"Policy about course outlines can be found in Section 23.4(2) of the University Calendar" (CGF 29 SEP 2003)

Physics 200: Relativistic Aspects of Modern Physics

Instructor: Prof. Doug Gingrich
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Lectures: Section B01, 8:00-9:20 Tuesdays and Thursdays, room V125

Suggested Textbook: "Special Relativity" by A.P. French, W.W. Norton & Company

Course Prerequisites: First-year Physics course(s) (two-term).
Course Pre- or co-requisites: MATH 113 or 114.
Note: This course is not available for credit towards Honours or Specialization Physics and Mathematical Physics degree programs.

Grade Distribution:

30%	Homework
20%	Mid-term Exam
50%	Final Exam

Grading in Course:

Descriptor	Letter Grade	Grade Point Value
Excellent	A+	4.0
	A	4.0
	A-	3.7
Good	B+	3.3
	B	3.0
	B-	2.7
Satisfactory	C+	2.3
	C	2.0
	C-	1.7
Poor	D+	1.3
Minimal Pass	D	1.0
Failure	F or F4	0.0

"The University of Alberta is committed to the highest standards of academic integrity and honesty. Students are expected to be familiar with these standards regarding academic honesty and to uphold the policies of the University in this respect. Students are particularly urged to familiarize themselves with the provisions of the Code of Student Behaviour (online at http://www.ualberta.ca/secretariat/appeals.htm) and avoid any behaviour which could potentially result in suspicions of cheating, plagiarism, misrepresentation of facts and/or participation in an offence. Academic dishonesty is a serious offence and can result in suspension or expulsion from the University." (GFC 29 SEP 2003)

Assigned Homework: 8 problems sets, each consisting of 3 problems, will be assigned throughout the semester. The problem sets are due at 4:30 pm. Late submissions will not be accepted. Please put them in box 11 that is marked PHYS 200 in the V-wing (south west). Do not put them under my door or in my mailbox. Solutions will be posted in the glass cabinet in the V-wing (south west).

Mid-term Exam: 8:00-9:20 15 February in V125. Covers first 3 topics in course outline.

Final Exam: 9:00-12:00, 27 April in ETLE2-001 The final exam will cover all the material presented in the lectures. The exam will be 3 hours long. Students who miss the final exam because of serious incapacitating illness or severe domestic affliction can take the Deferred Final Exam. The deferred exam will be 20 June, at 9:00 am in ETLE1-013. Note that students who miss a final examination must formally apply to their faculty office for a deferred final exam within two days of the final examination. Applications based on minor or inconsequential ailments or circumstance will not be approved. See the University Calendar.

Course Outline:

1 The Classical Era. Inertial reference frames. Galilean relativity and Newtonian mechanics. Galilean relativity and electromagnetism. Michelson-Morely experiment.
2 The postulates of the Theory of Special Relativity. The ultimate speed. Relativity of simultaneity.
3 The Lorentz Transformation. Time dilation. Length contraction. Transformation of velocities.
4 Minkowski Space-Time Diagrams. The light cone. The invariant interval. Four vectors. Causality. Length contraction paradox. The twin paradox.
5 Relativistic Dynamics: relativistic mass, momentum and energy. The photon. Collision and decay processes. Force and acceleration.
6 Relativity and Electromagnetism. The Doppler effect.
7 Introduction to General Relativity
8 Introduction to Cosmology

Course Goals:

1. Develop a conceptual understanding of relativity.
2. Improve reasoning ability.