Course Outline

College and Career Preparation
Winter, 2015

Science Preparation 010 Section G
5 Credits, 16 weeks, 5 hours

Course Description
This course is a grade 10 equivalency general science course designed to prepare students for entry into Biology 025, Chemistry 025, and Physics 025. It is especially recommended for those who have been away from high school science for 3 or more years. The course reviews basic concepts of math and science which are essential for success at the 025 level, including the metric system and the scientific method, while fostering a positive attitude toward the study of science and math.

Prerequisites: Grade 9 program of studies or equivalent or AFL 009 & AFM 009

Instructor
Melodee Helgason
Gregoire Lake Learning Centre
780 334-2559 Office
780 838-4361 cell (leave message)
melodee.helgason@keyano.ca

Office Hours
Monday 9:00 – 10:00 and 4:00 – 5:00
Tuesday 9:00 – 10:00
Wednesday 9:00 – 10:00
Thursday 9:00 – 10:00

Hours of Instruction
Monday 1:00 – 2:00
Wednesday 1:00 – 3:00
Thursday 1:00 – 3:00

Required Resources
Student Package supplied by instructor.

Course Outcomes

Upon successful completion of this course, students will be able to:
1. Understand science and the scientific method
2. Distinguish branches of chemistry
3. Describe the basic particles that make up the underlying structure of matter
4. Understand the Dalton's atomic theory
5. Will describe the three subatomic particles which make up the atom.
6. Will explain the division of elements in the periodic table
7. Identify and characterize of elements in groups and periods
8. Explain the properties of ionic compounds and molecular substances
9. Writing formulas for compounds
10. Recognize the systematic chemical name of binary, ternary and higher compounds
11. Describe acids qualitatively
12. Write balanced chemical equations
13. Write numbers correctly according to sig. dig. Rules
14. Describe what is meant by thermal energy and work
15. Find work through calculation and graphical means
16. Draw graphs correctly in a variety of problems
17. Describe the difference between speed, velocity, distance and displacement
18. Compare two speeds graphically
19. Differentiate between potential and kinetic energy
20. Describe and identify energy conversions and their efficiency
21. Differentiate between animal and plant cells
22. Describe cell theory and identify major contributors to cell theory
23. Identify and describe functions of cell organelles
24. Describe different biomes of the world
25. Identify the different parts of the earth’s structure and atmosphere
26. Explain the difference between climate and weather and how seasons arise
27. Discuss global warming in terms of changing weather patterns

Evaluation

Clearly outline what students must do in order to pass or complete the course.

Assignments 35%
Quizzes 25%
Projects 20%
Tests (2) 20%
Total 100%

The minimum pre-requisite for progression is 1.7 (refer to Grading System on following page)
Grading System

<table>
<thead>
<tr>
<th>Descriptor</th>
<th>4.0 Scale</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent</td>
<td>4.0</td>
<td>96 – 100</td>
</tr>
<tr>
<td></td>
<td>3.7</td>
<td>85 – 89</td>
</tr>
<tr>
<td>Good</td>
<td>3.3</td>
<td>81 – 84</td>
</tr>
<tr>
<td></td>
<td>3.0</td>
<td>77 – 80</td>
</tr>
<tr>
<td></td>
<td>2.7</td>
<td>73 – 76</td>
</tr>
<tr>
<td>Satisfactory</td>
<td>2.3</td>
<td>69 – 72</td>
</tr>
<tr>
<td>Minimum Prerequisite</td>
<td>2.0</td>
<td>65 – 68</td>
</tr>
<tr>
<td>Poor</td>
<td>1.3</td>
<td>55 – 59</td>
</tr>
<tr>
<td>Minimum Pass</td>
<td>1.0</td>
<td>50 – 54</td>
</tr>
<tr>
<td>Failure</td>
<td>0.0</td>
<td>0 – 49</td>
</tr>
</tbody>
</table>

Proposed Schedule of Topics

Most topics will be covered in class; however, students will be required to learn some of the material through self-study and/or by completing assignments. Please refer to the Science 010 Course Slides in the Student Package for detailed outlines and descriptions of each section.

Unit 1 – Chemistry
- Introduction to chemistry, scientific method and branches of chemistry
- Basic concepts of chemistry: laws, physical states of matter, classification
- Properties of pure substances, elements and compounds
- Changes of pure substances
- Dalton’s atomic theory and structure of the atom
- Electron dot diagrams
- Periodic table and trends in the table
- Writing chemical formulas for molecular and ionic compounds
- Chemical names for molecular and ionic compounds
- Properties of Acids
- Chemical equations: terms, symbols
- Balancing chemical equations
- Classifying and completing reactions

Unit 2– Physics & Math review
- Math review: significant digits, scientific notation, rearranging formulas
- Thermal Energy and work
- Calculating work and graphing examples of work
- Graphing
- Scalars vs. vectors
- Speed, velocity, distance, displacement
- Kinetic and potential energy
- Energy conversions
- Efficiency between energy conversions
Unit 3– Biology & Ecology

- Introduction to biology and ecology
- Cell theory & founding theorists
- Cells and functions of organelles
- Plant vs. animal cells
- Biomes of the world
- Construction of climatographs
- Climate vs. weather
- Global warming
- Societal impacts of changing weather

Please Note:
Date and time allotted to each topic is subject to change. It is your responsibility as a student to contact the Office of the Registrar to complete the forms for Withdrawal or Change of Registration, and any other forms. Please refer to the list of important dates as noted in the Academic Schedule in the Keyano College Credit Calendar.

Performance Requirements

Laboratory Safety

In the science laboratories, safety is important.

Students must complete the WHMIS for Students online training course on Moodle before entering the science laboratories.

Students must comply with the mandatory laboratory safety rules for this course as provided in the laboratory manual. Failure to do so will result in progressive discipline such as a verbal warning, refused entry into the laboratory, or suspension from the College.

Student Attendance

Class attendance is useful for two reasons. First, class attendance maximizes a student’s learning experience. Second, attending class is a good way to keep informed of matters relating to the administration of the course (e.g., the timing of assignments and exams). Ultimately, you are responsible for your own learning and performance in this course.

It is the responsibility of each student to be prepared for all classes. Students who miss classes are responsible for the material covered in those classes and for ensuring that they are prepared for the next class, including the completion of any assignments and / or notes that may be due.

Academic Misconduct

Students are considered to be responsible adults and should adhere to principles of intellectual integrity. Intellectual dishonesty may take many forms, such as:

- Plagiarism or the submission of another person’s work as one’s own
- The use of unauthorized aids in assignments or examinations (cheating)
- Collusion or the unauthorized collaboration with others in preparing work
- The deliberate misrepresentation of qualifications
- The willful distortion of results or data
- Substitution in an examination by another person
Handing in the same unchanged work as submitted for another assignment

Penalties for academic offences range from a verbal reprimand to dismissal from the College, and in certain circumstances may involve legal action.

Specialized Supports

Counselling and Disability Services
Counselling Services provides a wide range of specialized counselling services to prospective and registered students, including personal, career and academic counselling.

SKILL Centre
The SKILL Centre is a learning space in the Clearwater Campus at Keyano College where students can gather to share ideas, collaborate on projects and get new perspectives on learning from our tutorial staff.

The SKILL Centre, through a variety of delivery methods, provides assistance in skill development to Keyano students. Assistance is provided by instructors, staff and student tutors. Individuals wishing to improve their mathematics, writing, grammar, study, or other skills, can take advantage of this unique service.
Authorization
This course outline has been reviewed and approved by the Program Chair.

Melodee Helgason, Instructor

Lisa Turner, Chair

Guy Harmer, Dean