

EASTERN SCHOOL DISTRICTCourse Description

(June 2, 2006)

Course: Physics 3204**Subject Area:** Science**Text:** Irwin Physics**Description:**

Physics 3204 is a continuation of Physics 2204, which is a required prerequisite. The course is comprised of 3 Units, and is subject to a final Public Examination in June. The course is comprised of three units of study as outlined below.

Unit 1: Force, Motion, and Energy

43 hours

- 1) Motion (*Projectile Motion, Circular Motion*)
- 2) Forces (*Newton's Laws in Two Dimensions, Friction, Centripetal Force*)
- 3) Equilibrium (*Forces in Equilibrium, Torques*)

Core Lab 1: *Initial Velocity of a Projectile*Core Lab 2: *Centripetal Force and Acceleration*Core Lab 3: *Forces in Equilibrium*Core STSE 1: *Physics of Juggling***Unit 2: Fields**

47 hours

- 1) Field Definitions (*Gravitational, Electrical, Magnetic*)
- 2) Electricity (*Static, Coulombs Law, Electric Field Strength, Current, Kirchoff's Law, Power*)
- 3) Magnetism (*Magnetic Field Strength, Electromagnetic Induction, Faraday's Law, Oersted's Law, AC & DC*)

Core Lab 4: *Laws of Electric Charges*Core Lab 5: *Circuit Analysis*Core Lab 6: *Electromagnetic Induction*Core STSE 2: *The Physics of Cellular Phones*

Unit 3: Matter Energy Interface

27 hours

- 1) Quantum Physics (*Light Energy & Momentum, Photoelectric Effect, Bohr Atom, DeBroglie Waves*)
- 2) Radiation (*Alpha, Beta, & Gamma Decay, Isotopes, Half-Life, Fission & Fusion*)

Core Lab 7: *To be Determined*

Core STSE 3: *The Physics of Bungee Jumping*

Evaluation Guidelines:

Summative evaluation of students in Physics 3204 shall utilize a variety of evaluation instruments. Primarily, these are designed to test students' basic knowledge of content, their understanding and ability to apply content, and ability to synthesize and problem solve (higher thinking skills) with respect to the content.

Summative evaluation of students in science courses must involve a variety of evaluation instruments. **Midyear examinations, final examinations, and unit tests/quizzes**, completed by students are traditional instruments which must be a part of any summative student evaluation scheme. As well, **Performance Assessment** instruments shall be used for a portion of the summative evaluation.

Unit Tests/Quizzes:

All unit tests are based on the learning outcomes of the course and the objectives. The tests include a variety of testing techniques such as multiple choice and essay items. There is at least one test after each unit and sometimes the unit can be broken into several sections for the purpose of testing if the teacher deems it necessary. Each test is designed for completion in a single class period.

Performance Assessment:

Performance assessment instruments shall be used for a portion of the summative evaluation. *Examples of performance assessment instruments are assignments, written homework, science fair, class observations, science projects, laboratory reports, in-class presentation, in-class cooperative education, practical laboratory tests, observation checklist, computer assisted evaluation and teacher-student interviews, research reports, field trip reports, portfolios, etc.*

Teachers can determine the performance assessment instruments used in Physics 3204. However, a variety of instruments shall be used to accurately assess students' understanding of learning outcomes, with a focus on core labs and STSE topics.

Cumulative Midyear Examination:

The mid-year examination tests all course objectives to that point. The test is designed to be completed in a 2 hour time period.

Final Provincial Examination:

The provincial examination in Physics 3204 is composed of two parts. Part I contains 50 multiple choice questions that measure students' achievement at all levels of cognitive learning. Part II contains constructed response questions that measure students' achievement only at the higher levels of cognitive learning (levels 2 and 3). Part I has a value of 50% and Part II has a value of 50%. The evaluation instrument will contain 15-20% of core labs and STSE (Science, Technology, Society, and the Environment) content. The test is designed to be completed in a 3.0 hour time period.

Weighting of Evaluation Component:

Tests/Quizzes	20%
Performance Assessment	10%
Comprehensive Midyear Exam	20%
Final Public Examination	50%

Notes:

- 1) Performance assessments in Physics 3204 should primarily focus on STSE and core lab outcomes (because approximately 15%-20% of the public examination contains STSE and core lab questions).
- 2) Student grades for the November reporting period comprised of results obtained from tests/quizzes (80%) and Performance Assessment (20%).

Table of Specifications:

This Table of Specifications is reviewed annually before the provincial (public) examination is developed. It is used for two main reasons. First, it guides the construction of the public examination by outlining a percent value for each cognitive level and unit of study. Secondly, the total percentage for each unit directly corresponds to the suggested time for teaching that unit.

Unit	Cognitive Level %			Total %
	1	2	3	
Force, Motion and Energy	8	24	8	40
Fields	8	24	8	40
Matter Energy Interface	4	12	4	20
Total %	20	60	20	100

The evaluation instrument will contain 15-20% of core lab and STSE (Science, Technology, Society, and the environment) content.