

**R.H. KING ACADEMY SCIENCE DEPARTMENT  
COURSE OUTLINE AND EVALUATION  
GRADE 11 UNIVERSITY PHYSICS**

**COURSE OVERVIEW**

This course develops students' understanding of the basic concepts of physics. Students will explore kinematics, with an emphasis on linear motion; different kinds of forces; energy transformations; the properties of mechanical waves and sound; and electricity and magnetism. They will enhance their scientific investigation skills as they test laws of physics. In addition, they will analyse the interrelationships between physics and technology, and consider the impact of technological applications of physics on society and the environment.

**TOPICS OF STUDY**

***Kinematics***

In this unit students will:

- analyse technologies that apply concepts related to kinematics, and assess the technologies' social and environmental impact;
- investigate, in qualitative and quantitative terms, uniform and non-uniform linear motion, and solve related problems;
- demonstrate an understanding of uniform and non-uniform linear motion, in one and two dimensions.

***Forces***

In this unit students will:

- analyse and propose improvements to technologies that apply concepts related to dynamics and Newton's laws, and assess the technologies' social and environmental impact;
- investigate, in qualitative and quantitative terms, net force, acceleration, and mass, and solve related problems;
- demonstrate an understanding of the relationship between changes in velocity and unbalanced forces in one dimension.

***Energy and Society***

In this unit students will:

- analyse technologies that apply principles of and concepts related to energy transformations, and assess the technologies' social and environmental impact;
- investigate energy transformations and the law of conservation of energy, and solve related problems;
- demonstrate an understanding of work, efficiency, power, gravitational potential energy, kinetic energy, nuclear energy, and thermal energy and its transfer (heat).

***Waves and Sound***

In this unit students will:

- analyse how mechanical waves and sound affect technology, structures, society, and the environment, and assess ways of reducing their negative effects;
- investigate, in qualitative and quantitative terms, the properties of mechanical waves and sound, and solve related problems;
- demonstrate an understanding of the properties of mechanical waves and sound and of the principles underlying their production, transmission, interaction, and reception.

***Electricity and Magnetism***

In this unit students will:

- analyse the social, economic, and environmental impact of electrical energy production and technologies related to electromagnetism, and propose ways to improve the sustainability of electrical energy production;
- investigate, in qualitative and quantitative terms, magnetic fields and electric circuits, and solve related problems;
- demonstrate an understanding of the properties of magnetic fields, the principles of current and electron flow, and the operation of selected technologies that use these properties and principles to produce and transmit electrical energy.

**COURSE TEXTBOOK:** Nelson Physics 11

**Replacement Cost:** \$90

## **MATERIALS REQUIRED**

binder, loose leaf paper, pens, pencils, eraser, ruler, calculator, graph paper, protractor

## **CALCULATION OF MARKS**

Your final mark in Physics will be calculated as follows:

Knowledge	18 %
Inquiry	18 %
Communication	12 %
Application / Making Connections	12 %
Projects (K, I, C, A)	10 %
Final Exam	30 %

### ***Knowledge and Understanding***

- understanding of concepts, principles, laws, and theories (e.g. identifying assumptions, eliminating misconceptions, providing explanations)
- knowledge of facts and terms
- transfer of concepts to new contexts
- understanding of relationships between concepts

### ***Thinking and Inquiry***

- application of the skills and strategies of scientific inquiry (e.g. initiating and planning, performing and recording, analysing and interpretation, problem solving)
- application of technical skills and procedures
- use of tools, equipment and materials

### ***Communication***

- communication of information and ideas: use of scientific terminology, symbols, conventions and standard (SI) units, communication for different audiences and purposes
- use of various forms of communication (e.g. reports, essays)
- use of information technology for scientific purposes

### ***Application and Making Connections***

- understanding connections between science, technology, society and the environment
- analysis of social and economic issues involving science and technology
- assessment of impacts of science and technology on the environment
- proposing courses of practical action in relation to science and technology based problems

The instruments used to evaluate your performance in science include daily class work, reports, laboratory skills and reports, independent study projects, quizzes, tests and the final examination.

## **CLINIC**

All students can benefit by attending clinic periods when they feel they need extra help. You may be required to commit to clinic with your Physics teacher based on marks, completion of work, disciplinary needs, or teacher request.

## **CHEATING AND PLAGIARISM**

It is expected that all students at R.H. King Academy will practice academic honesty and build this into their career philosophies. They must acknowledge any input from peers, parents and secondary sources. Information gathered from the Internet is considered a secondary source. To submit any work that is not completely their own is considered plagiarism. "Loaning" completed work to other students is considered to be cheating.

**Cheating will result in a mark of zero and may result in suspension and/or loss of credit.**