BIOLOGY 100 – PRINCIPLES OF BIOLOGY – Fall Semester 2009

Course description: This is an introductory biology course which covers the main concepts in biology in a lecture/ laboratory format. The course satisfies the F4 LinC graduation requirement (laboratory requirement for graduation). The human organism is used as the primary focus organism for each topic. Lab exercises correlate with the lecture content. (Note - a fetal pig dissection is done in the laboratory).

Instructor - Dr. Karen Kurvink

Lecture - Biol 100 - MWF 4 (11:45-12:35)
L-A 1:15-4:15 PM
L-B 8:30-1130 PM
L-C 1:15-4:15 PM

Text - **BIOLOGY – Concepts and applications - Starr/Evers/ Starr -2009**

Course objectives:

1. To focus on the basic principles of biology.

2. To introduce students to the process of science and experimental design.

3. To emphasize biological systems related to the human organism in the context of "evolutionary conservation in design" in all higher organisms .

4. To consider the scientific and societal implications of current biological research and technologies.

Course comments:

1. "Showing up" for lectures and laboratories is critical for success in this course. If you miss a lecture or lab you should submit a written/signed explanation of the reason for your absence. Unexcused absences will result in a lowered course grade. Lab attendance is recorded as 20 pts/lab.

2. Unit exams will cover material from both the lecture and laboratory portions of the course. The exams will contain a variety of types of questions. Optional help sessions will be offered before each exam to answer questions and to clarify the material

covered. Each unit exam is 100 pts.

3. A contracting option is available for students who have a specific interest in doing an individual project. This is optional and must be discussed and contracted with the professor.

4. Optional lectures and/or videos may be available during the semester. These will be announced by the professor in terms of topic and the point value. Note in each case the earned points/possible points will be added to the other points earned in the course.

5. During the last lab of the course students will present brief power point presentations on an environmental topic. (Note: this presentation will be researched and presented with a partner.)

5. Course grade: This grade will be determined by dividing earned points by the total possible number of points. The percentage will translate into a letter grade according to the following scale:

90 - 100%	A	
80 - 89%	B	+ and - will be determined by the
70 - 79%	C	professor
60 - 69%	D	
Below	F	

Tentative point distribution:

Four unit exams (l00 pts each)	400 pts
Lab attendance/participation	220 pts
Practical (pig)	60 pts
Mini-practical (plants)	30 pts
Short power point presentation	60 pts (per student)
Optional efforts	0 to l00 pts maximum
Lecture attendance	100 pts
Final class video	20 pts
Contracted work	200 pts maximum

Tentative Lecture Schedule

Aug 31 (M)	Introduction to the course	Chapter 1
Sept 2 (W)	Cell chemistry	Chapter 2 & 3
Sept 4 (F)	Cell structure and function	Chapter 4
Sept 7 (M)	No class – Labor Day	
Sept 9 (W)	Bacteria and viruses	Chapter l9
Sept 11 (F)	Cellular respiration	Chapter 5,7
Sept 14 (M)	Cell division – mitosis	Chapter 8
Sept 16 (W)	Meiosis and sexual reproduction	Chapter 9
Sept 18 (F)	Animal reproduction and development	Chapter 39
Sept 21 (M)	Animal development	Chapter 39
Sept 23 (W)	Digestive system	Chapter 37
Sept 25 (F)	UNIT EXAM 1 (1,2,3,4,5,7,8,9, 19, 39)	
Sept 28 (M)	Respiratory system	Chapter 36
Sept 30 (W)	Structural support/movement	Chapter 33
Oct 2 (F)	Circulatory system	Chapter 34
Oct 5 (M)	Immunity	Chapter 35
Oct 7 (W)	Excretory system	Chapter 38
Oct 9 (F)	Endocrine system	Chapter 32
Oct 12 (M)	Fall Break – no class	
Oct 14 (W)	Nervous system	Chapter 30
Oct 16 (F)	Sensory perception	Chapter 31
Oct 19 (M)	Complete organ systems	
Oct 21 (W)	Practical exam	

Oct 21 (W)	Plants and animals common challenges	Chapter 25
Oct 23 (F)	Plant structure and function	Chapter 26 & 27
Oct 26 (M)	Photosynthesis	Chapter 6
Oct 28 (W)	Plant reproduction and development	Chapter 28
Oct 30 (F)	UNIT EXAM 2 (37, 36, 33, 34, 35, 38, 32, 30, 31)	
Nov 2 (M)	Mendelian genetics	Chapter 10
Nov 4 (W)	Mendelian patterns	Chapter 11
Nov 6 (F)	Chromosomal variation Down syndrome	Chapter 11
Nov 9 (M)	DNA structure and function	Chapter 12
Nov 11 (W)	Protein synthesis	Chapter 13 & 14
Nov 13 (F)	Studying and manipulating genomes	Chapter 15
Nov 16 (M)	Population Genetics	Chapter 17: 264-269
Nov 18 (W)	Processes of Evolution	Chapter 17: 269-286
Nov 20 (F)	Evidence of evolution	Chapter 16
Nov 23 (M)	EXAM 3 (25, 26,27,28,6, 10,11,12,13,14,15)	
Nov 30 (M)	Ecology	Chapter 41
Dec 2 (W)	Ecosystems	Chapter 42 Chapter 43:762-780
Dec 4 (F)	Population growth	Chapter 40
Dec 7 (M)	Environmental challenges	Chapter 43: 754-761
Dec 9 (W)	Natural ecological connections	Chapter 43:762-780

FINAL EXAM PERIOD - UNIT EXAM 4 (17, 16, 40, 41, 42, 43)

Tentative Laboratory Schedule

Aug 31-Sept 2	Laboratory introduction Microscope/cells Scientific literature - Stem cell articles Group "situational" exercise - Stem cell Applications
Sept 7-11	No lab (Labor Day holiday)
Sept 14-16	Mitosis Enzyme analysis – spectrophotometer Scientific quantificiation (measurement)
Sept 21-23	Meiosis Reproduction and development Placental types
Sept 26-30	Muscles/skeletal system Fetal pig – digestive system Slide analysis – digestive tract slides
Oct 5-7	Fetal pig – respiratory system Fetal pig – circulatory system Body parts - heart (sheep/models) Slides – human blood Fetal pig – endocrine system
Oct 12-14	Fetal pig-excretory system Fetal pig – reproductive system Body parts – brain (sheep/models) Body parts – eye (sheep)
Oct l9 and 20	Practical review (open lab)
Oct 21	Practical exam
Oct 26 – 28	Plant structure and function Plant reproduction

Nov 2-4	Mini-practical on plants Genetic problems Human genetic traits Human karyotype
Nov 9-11	DNA isolation and electrophoretic separation DNA structure DNA fingerprinting
Nov 16-18	Review DNA replication and protein synthesis Population genetics
Nov 30- Dec 2	Phylogenetic trees Evolution discussions
Dec 7-9	Environmental concern presentations Course evaluation