SCHOOL OF STEM SYLLABUS

TERM:

INSTRUCTOR:

COURSE CODE: BIO-116

OFFICE HOURS:

COURSE TITLE: Principles of Biology II

OFFICE LOCATION:

DAY(S) AND TIME(S):

EMAIL:

LOCATION:

PHONE:

COURSE PREREQUISITE: BIO-115

CREDITS: 4

COURSE DESCRIPTION:
This course is a continuation of Principles of Biology I. Students will study the structure, function, and behavior of organisms, and they will appreciate the unity and diversity of life. Topics include the principles of evolution, Viruses and DNA biotechnology, Diversity of Bacteria, plants and Protists. Students will compare the Immune, Circulatory, Nervous and Hormonal systems between human and other species. Laboratory exercises will encourage students to practice science throughout hands on experiments

STUDENT LEARNING OUTCOMES:
Upon completion of this course, students will be able to:

1. Describe DNA sequencing, cloning, stem cell research and perform experiments such DNA extraction, PCR, Western/Southern Blotting.
2. Explain the concepts of evolution from Darwinian, evolution of population, the origin of species the history of life on earth and Hardy-Weinberg theory.
3. Differentiate between micro and macro evolutions, Phylogeny and Taxonomy process between kingdoms and domains.
4. Differentiate the structure of virus as enveloped versus non enveloped, viroid's, Prions & Compare virus replication as lytic or lysogenic and virus mutations.
5. Differentiate between bacteria, archaea and protists, fungi structures, metabolic process and diversity
6. Compare between, conjugation, transformation and transduction in genetics recombination and mutations of bacteria and archaea and their effect on other species.
7. Compare and contrast Plants structures and tissues Ground, vascular, angiosperm diversity.
8. Differentiate and describe systems structure and function between different species such s circulation, exchange, immune, endocrine and nervous systems.
9. Describe population ecology, community and ecosystems.

TEXTBOOK AND SUPPLEMENTAL MATERIALS:

Reece, Jane B, Campbell, Neil A, Cain, Michael L. Campbell Biology 11th Edition. Pearson. ISBN-13: 9780134093413

Judith G Morgan & M. Eloise Carter. Investigating Biology-Laboratory Manual 9th Edition. Pearson. ISBN13: 9780134473468

GRADING POLICY:

Two Lecture Exams	20%
Two Lab Exams	20%
Lab Reports	10%
Written Paper Assignment	10%
Midterm Exam	15%
Final Comprehensive Exam	25%

Make up exams will be given only in extenuating circumstances. It is your responsibility to let me know that you missed an exam. All make up exams are more difficult than the original.

SAMPLE COURSE SCHEDULE:

Weeks	Lecture	Labs
Week 1	Review from BIO 115 DNA & RNA	Laboratory Safety Orientation & Safety Rules: Discuss the theory of Labs performed in BIO 115
Week 2	Biotechnology. Ch 20	Restriction Enzyme Lab Lab Topic 10.1 Starting from 2. Prepare the digestions (p.253-258)
Week 3	A Darwinian View of Life. Ch 22	Continuation from Lab Topic 10.1 (p.259) Lab Topic 10.2: Practice Problem for Mapping DNA
Week 4	Origin of Species. Ch 23 History of Life. Ch 25	Lab Topic 11: Population Genetics: The Hardy-Weinberg Equilibrium
Week 5	Phylogeny. Ch 26	Lab Practical Exam I
Week 6	Viruses. Ch 19	Video on Viruses

Week 7	Bacteria and Archaea. Ch ch 27	Lab Topic 12: Bacteriology (12.2 and 12.3)
Week 8	Protist Chapter.ch 28 Plant Diversity ch 29,30	Lab Topic 13: Protists
Week 9	Fungi. Ch 31	Midterm Exam
Week 10	Vascular Plant Structure, Growth, and Developmentch 35	Lab Topic 14: Plant Diversity I: Bryophytes (Nonvascular Plants) and Seedless Vascular Plants
Week 11	Circulation and Gas Exchange. Ch42	Lab Topic 23: Vertebrate Anatomy II: The Circulatory and Respiratory Systems Sheep Heart Dissection Models
Week 12	Immunity. ch 43	Lab Topic 18: Animal Diversity I: Porifera, Cnidaria, Platyhelminthes, Mollusca, and Annelida
Week 13	Nervous System. Ch 49	Lab Topic 24.3 Nervous Tissue, the Spinal Cord and Reflex Arc, the Sheep Brain and the Vertebrate Eye
Week 14	Regulations and Hormones. Ch 45 Population Ecology. Ch 53	Lab Practical Exam II
Week 15	Final Exam	

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https://www.hccc.edu/administration/academic-affairs/syllabus-addendum.html