different points of view and to work effectively with others to support a shared purpose or goal
- ☐ **Social Responsibility (SR) –** Intercultural competence, knowledge of civic responsibility, and the ability to engage effectively in regional, national, and global communities
- ☐ **Personal Responsibility (PR) –** The ability to connect choices, actions, and consequences to ethical decision-making

VIII. Methods of Instruction

Lectures (3-4 weekly) on the major concepts and theories in biology will be discussed.
Labs (1-2 weekly) in which major biological principles will be demonstrated by examination of specimens, conducting experiments and viewing videos.

IX. Methods of Assessment

Exams will consist of multiple choice and short answer questions and will cover all material discussed in class or in reading assignments. Each question will be graded as correct or incorrect in accordance with information in the text, lectures and readings. Exam grades will be taken as the points correct. Points may be added to exam scores for in class assignments, but you must be in class and complete these assignments in the appropriate manner to receive credit.
Students missing lectures are responsible for getting notes from the instructor or classmates (notes, and other resources, are available on the Ranger College Web Page via Blackboard).
Make-up exams, for exams missed due to an excused absence, will be given later in the semester and may include different style questions and will exclude bonus questions. Students are strongly urged to not miss exams. The final exam is required – it is not optional.

The course grade will be computed as follows:

$$\text{Average of lecture exams (CT, COM, EQS)} = 3/4 \qquad \frac{(\text{Lecture Ave.} * 3) + \text{Lab Ave}}{4}$$

$$\text{Lab average (CT, COM, EQS, TW)} = 1/4$$

Letter grades will be assigned as follows:
90-100 = A, 80-89 = B, 70-79 = C, 60-69 = D, below 60 = F

X. Course/Classroom Policies

Regular and punctual attendance in all classes and labs is considered essential for optimum academic success. If the student has the equivalence of three weeks of unofficial absences . . . the instructor may drop the student from the course with a grade of F (Ranger College General Catalog). Students are expected to be seated by the beginning of the lecture period. Excessive tardies (6) may be considered as absences. Excessive unexcused absences (6) may result in a grade of I (incomplete) and may result in dismissal from the course with a grade of F. It is your responsibility to inform the instructor of an excused absence. An absence is excused if you are excused by the Dean to participate in an authorized College activity or if you have a valid medical excuse.
Any student who is disruptive to the class will be dismissed from the class and may be dismissed from the course. Any student found with unauthorized notes (cheat sheets, electronic devices, etc.) during an exam or copying from another student's exam will be subject to disciplinary action. Any student misconduct will be reported to the Dean of Student Services (See Student Handbook).
Electronic devices (computers, phones) may be used in class with special permission and with the understanding that they will be used only for biology class material. Misuse of cell phones, or

other electronic devices, in class may lead to the student being counted absent or points deducted on exams.
No tobacco use is permitted in the science building, or any location on the RC campus.

Biology 1406 Lab Policies and Procedures
Fall 2017

Biology labs meet twice a week for 75 minutes. Each lab will consist of a series of experiments, demonstrations, observations, videos or other activities. Active learning and critical thinking skills will be stressed through a series of exercises in scientific problem solving. Daily grades will be based on work sheets and quizzes completed in the lab on these activities. **All lab exercises should be completed and work sheets should be turned in before you leave the lab**. The graded worksheets will be returned during the following lab, or as quickly as possible, for correction. These work sheets will form the basis for major practical exams so you should keep them for future studying.

*** To get full credit for a daily grade you must be in lab by the beginning of the class - and cell phones off.*** During the beginning of lab the exercise will be explained - being present and focused is important.

Your grade in the lab (which is 1/4 of the course grade) will be determined by the following formula:

50% - daily grades (work sheets, quizzes, participation, etc. - about 20 daily grades)
50% - five major practical exams

To receive credit for the daily grade you must attend the lab. If you miss a lab you may be able to attend another regularly scheduled lab covering the same topic, space permitting. Check with me before you do this. The times the labs are scheduled will be posted on my office door.

The major practical exams will be based on the daily exercises completed since the last practical. **You are responsible for the material covered in lab whether you attended the lab or not**. Work sheets will be available after the lab is completed in order to allow you to study for the practical **but not for a daily grade**.
Make up practical exams are difficult.
You should make every effort to take the lab practical exams when they are scheduled.
No make up practical exams will be given for unexcused absences.

All lab materials will be provided except for pencils, paper and a notebook. Drawings and calculations are best done in pencil so that errors can be corrected more easily. In most cases, you will work with a lab partner, or in a small group; however you are individually responsible for completing and turning in work sheets.
When you have completed the lab please return all equipment (slides, microscopes, glassware,

etc.) to the proper storage area.
No tobacco products, smokeless or otherwise, are allowed in the science building, or on the Ranger College campus.

XI. Course Outline/Schedule

BIOLOGY 1406

Course Calendar

text: Concepts of Biology by OpenStax College

Class	Lecture Topic	Text Assignment
1	Class orientation	
2	Introduction to science and the scientific method	Ch 1
3	Labor Day / Cell organization	
4	Biological chemistry – characteristics of molecules	Ch 2
5	Cell structure and function – basic cell organization	Ch3
6	"	"
7	Transport across cell membranes	"
8	**Exam 1**	
9	Metabolism - chemical reactions and ATP	Ch 4
10	Transferring energy cellular respiration	"
11	Fermentation and aerobic respiration	"
12	Photosynthesis - using light to make food	Ch5
13	Evolution of metabolism	"
14	**Exam 2**	
15	Protein structure and function / Nucleic acid structure	Ch 9
16	DNA structure – the genetic code	"
17	Protein synthesis – transcription and translation	"
18	Control of gene expression – homeotic genes	"
19	**Exam 3**	
20	Cell division-mitosis and meiosis/ homologous chromosomes	Ch 6
21	Genetics and inheritance - Mendel's law of inheritance	Ch7
22	Genetics - simple inheritance	Ch8
23	Genetics - inheritance of non-Mendelian traits	"
24	**Exam 4**	

Thanksgiving Holiday (enjoy)

25	Population genetics – definition/ Hardy- Weinberg	Ch 11
26	Factors affecting Hardy Weinberg equilibrium	"
27	Natural selection and adaptation	"
28	Speciation-definition, conditions, reproductive barriers	"
29	"	"
30	**Exam 5**	
31	Review	
32	**Final Exam**	

XII. Non-Discrimination Statement

Admissions, employment, and program policies of Ranger College are nondiscriminatory in regard to race, creed, color, sex, age, disability, and national origin.

XIII. ADA Statement

Ranger College provides a variety of services for students with learning and/or physical disabilities. Students are responsible for making initial contact with the Ranger College Counselor, Gabe Lewis (glewis@rangercollege.edu). It is advisable to make this contact before or immediately after the semester begins.

XIV. Exit plan from Room 102:

In case of fire or other emergency, the nearest exit from the classroom (102) is the classroom door then to the west building exit. The nearest exit from the biology lab (101) is the classroom door then to the west building exit. If it is a fire exit the building and meet in the band practice lot to the west of the high school. If it is a tornado or severe weather exit the east doors and go to the high school gym.
Please remain outside the building or in the gym until otherwise notified by faculty and administration.