SEP. 18 MM

GRANDE PRAIRIE REGIONAL COLLEGE ACADEMIC UPGRADING DEPARTMENT

COURSE OUTLINE

SC0100: SCIENCE AND SOCIETY

INSTRUCTOR:

Bill Shaw

OFFICE:

C207

PHONE:

539 - 2713

Internet Address: shaw@gprc.ab.ca

OFFICE HOURS:

As posted on the Office door, or by appointment

TEXT:

Science Matters

Robert M. Hazen & James Trefil

SUPPLIES:

Plastic folder to hold loose-leaf, , pen, pencil & ruler.

CLASSROOM:

B305 Monday / Friday 11:30 - 12:50

Tuesday / Thursday 11:30 - 12:20

COURSE GOALS:

This course is intended to (a) provide students with the basic knowledge, understanding, and appreciation of science and science-related issues needed to be an informed citizen, (b) provide some preparation for students entering 0100 level science courses at GPRC.

COURSE CONTENT:

Through the course there will be an emphasis on two major themes for science in our times: (1) science: what it is and how it works, and (2) science issues in society: how science and technology affect our lives, what the different sides of the issues are, and what we should do about it. The exact details of the course will depend on class and instructor interests, and on which current science-technology issues are interesting and important.

Unit#1:

Ecology and Ecosystems

interdependence

- photosynthesis and respiration

food chains & webs, pyramid of energy
greenhouse effect, acid rain, ozone depletion
weather/climate, air pressure/winds, water cycle

- composition of atmosphere, convection currents

Societal Issues:

Is the environment in danger?

Should we protect the environment?

What can people do about it?

Unit#2

Science & Technology

- science- what is it & what it isn't

- how science works

- technology: what is it

how technology relates to science

Societal Issues:

What effects do science and technology have on society? Is science and technology good, bad, or neutral? Should science and technology be controlled? (And by

whom?)

Unit#3

Chemicals in our Environment

- classification of matter

- atoms, elements (symbols), molecules, & compounds

- mass, weight, and volume

- chemical properties/changes, solutions, mixtures

atomic mass, atomic number

air/water pollution & hazardous waste

Societal Issues:

What should we do about pollution and waste disposal? Should we be worried about chemicals in our diet, and food additives?

Unit#4

Cells, DNA, & Genes

- cells: the unit of life

prokaryote and eukaryote cells
asexual / sexual reproduction

- DNA structure /replication

- mitosis, genes & the genetic code

- reproduction & inheritance

- Human genome project, biotechnology

Societal Issues:

How much control should humans have over other living things? Should we interfere with nature (gene therapy, genetic screening, biotechnology)?

Unit#5

Energy and the Environment (Physics)

- What is physics?

- SI unit of measurement

- fundamental units and derived units

- scientific notation

position / time

distance / displacement

speed, velocity, acceleration

- concept of vectors / scalars

Societal Issues:

What energy sources should we be using now, and in the future? What can people do to save energy?

Teaching Methods:

Some or all of the following, according to student needs and interest:

- Lecture/discussion: with an emphasis on class participation most classes will be of this type.
- Small group activities: small group discussion, projects, exercises, presentations.
- Practical activities: in class and in lab; observing hypothesis, collecting data, and interpreting data, classifying, problem solving, and so; as a whole class, in groups and in pairs.
- Individual activities: assignments based on newspaper/magazine articles, individual presentations, research (library) project.
- Other possibilities: visits to places of scientific interest, guest speakers, your suggestions.

EVALUATION:

Tests	40%
Assignments	10%
Lab Reports	20%
Final Exam	30%
Total	100%

Tests and Exams:

There will be a test (50 min.) about every two weeks or so, for a total of five tests for the course. Absence from tests, labs or exams will result in a zero for that test, lab or exam unless a previous arrangement is made with the instructor for medical or other legitimate reasons.

TOTAL 54 WORKING DAYS!