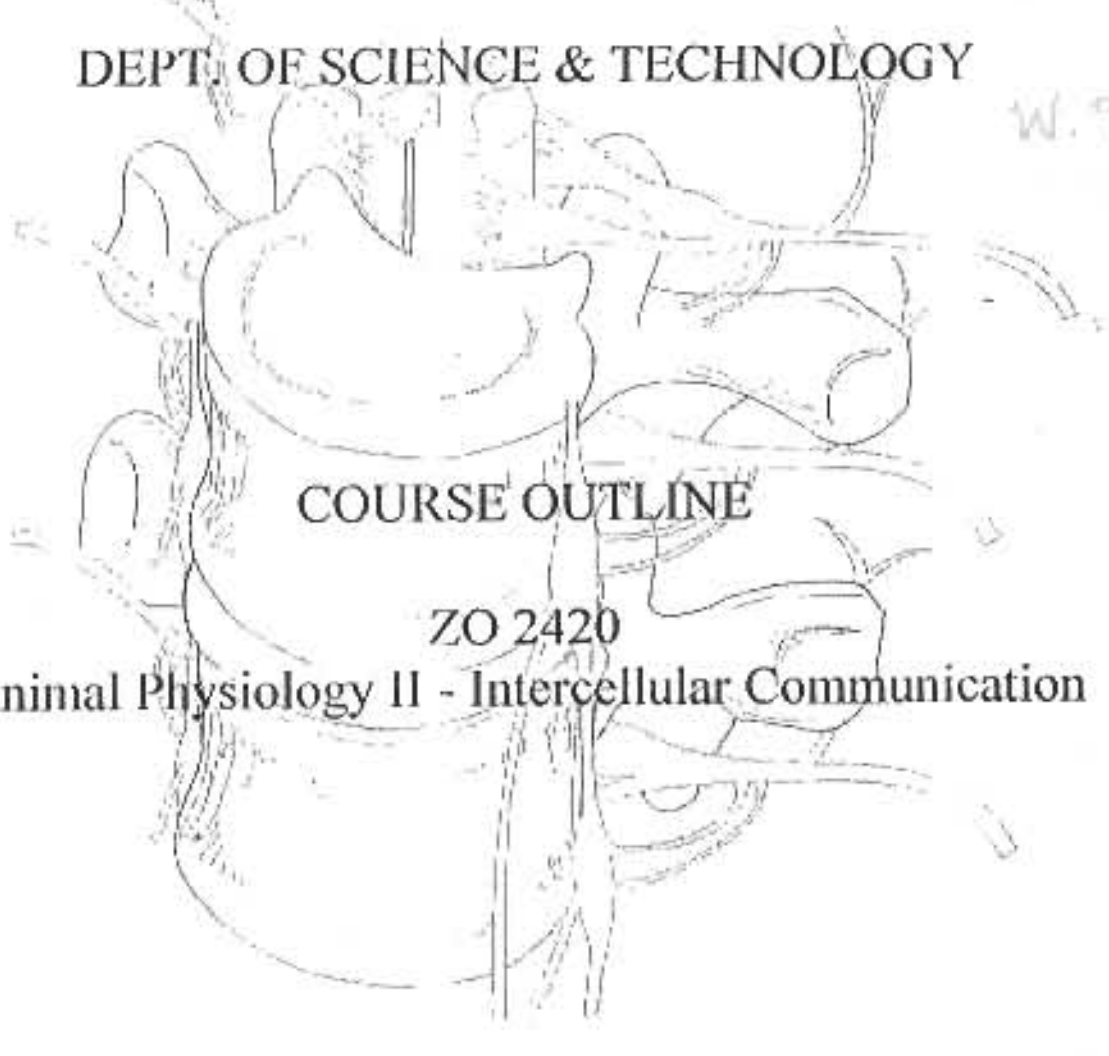


GRANDE PRAIRIE REGIONAL COLLEGE

DEPT. OF SCIENCE & TECHNOLOGY

W. 98



COURSE OUTLINE

ZO 2420

Animal Physiology II - Intercellular Communication

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Office: J222

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Description: Organismal communication, coordination and defence are explored. This includes the physiology of the nervous, sensory, motor, muscle, endocrine and immune systems. Examples are used from invertebrates and vertebrates.
Students with credit in ZOOLOGY 2410 prior to 1996-97 or PHYSIOLOGY 2100 may not obtain credit in ZO 2420.

Prerequisites: ZOOLOGY 1200 or BI 1070

Text-book: 'Animal Physiology'
Randall, Burggren and French
W.H. Freeman and Comphy, New York

Requirements: Since participation in lectures and completion of assignments are important components of this course, students will serve their best interests by regular attendance at both class and seminar sessions. Those who chose not to attend must assume whatever risks are involved. In this regard, your attention is directed to the Academic Guidelines of Grande Prairie Regional College.

All assignments must be completed and handed to the instructor by the date specified. Late assignments will not be marked.
By the 15th January, each student will have selected a topic to be presented during the seminar period. Each presentation will be approximately 15 minutes in length and completely prepared by the 29th January. Each week, selection of presenters will be by a random drawing of names. Student seminars will be evaluated by all members of the class on an equal basis. Attendance at all seminar presentations is compulsory. Each absence without a valid excuse will result in a loss of 20% from the seminar mark of that student.

Evaluation:

Seminar Presentations	10%
Quizzes	20%
Mid-term Exam I	20%
Mid-term Exam II	20%
Final Exam	30%

Topic Outline

1. Evolution and anatomy of the nervous system.
2. Principles of electricity.
3. Voltage, current, resistance, capacitance.
4. Membrane potential.
5. Ion channels and action potentials.
6. Propagation of action potentials along axons.
7. Synaptic transmission - electrical vs chemical transmission.
8. Synaptic transmission - pre-synaptic and post-synaptic mechanisms.
9. Synaptic transmission - integration and modulation.
10. Neural integration.
11. Simple reflexes and behaviour.
12. **MID-TERM EXAM I**
13. Sensory physiology - general principles of transduction.
14. Sensory physiology - diversity of receptors.
15. Sensory physiology - auditory reception.
16. Sensory physiology - vision reception.
17. Muscle physiology - sliding filament hypothesis.
18. Muscle physiology - properties/regulation of muscle contraction.
19. Muscle physiology - metabolic aspects.
20. Neuroendocrinology - chemical messengers and regulators.
21. Neuroendocrinology - first and second messengers.
22. Neuroendocrinology - steroid hormones.
23. Neuroendocrinology - non-steroid hormones.
24. Neuroendocrinology - classification of hormones.
25. Neuroendocrinology - endocrine glands and their hormones.
26. Neuroendocrinology - regulation of hormone secretion.
27. Neuroendocrinology - hypothalamus pituitary pathway.
28. Neuroendocrinology - metabolic and developmental hormones.
29. Neuroendocrinology - prostaglandins and sex hormones.
30. Neuroendocrinology - insect endocrine system.
31. **MID-TERM EXAM II**
32. Immunology - the immune system.
33. Immunology - the immune process.
34. Immunology - the cellular basis of immunity.
35. Immunology - the functional basis of antibodies.
36. Immunology - the complement system.
37. Immunology - T-lymphocytes and cell-mediated immunity.
38. Immunology - hypersensitivity (autoimmune disease, allergies)
39. Immunology - applied immunology (AIDS, infectious disease).