SCIE 030, Science 30

5 Credits, 6 hours lecture

Course Description

Science 030 provides students an opportunity to investigate and analyze topics in the area of Biology, Chemistry and Physics, with a particular focus on environmental interactions. Topics include: electromagnetic field theory and its application in motors, generators and transformers; the impacts of acids and bases, organic compounds and air pollutants on aquatic and terrestrial ecosystems; the principles of heredity and genetics; and immune and circulatory systems.

Alberta Education Course Equivalency: Science 30

Pre and Co-requisites

Prerequisites: SCIE 010; one of BIOL 025, CHEM 025, PHYS 025, SCIE 020; and MATH 20-1 or MATH 20-2, or permission from the program chair

Course Learning Outcomes (CLOs)

Upon successful completion of the course, the student shall be able to:

CLO1 Identify the parts and functions of the heart and circulatory system
CLO2 Explain the flow of blood through the body
CLO3 Identify parts of blood and their makeup
CLO4 Explain the immune response and specific roles of B-cells, T-cells
CLO5 Explain diseases and disorders of the circulatory and immune system
CLO6 Apply the principles of heredity and molecular genetics to explain: how human diseases can arise from inherited traits, the risks and benefits of genetic technology, and the need for ethical considerations in the application of scientific knowledge
CLO7 Describe properties of acids and bases
CLO8 Calculate pH & pOH and hydronium/hydroxide concentrations
CLO9 Write Brønsted Lowry equations
CLO10 Identify an appropriate indicator for analysis
CLO11 Understand how to perform a titration
CLO12 Analyze data from a titration, given the chemical equation
CLO13 Explain the effects of acids and bases on the environment (acid rain, erosion, acid deposition)
CLO14 Name and draw organic compounds (aliphatics, aromatics, alcohols, halides, acids, esters)
CLO15 Identify how organic compounds impact society (fossil fuels, combustion, pesticides)
CLO16 Explain what fields are and how they apply to magnets
CLO17 Explain how motors and AC/ DC generators work
CLO18 Write and draw series and parallel circuits
CLO19 Determine how power is calculated
CLO20 Explain how energy is moved along a transformer

CLO21 Describe the EMR spectrum
CLO22 Explain what non-renewable and renewable energies are available
CLO23 Discuss nuclear energy in terms of fission and fusion, and their by-products of (alpha, beta and gamma radiation)
CLO24 Discuss sources of renewable energy (wind, solar, photovoltaic, biomass, biofuel, tidal, geothermal)
CLO25 Analyze the impacts of the renewable energies in everyday life (pros and cons)

Evaluation

Assessment Type	Percentage
Assignments and Quizzes	20%
Lab Activities and Projects	30%
Midterm Exam	25%
Final Exam	25%

Course Completion Requirements

Minimum passing mark of 50% or D is required.

Grading Scale

4.0 Grade Scale	Alpha Grade	Percentage Grade
4.0	A+	93-100
4.0	A	85-92.9
3.7	A-	80-84.9
3.3	B+	77-79.9
3.0	B	74-76.9
2.7	B-	70-73.9
2.3	C+	67-69.9
2.0	C	64-66.9
1.7	C-	60-63.9
1.3	D+	55-59.9
1.0	*D	50-54.9
0.0	F	0-49.9

Land Acknowledgement

We respectfully acknowledge that Keyano College is on Treaty No. 8 Territory, the ancestral and traditional territory of the Cree, Dene, and Métis people.

Review Date: November 26, 2024

Every effort has been made to ensure that information in this course outline is accurate at the time of publication. Keyano College reserves the right to change courses if it becomes necessary so that course content remains relevant. In such cases, the instructor will give the students clear and timely notice of the changes.

Keyano College reserves the right to modify the syllabus, curriculum, or schedule of any course/program, or to cancel a course/program entirely, at any time and for any reason. Such changes may be necessary due to unforeseen circumstances, regulatory requirements, or to ensure the highest quality of education.

Students will be notified of any significant changes as soon as possible. Keyano College is not responsible for any inconvenience or disruption caused by these changes. It is the responsibility of the students to stay informed about any updates or modifications to their courses.