

APPROVED FOR
CALENDAR 1993-94
W. 94
F. 93
S. Irwin

GRANDE PRAIRIE REGIONAL COLLEGE
DIVISION OF ACADEMIC AND APPLIED STUDIES
DEPARTMENT OF SCIENCE

GN 1650 GENETICS AND HUMAN WELFARE

COURSE OUTLINE

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- OBJECTIVES:** The principal objectives of the course are to introduce the metabolic basis of inherited human disease, examine the methodology used to study such diseases, and to examine the moral and ethical issues stemming from recent advances in genetic engineering.
- DESCRIPTION:** An introduction to human genetics and the application of genetics to biotechnology. After a review of basic Mendelian genetics and the structure, function, and analysis of chromatin, discussions will ensue on human genetic disorders, mutagens and carcinogens, pedigrees, prenatal diagnosis, cancer, viruses, human evolution, and the expanding role of recombinant DNA research in biotechnology. This course is primarily intended for non-science students seeking a science option and for students on the B.Sc. route who will not be choosing a major or minor in the biological sciences.
- PREREQUISITE:** High School Biology 30 (BI 30)
- TEXTBOOK:** L.R. Maxson and C.H. Daugherty, Genetics: A Human Perspective (3rd ed.), Wm. C. Brown publishers, Indiana, 1992. (tentative)
- EVALUATION:**
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| Assignments | 10% |
| Pre-Midterm Test | 20% |
| Post-Midterm Test | 20% |
| Term Paper | 15% |
| Final course Examination | 35% |

TENTATIVE CLASS AND DISCUSSION TOPICS

nature of the genetic material
DNA and chromosome structure
DNA replication
genes and proteins
transcription
genetic code and translation
metabolic pathways
metabolic basis of inherited disease
mutation and DNA repair
mutagens and carcinogens
neoplastic transformation
hereditary tumors
genes and cancer
mitosis
meiosis
monohybrid and dihybrid crosses
Mendel's postulates
gene linkage
pedigree analysis
gene mapping
sex determination
chromosomal aberrations
prenatal diagnosis
genetic counseling
genetics and biotechnology
ethical and societal issues