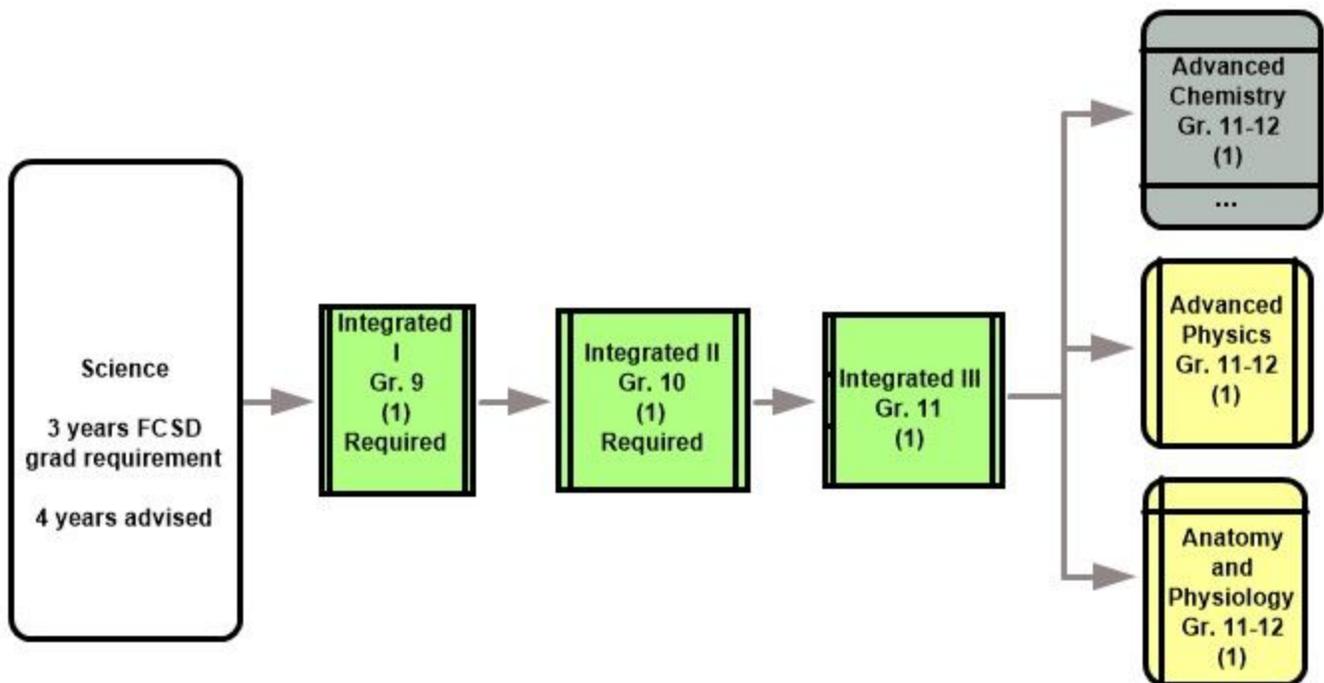


# SCIENCE



# SCIENCE

## INTEGRATED SCIENCE I – Full year course

Course #: 1701-1702

Credit: 2

Required: Grade 9

Prerequisite: None

### Course Description:

Integrated Science is the first of a series of 3 required integrated Science courses. Integrated I integrates biology and chemistry into a unified domain of study and present the resulting body of knowledge in the context of work, home, society, and the environment, emphasizing field and laboratory activities. Topics include natural resources, water, air and other gases, nutrition, disease and wellness, plant growth and reproduction, life processes, microorganisms, synthetic materials, waste and waste management, and the community of life. Includes earth science as well. Integrated I encompasses 50% of a traditional Chemistry course required for college admission and 50% of a traditional physics course.

### Skills Needed To Be Successful In The Class:

Students must have a willingness to learn and complete tasks. They must have good listening skills and be able to collaborate with classmates on activities.

### Specific Outcomes – The Students Will Be Expected To:

1. Read, interpret and describe tables and graphs.
2. Apply basic Algebra.
3. Consider the nature and meaning of science.
4. Investigate how forces affect the movement of matter.
5. Understand that energy has many different forms.
6. Investigate conservation of energy.
7. Identify atomic structure and how it applies to the periodic table.
8. Describe properties and changes of properties in matter.
9. Investigate aspects of minerology.

### Careers Related to Content:

Teaching, Farming, Nursing, Pharmacist, Lawn and Garden Services, Scientific Research, Dentistry, Medical Lab Technicians, Aviation, Veterinary Medicine

# SCIENCE

## INTEGRATED SCIENCE II – Full year course

Course #:

Credit: 2

Required: Grade 10

Prerequisite: None

### Course Description:

Integrated Science is the second in a series of 3 required integrated Science courses. Integrated II advances the integration of biology and chemistry into a unified domain of study and presents the resulting body of knowledge in the context of work, home, society, and the environment, emphasizing field and laboratory activities. Topics include natural resources, water, air and other gases, nutrition, disease and wellness, plant growth and reproduction, life processes, microorganisms, synthetic materials, waste and waste management, and the community of life. Includes earth science as well. Integrated II encompasses 50% of a traditional Chemistry course required for college admission and 25% of a traditional physics course. Primary foci: life science, chemistry, earth science.

### Skills Needed To Be Successful In The Class:

Students must have a willingness to learn and complete tasks. They must have good listening skills and be able to collaborate with classmates on activities.

### Specific Outcomes – The Students Will Be Expected To:

1. Read, interpret and describe tables and graphs.
2. Apply basic Algebra.
3. Consider the nature and meaning of science.
4. Investigate how forces affect the movement of matter.
5. Understand that energy has many different forms.
6. Investigate conservation of energy.
7. Identify atomic structure and how it applies to the periodic table.
8. Describe properties and changes of properties in matter.
9. Investigate aspects of minerology.

### Careers Related to Content:

Teaching, Farming, Nursing, Pharmacist, Lawn and Garden Services, Scientific Research, Dentistry, Medical Lab Technicians, Aviation, Veterinary Medicine

# SCIENCE

## **INTEGRATED SCIENCE III – Full year course**

Course #: 1701-1702

Credit: 2

Required: Grade 11

Prerequisite: Integrated I, II

### Course Description:

Integrated Science III is the third in a series of 3 required integrated Science courses. Integrated III integrates The specific content of Integrated Science courses varies, but they draw upon the principles of several scientific specialties—earth science, physical science, biology, chemistry, and physics—and organize the material around thematic units. Common themes covered include systems, models, energy, patterns, change, and constancy. This use appropriate aspects from each specialty to investigate applications of the theme. this course meets the final 25% of a traditional physics content. Primary foci: life and earth science

### Skills Needed To Be Successful In The Class:

Students must have a willingness to learn and complete tasks. They must have good listening skills and be able to collaborate with classmates on activities.

### Specific Outcomes – The Students Will Be Expected To:

1. Read, interpret and describe tables and graphs.
2. Apply basic Algebra.
3. Consider the nature and meaning of science.
4. Investigate how forces affect the movement of matter.
5. Understand that energy has many different forms.
6. Investigate conservation of energy.
7. Identify atomic structure and how it applies to the periodic table.
8. Describe properties and changes of properties in matter.
9. Investigate aspects of minerology.

### Careers Related to Content:

Teaching, Farming, Nursing, Pharmacist, Lawn and Garden Services, Scientific Research, Dentistry, Medical Lab Technicians, Aviation, Veterinary Medicine

# SCIENCE

## ADVANCED CHEMISTRY: - Full Year Course

Course #: 1751 – 1752

Credit: 2

Elective: Grade 11-12

Prerequisites: Algebra 2, Successful completion of Chemistry 1 or Integrated I-II. Students attempting to enroll without completion of Chemistry I will be reviewed on a case by case basis by the science department.

Co requisites: Integrated III.

### Course Description:

Advanced Chemistry provides a brief review of basic topics covered in Integrated I and II Chemistry and then goes on to a more in-depth study of quantitative analysis, qualitative analysis, redox reactions, and the chemistry of solutions, thermochemistry, chemical equilibrium, kinetics, and organic chemistry.

### Skills Needed To Be Successful In The Class:

Students should be able to read and comprehend their chemistry text, handle complex math calculations, and do detailed and accurate labs work.

### Specific Outcomes -- The Student Will Be Expected To:

1. Reinforce basic concepts from Chemistry 1/Integrated I-II.
2. Develop superior lab techniques with both accuracy and precision.
3. Apply math principles and skills to the solution of chemical problems.
4. Understand the basics of organic chemistry.
5. Develop confidence for future study in any scientific field.

### Careers Related to Content:

Forensics, Medicine, Engineering, Law, Pharmacy, Dentistry, Scientific Research, or any Highly Competitive Professional Career

# SCIENCE

ADVANCED PHYSICS: - Full Year

Course #: 1761 – 1762

Credit: 2

Elective: Grade 11-12

Prerequisites: Successful completion of Algebra 2, Integrated I-II

Co-requisites: enrollment in Integrated III

## Course Description:

Physics is the study of the interrelationship between energy and matter. This course includes units on mechanics, forces, energy, wave phenomena, light, and electricity & magnetism. Labs, visual aids and demonstrations are correlated with each unit studies. This introductory course is designed for the college-bound student who is interested in a science that can give them an idea of the way physicists view the world. Advanced Studies courses provide instruction in laws of conservation, thermodynamics, and kinetics; wave and particle phenomena; electromagnetic fields; and fluid dynamics.

## Skills Needed To Be Successful In The Class:

The ability to read, take notes, express themselves in written and oral forms, apply new knowledge to new situations, work with others in a lab setting and a strong work ethic and desire are all necessary to be successful in this class.

## Specific Outcomes -- The Student Will Be Expected To:

1. Gain an understanding of the nature of physics and of the fundamental laws that govern our universe.
2. Gain knowledge of the basic measurements, calculations, and tools used by physicists.
3. Be able to effectively use laboratory equipment to gather and analyze data.
4. Develop a basic understanding of motion, forces, work, electricity, magnetism, wave phenomena, and light properties.

## Careers Related to Content:

Surveyors, Aviation, Air Traffic Control, all types of Engineers, Telecommunications, Fiber Optics, Music Related Fields, Acoustics, Electrical and Electronic Technicians, Medicine, Education

# SCIENCE

## HUMAN ANATOMY AND PHYSIOLOGY: - Full Year Course

Course #: 1771 – 1772

Credit: 2

Elective: Grades 11 - 12

Prerequisites: Successful Completion of Integrated I-II

Corequisites: Integrated III

### Course Description:

Anatomy and Physiology is the study and function of the eleven organ systems of the human organism and their relationship to one another. Labs and visual aids are correlated with each system studied. This course is designed for the college-bound student who is interested in a health-related career and would prove valuable to any student who wants to know more about the structure and functioning of their own body.

### Skills Needed To Be Successful In The Class:

The ability to read, take notes, express themselves in written and oral forms, apply new knowledge to new situations, work with others in a lab setting and a strong work ethic and desire are all necessary to be successful in this class.

### Specific Outcomes -- The Student Will Be Expected To:

1. Show an increased awareness and appreciation for their own body and its intricate organization and their responsibility for its well being.
2. Understand the relationship of cells, tissues, organs, organ systems and complete organisms.
3. Develop lab skills through use of standard laboratory equipment.
4. Show proficiency in their dissecting skills through organ dissection and comparative small mammal dissection.
5. Become skilled at using basic reference texts to supplement text reading and laboratory materials.

### Careers Related to Content:

Clinical Laboratory Services, Health Occupation Services, Physical Therapy, Nursing, Doctor, Dentist, Laboratory Technicians, Education

# SCIENCE

## ENVIRONMENTAL SCIENCE: - Full Year Course

Credit: 2

Elective: Grades 9-12; Offered every other year

Prerequisite: None

### Course Description:

This science course involves knowing ecology is the study of relationships of living things to each other and to their physical environment. Environmental science includes knowing four important natural resources and how these natural resources can be conserved. This course looks at ways of stopping pollution of our environment, explores environmental problems and the future.

### Skills Needed To Be Successful In The Class:

Students must be able to read, write, and accurately complete assignments on time. They must listen and take part in class discussions, projects, and lab assignments.

### Specific Outcomes: -- The student will be expected to:

1. Understand process of succession.
2. Know there is an interdependence among the members for a community (food webs etc.).
3. Know the biome communities of plants and animals.
4. Recognize pollutants and what is being done to keep our environment safe.
5. Describe the different types of pollution.
6. Know the cause and effect of pollution.

# SCIENCE

## EARTH SCIENCE: - Year Course

Credit: 2

Elective: Grades 9 – 12; Offered every other year

Prerequisite: None

### Course Description:

Earth Science is the study of the earth and the universe. Earth Science involves units on geology, meteorology, oceanography and astronomy.

### Skills Needed To Be Successful In The Class:

Students must be able to read, write, listen and accurately complete assignments on time. Students are expected to take part in class discussions and class projects.

### Specific Outcomes: The student will be expected to

1. Know basic knowledge of each area of earth science.
2. Have a general knowledge of the following:
  - a. Use of maps, the globe, and the positions of latitude and longitude.
  - b. The orbits of the earth and the moon.
  - c. The planets of the solar system.
  - d. The life cycle of stars.
  - e. Matter, compounds, and minerals of the earth's crust.
  - f. Types of rocks in the earth.
  - g. The atmosphere and how it affects weather, water, and erosion on earth.