GRANDE PRAIRIE REGIONAL COLLEGE
ACADEMIC UPGRADING DEPARTMENT

BIOLOGY 0120
COURSE OUTLINE
FALL 2000

INSTRUCTOR: Gordon Pellerin

OFFICE: C310

PHONE: 539-2088 (office)

EQUIVALENCY: Biology 20 (5 credits)

TEXTBOOK: Modern Biology by Albert Towle, Holt Rinehart Winston

SUPPLIES: Notebook, lab notebook, lab coat (optional)

ATTENDANCE: Regular attendance is expected from all students and is essential for passing the course. Students who miss classes soon find themselves falling behind and failing.

Lateness will NOT be tolerated as it interrupts the instructor and fellow classmates.

TESTS AND EXAMS: Absence from quizzes or exams WILL result in a mark of zero for that quiz or exam. A medical note WILL be required when absence is for medical reasons, at which time the instructor will use his or her discretion as to whether the student is eligible to write a make-up quiz or exam.

ASSIGNMENTS & LAB REPORTS: Assignments and lab reports are due on the dates announced in class. Late penalties will be awarded as follows:

1 day late - 25%
2 days late - 50%

No labs or assignments will be accepted after 2 days late!

LABS: Attendance is compulsory for ALL labs. A passing grade must be obtained in the lab section in order to pass the course. A student who fails the lab component will be given as incomplete (IN) on his/her transcript.

A missed lab will result in a mark of zero for that lab. A medical note verifying as accident of illness is required if the student wishes to have an opportunity to make-up the lab at a later date. Such make-up labs, however, cannot be guaranteed and are at the discretion of the lab technician.

COURSE OVERVIEW: This course is designed to provide the student with an understanding of some basic biological concepts. The course is divided into two sections - ecology and genetics.

Ecology involves the interdependence of organisms and their relationship with the environment.

Genetics involves the study of heredity and how traits are passed from generation to generation.

The laboratory component of the course is designed to aid the student in developing biological laboratory skills such as observation and the collection and analysis of data.

EVALUATION:

PART I: ECOLOGY

Tests/Quizzes 15%	
Labs/Assignments	15%
Ecology Exam 20%	

PART II: GENETICS

Tests/Quizzes 15%	
Labs/Assignments	15%
Genetics Exam	20%

GRANDE PRAIRIE REGIONAL COLLEGE GRADING PROCEDURES

STANINE	PERCENTAGE EQUIVALENCE	DESIGNATION
9	90 - 100	
8	80 - 89	Excellent
7	72 - 79	
6	65 - 71	Good
5	57 - 64	
4	50 - 56	Pass
3	45 - 49	Fail
2	26 - 44	
1	0 - 25	

PART I ECOLOGY

UNIT I Interdependence of Living Things

pg. 765 – 766
1. Define ecology, biosphere, population, community, and ecosystem.
2. Define biotic and abiotic. Discuss some abiotic/biotic interactions.

pg. 782 – 787
3. Outline the various trophic levels. Define autotrophic and heterotrophic. Define consumer and outline the different levels of consumers. Define and give examples of herbivores, carnivores, omnivores, scavengers, and decomposers.
4. Interpret and draw food chains and food webs.
5. Name and discuss three ecological pyramids.

pg. 788 – 791
6. Outline and discuss three biochemical cycles: hydrolytic cycle, nitrogen cycle, and carbon-oxygen cycle.

UNIT II Photosynthesis and Respiration

pg. 93 – 94
1. Give the general word and formula equations for photosynthesis and respiration.
2. Use a line diagram to show the relationship between photosynthesis and respiration.

pg. 96
3. Describe the role of chlorophyll and other plant pigments in photosynthesis.

pg. 394 – 396
4. Identify the main parts of the leaf. Give the main function of each part.

pg. 97 – 102
5. Distinguish between the light and dark reactions of photosynthesis and summarize the events that occur in each phase.

UNIT III Populations

pg. 811	1. Give the formula for the population growth rate.
	2. Define biotic potential.
pg. 812 – 813	3. Interpret the J-shaped curve and the S-shaped curve.
pg. 814	4. Give the formula for population density.
	5. List and explain the density-independent and density-dependent limiting factors which control population density.
pg. 815 – 816	6. Discuss human population growth, factors affecting growth and possible future implications.
pg. 820 – 826	7. Describe the impact of human population growth on resources.
	8. Differentiate between extinct, endangered, threatened and extirpated species.
	9. Differentiate between primary and secondary pollution.
	10. Define biomagnification. Use DDT as an example to demonstrate biological magnification in the food chain.

UNIT IV Communities

pg. 781	1. Distinguish between habitat and niche. Give examples.
pg. 797 – 799	2. Explain and give examples of the following relationships: competition (intraspecific and interspecific), predation, symbiosis, parasitism, commensulism, and mutualism.
pg. 803 – 806	3. Define succession, pioneer species, seral community, and climax community.
	4. Distinguish between primary succession and secondary succession.
	5. Outline succession of a barren environment such as a bare rock; of an area after a natural disaster; and eutrophication.
pg. 767 – 773	6. Name and describe the characteristics of the seven terrestrial biomes: polar, tundra, coniferous forest, deciduous forest, grassland, desert, and rain forest.
pg. 774 – 775	7. Name and describe the three marine biomes: ocean, intertidal zones, and estuaries.
pg. 776	8. List and describe the two main freshwater biomes.

PART II GENETICS AND EVOLUTION

UNIT I DNA, Chromosomes and Cell Division

pg. 113 – 115, 129	1. Describe the basic structure of the DNA molecule and relate this structure to the structure of the chromosome.
pg. 115 – 116	2. Summarize the replication of DNA.
pg. 131 – 135	3. Explain the importance of cell division.
	4. Define the cell cycle. Differentiate between mitosis and cytokinesis.
	5. Name and describe the phases of mitosis.
pg. 130	6. Define chromosome number, haploid number, diploid number, and homologous chromosomes.
pg. 136 – 137	7. Name and describe the phases of meiosis.
	8. Distinguish between meiosis and mitosis.
pg. 138	9. State the differences between egg formation and sperm formation.

UNIT II GENETICS: The Science of Heredity

pg. 147 – 149	1. Summarize Mendel's experiments with garden peas.
pg. 150 – 151	2. State and explain Mendel's three principles.
pg. 152 – 153	3. Define gene, allele, genotype, phenotype, heterozygous, homozygous, and multiple allele.
pg. 154 – 158	4. Solve genetic problems involving monohybrid crosses, dihybrid crosses, codominance and incomplete dominance, and sex-linked traits.
pg. 165	5. Explain the determination of sex by sex chromosomes.
pg. 174 – 175	6. Name and explain 4 or 5 genetic disorders.

UNIT III Protein Synthesis

pg. 52 – 54	1. Write the general formula for an amino acid, nucleic acid, and dipeptide.
pg. 118	2. Compare the structure of RNA to DNA. Name the three types of RNA.
pg. 118 – 123	3. Summarize the steps of protein synthesis. Key terms include transcription, codons, anticodon, and translation.

UNIT IV Evolution

pg. 219 – 224	1. Name and explain 6 evidences of evolution.
pg. 225 – 230	2. Summarize Darwin's "theory of evolution" and the process of natural selection.
pg. 243, 247, 249	3. Discuss the modern theories of evolution: genetic drift, speciation in isolated populations, and punctuated equilibrium.