

GENERAL SCIENCE

SCI 098-4

COURSE NAME

COURSE NUMBER

TOTAL CREDIT HOURS: 64

PREREQUISITE(S): NONE

I. PHILOSOPHY/GOALS:

To present basic knowledge and practices in earth and space science and physics, including earth materials, weather, motion and force, work and energy, heat, electricity and magnetism, and light and sound.

II. STUDENT PERFORMANCE OBJECTIVES:

Upon successful completion of this course the student will be able to:

1. Explain what minerals are and identify minerals and rocks.
2. Describe the water cycle and discuss drinking water and its sources.
3. Define weathering and describe how soil is formed.
4. Describe the atmosphere and wind patterns of Earth.
5. Explain motion, force, weight and mass.
6. Define work, energy and power.
7. Define and explain heat, temperature and pressure.
8. Explain how electric charges are produced and describe magnetic fields.
9. Describe sources of light and wave motion in terms of wavelength and frequency.

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III. TOPICS TO BE COVERED:

<u>TOPICS</u>	<u>HOURS</u>
1. <u>EARTH MATERIALS</u>	4
1.1 Minerals	
1.2 Rocks	
1.3 Fossils	
1.4 The Water Cycle	
1.5 Drinking Water	
1.6* Geologic and Topographic Maps	
2. <u>EARTH'S CHANGING CRUST</u>	4
2.1 Weathering	
2.2* Soils	
2.3 Erosion	
2.4 Deposition	
2.5 Plate Tectonics	
2.6 Earthquakes	
2.7 Volcanoes	
3. <u>WEATHER</u>	4
3.1 Atmosphere	
3.2 Wind	
3.3 Wind Patterns	
3.4 Clouds and Precipitation	
3.5 Storms	
3.6 Weather Predictions	
3.7* Climate	

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III. TOPICS TO BE COVERED:

<u>TOPICS</u>	<u>HOURS</u>
4. <u>OCEANS</u>	4
4.1 Composition of Sea Water	
4.2 Waves	
4.3 Tides	
4.4 Currents	
4.5 Sediments	
4.6 Features of the Ocean Floor	
4.7* Resources of the Ocean	
5. <u>ASTRONOMY</u>	4
5.1 Planet Earth	
5.2 Earth's Moon	
5.3 The Solar System	
5.4 The Sun	
5.5 The Universe	
5.6* Tools of Astronomy	
6. <u>MOTION AND FORCE</u>	12
6.1 Motion	
6.2 Newton's First Law of Motion	
6.3 Newton's Second Law of Motion	
6.4 Newton's Third Law of Motion	
6.5 Gravity	
6.6 Weight and Mass	
6.7 Falling Objects	
6.8* Circular Motion	
7. <u>WORK AND ENERGY</u>	12
7.1 Work	
7.2 Machines	
7.3 Simple Machines	
7.4 Efficiency of Machines	
7.5 Work and Energy	
7.6* Perpetual Motion Machines	
7.7 Power	

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III. TOPICS TO BE COVERED:

<u>TOPICS</u>	<u>HOURS</u>
8. <u>HEAT</u>	6
8.1 Heat and Temperature	
8.2 Temperature and Pressure	
8.3* Specific Heat	
8.4 Transferring Heat	
8.5 Transformation of Energy	
8.6 Solar Energy	
8.7 Other Energy Sources	
8.8 Heating and Cooling Systems	
9. <u>ELECTRICITY AND MAGNETISM</u>	6
9.1 Electric Charge	
9.2 The Electrical Nature of Matter	
9.3 Static Electricity	
9.4 Current Electricity	
9.5 series and Parallel Circuits	
9.6 Magnetism	
9.7 Electricity From Magnetism	
9.8 Using Electricity at Home	
9.9* Saving Electricity	
10. <u>LIGHT AND SOUND</u>	4
10.1 Introduction to Light	
10.2 Mirrors	
10.3 Lenses	
10.4 The Nature of Light	
10.5 The Electromagnetic Spectrum	
10.6*Colour	
10.7 Sound	
10.8 Sound and Light	

* These are enrichment topics which may be skipped.

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IV. LEARNING ACTIVITIES

REQUIRED RESOURCES

1.0 EARTH MATERIALS

Text Chapter 11

Upon successful completion of this unit the student will be able to:

Activity Book:
Exercises 11-1
11-2

1.1 Describe minerals, types of rocks and fossils and their significance

1.2 Discuss the water cycle and problems related to drinking water supplies

1.3 Use maps in the earth sciences.

2.0 EARTH'S CHANGING CRUST

Text Chapter 12

Upon successful completion of this unit the student will be able to:

Activity Book:
Exercises 12-1
12-2

2.1 Explore the composition of soils, weathering and volcanoes

2.2 Relate the theory of plate tectonics to forces affecting Earth's surface features.

3.0 WEATHER

Text Chapter 13

Upon successful completion of this unit the student will be able to:

Activity Book:
Exercises 13-1
13-2

3.1 Describe the atmosphere, wind patterns, basic weather phenomena and climate

3.2 Discuss the science of weather forecasting -

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IV. LEARNING ACTIVITIES

REQUIRED RESOURCES

4.0 OCEANS

Text Chapter 14

Upon successful completion of this unit the student will be able to:

Activity Book:
Exercises 14-1

- 4.1 Describe the composition of seawater, wave and tidal effects, ocean currents, ocean sediments and the ocean floor

- 4.2 Relate the resources of the seas to human needs and activities.

5.0 ASTRONOMY

Text Chapter 15

Upon successful completion of this unit the student will be able to:

Activity Book:
Exercises 15-1

- 5.1 Describe the solar system
- 5.2 Discuss beneficial outcomes of astronomical studies.

6.0 MOTION AND FORCE

Text Chapter 16

Upon successful completion of this unit the student will be able to:

Activity Book:
Exercises 16-1
16-3
16-4
16-5
16-6

- 6.1 Define Newton's laws of motion

- 6.2 Calculate force, weight and mass and circular motion

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IV. LEARNING ACTIVITIES

REQUIRED RESOURCES

7.0 WORK AND ENERGY

Text Chapter 17

Upon successful completion of this unit the student will be able to:

Activity Book:
Exercises 17-1
17-2
17-5
17-7

- 7.1 Define and explain work and energy
- 7.2 Define the mechanical advantage and efficiency of a machine
- 7.3 Define power and explain its importance.

8.0 HEAT

Text Chapter 18

Upon successful completion of this unit the student will be able to:

Activity Book:
Exercises 18-1
18-2

- 8.1 Describe the relationship between heat and temperature and temperature and pressure
- 8.2 Discuss the transfer of heat, solar and other energy sources,

9.0 ELECTRICITY AND MAGNETISM

Text Chapter 19

Upon successful completion of this unit the student will be able to:

Activity Book:
Exercises 19-1
19-4

- 9.1 Define electric charge
- 9.2 Discuss the electrical nature of matter
- 9.3 Describe static and current electricity and magnetism

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IV. LEARNING ACTIVITIES

REQUIRED RESOURCES

10.0 LIGHT AND SOUND

Text Chapter 20

Upon successful completion of this unit the student will be able to:

Activity Book:
Exercises 20-1
20-4

10.1 Discuss the nature of light

10.2 Describe image formation by mirrors and lenses

10.3 Compare the physical basis of sound with that of light.

V. METHOD OF EVALUATION:

Assignments/Exercises	20 ⁵
Interim Tests - 3 @ 15'	45'
Final Examination	35'

Grading:

A+	=	90	100%
A	=	80	89%
B	=	70	79%
C	=	60	69%

A passing grade will be based on a minimum composite grading of 60%. Students obtaining a composite grading of 55 to 59% may be allowed to complete a supplementary examination.

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VI. REQUIRED STUDENT RESOURCES:

Textbooks:

Brockway, C.S.; Garner, R.; Howe, S.F.; GENERAL SCIENCE, 2nd Edition, Allyn and Bacon, Inc., Newton Mass.

Brockway, R.; Howe, S.F.; Husted, B.; Jones, H.; Rieck, G.W.; GENERAL SCIENCE (ACTIVITY BOOK), 2nd Edition, Allyn and Bacon, Inc., Newton, Mass.

VII. SPECIAL NOTES:

Students with special needs (e.g. physical limitations, visual impairments, hearing impairments, learning disabilities) are encouraged to discuss required accommodations confidentially with the instructor.

Your instructor reserves the right to modify the course as he/she deems necessary to meet the needs of students.