



Grade 12 Science

Senior 4 Physics (40S) A Foundation for Implementation 2005

Student Learning Outcomes & Unit Skills and Attitude Outcomes Related to Sustainable Development

Topic 2: Fields

2.1 Exploration of Space

S4P-2-1 Identify and analyze issues pertaining to space exploration.

Examples: scale of the universe, technological advancement, promotion of global co-operation, social and economic benefits, allocation of resources shifted away from other pursuits, possibility of disaster

Topic 3: Electricity

3.2 Electromagnetic Induction

S4P-0-3A: Analyze, from a variety of perspectives, the risks and benefits to society and the environment when applying scientific knowledge or introducing technology.

S4P-0-3C: Identify social issues related to science and technology, taking into account human and environmental needs and ethical considerations.

S4P-0-4D: Develop a sense of personal and shared responsibility for the impact of humans on the environment, and demonstrate concern for social and environmental consequences of proposed actions.

S4P-3-15: Describe the generation, transmission, and distribution of electricity in Manitoba. Include: step-up and step-down transformers, power transfer, High Voltage, Direct Current

Topic 4: Medical Physics

4.1 Medical Physics

S4P-4-6: Describe various applications of non-ionizing radiation.

Examples: communications, microwave oven, laser, tanning bed

S4P-4-7: Describe various applications of ionizing radiation.

Examples: food irradiation, sterilization, smoke alarm

S4P-4-8 Describe the effects of non-ionizing and ionizing radiation on the human body.
Include: equivalency of sievert (Sv) and rem units, solar erythema (sunburn)

S4P-4-9 Research, identify, and examine the application of radiation to diagnostic imaging and treatment techniques.

Examples: nuclear medicine imagery techniques such as MRI, ultrasound, endoscopy, X-ray, CT scanning, PET, heavy isotopes such as Ba; nuclear medicine therapies such as brachithery, external beam, gamma knife