UNIVERSITY OF CALGARY
DEPARTMENT OF PHYSICS and ASTRONOMY
COURSE OUTLINE

1. **Physics 323 (E&M, Optics) Lecture Sections:**

Dr. Phil Langill (coordinator)	**Dr. Jozef Biel**
L02 : MWF 12:00 - 12:50 : SB 146	L01 : MWF : 09:00 – 09:50 : ST 145
Office: SB 507, 220-5402	Office: SB 533, 220-7270

Office Hours: Each Instructor will make known their availability

Course Websites: https://blackboard.ucalgary.ca/webapps/login http://phas.ucalgary.ca/courses/f11/PHYS323
Main Physics Office: SB 605, 220-5385

2. **Prerequisits:** Physics 211 or 221 or 227, and 213 or 223; Applied Mathematics 217 or Mathematics 249 or 251.
Note: The Faculty of Science policy on pre- and co-requisite checking is outlined in the 2011-2012 Calendar. A student may not register in a course unless a grade at least" C-" has been obtained in each pre-requisite course; it is the responsibility of students to ensure that their registrations are in order. See http://www.ucalgary.ca/pubs/calendar/current/sc-3-5.html for details.

3. **Grading**: In determining the overall grade in the course the following weights will be used;
Assignments (7): MP=14% / W=7% Labs (10): 25% Clicker Bonus: 2%
Midterm Exam: 25% Final Exam: 29%
NOTE: Students who attain an overall average exam grade of less than 40% should not expect to receive an overall course letter grade above a D. Overall course percentage grade to course letter grade conversion is discussed on the following pages

The University policy on grading and related matters is also found in the UofC Calendar. Details can be found at;
http://www.ucalgary.ca/pubs/calendar/current/f.html

4. **Missed Components of Term Work**. The regulations of the Faculty of Science pertaining to this matter are outlined in the UofC Calendar at; http://www.ucalgary.ca/pubs/calendar/current/sc-3-6.html It is each student's responsibility to familiarize himself/herself with these regulations. See also http://www.ucalgary.ca/pubs/calendar/current/e-3.html.

5. **Out-of-class-time activities:** Dates and times of class activities held outside of class hours:
Midterm Exam will be held on Monday Oct. 31st from 18:00 – 20:00.
REGULARLY SCHEDULED CLASSES HAVE PRECEDENCE OVER ANY OUT-OF-CLASS-TIME-ACTIVITY. Students are expected to make every effort to attend this exam. If you have a legitimate conflict, you must inform the course coordinator at least 2 weeks prior to the exam so that alternative arrangements may be made for you.

6. **TEXTBOOK**: ***"Physics for Scientists and Engineers" 2nd Ed. Vols 3 & 4,*** R. Knight, Pearson-Addison-Wesley 2008

7. **Examination Policy**: Rules pertaining to the use of calculators, and other devices, during exams will be discussed in lecture. Students are encouraged to read the Calendar, Section G, on Examinations: http://www.ucalgary.ca/pubs/calendar/current/g.html.

8. **Course fees**: There are no additional fees required to take Phys 323.

9. **Writing across the curriculum**: In this course, the quality of the student's writing in laboratory reports will factor in the evaluation of those reports. See also http://www.ucalgary.ca/pubs/calendar/current/e-2.html.

10. **Human studies**: Students in this course are not expected to participate as subjects or researchers.
See also http://www.ucalgary.ca/pubs/calendar/current/e-5.html.

Department Approval: _____ **Date** 17-9-9

Associate Dean's Approval for
out of regular class-time activity: _____ **Date:** _____

11. OTHER IMPORTANT INFORMATION FOR STUDENTS:

(a) **ACADEMIC MISCONDUCT** (cheating, plagiarism, or any other form) is a very serious offence that will be dealt with rigorously in all cases. A single offence may lead to disciplinary probation or suspension or expulsion. The Faculty of Science follows a zero tolerance policy regarding dishonesty. Please read the sections of the University Calendar under K. Student Misconduct http://www.ucalgary.ca/pubs/calendar/current/k.html to inform yourself of definitions, processes and penalties

(b) **ASSEMBLY POINTS in case of emergency during class time. Be sure to FAMILIARIZE YOURSELF with the information at** http://www.ucalgary.ca/emergencyplan/assemblypoints.

(c) **ACADEMIC ACCOMMODATION POLICY.** Students with documentable disabilities are referred to the following links:
Calendar entry on students with disabilities: http://www.ucalgary.ca/pubs/calendar/current/b-1.html
Disability Resource Centre: http://www.ucalgary.ca/drc

(d) **SAFEWALK:** Campus Security will escort individuals day or night http://www.ucalgary.ca/security/safewalk. Call **220-5333** for assistance. Use any campus phone, emergency phone or the yellow phones located at most parking lot pay booths.

(e) **FREEDOM OF INFORMATION AND PRIVACY:** This course will be conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIPP). As one consequence, **students should identify themselves on all written work by placing their name on the front page and their ID number on each subsequent page.** For more information see also http://www.ucalgary.ca/secretariat/privacy.

(f) **STUDENT UNION INFORMATION:**
VP Academic **Phone**: 220-3911 **Email**: suvpaca@ucagary.ca.
SU Faculty Rep. **Phone:** 220-3913 **Email:** sciencerep@su.ucalgary.ca
Website: http://www.su.ucalgary.ca/home/contact.html.
Student Ombudsman: http://www.su.ucalgary.ca/services/student-services/student-rights.html

(i) **INTERNET and ELECTRONIC COMMUNICATION DEVICE Information.** You can assume that in all classes that you attend, **your cell phone should be turned off.** Also, communication with other individuals, via laptop computers, Blackberries or other devices connectable to the Internet is not allowed in class time unless specifically permitted by the instructor. If you violate this policy you may be asked to leave the classroom. Repeated abuse may result in a charge of misconduct.

OTHER COURSE RELATED INFORMATION

1. eInstruction CLICKERS

As a vehicle to encourage class participation and student interaction as well as providing instructors with rapid, in-class feedback, the Classroom Performance System (CPS) will be employed. Students who do not have a 'clicker' are strongly encouraged to get one from the UofC Bookstore. The set-up procedure is to go to the CPS website to register for the course and activate your clicker. Go to www.einstruction.com and click on STUDENTS at the top. There is a huge drop-down list of institutions on the CPS system, and you first have to select 'University of Calgary'. At some point you will be asked for a 'class key'. **Each lecture section will have its own key. Ask your instructor for your class key.**

This is an opportunity to answer questions in the classroom setting – anonymously, and earn some BONUS credit. The type and number of "clicker questions" you will encounter over the semester is at the sole discretion of your instructor. Participate and you can earn up to an extra 2% toward your overall course grade.
The model will be as it was in Physics 223. That is, if students make any attempt to answer a question they get 1 mark, and if they get the answer correct they get 1 more mark. Such questions are worth 2 marks. Some of the questions asked will not have a specific correct answer and are worth 1 mark. The bonus mark a student gets will be the total clicker marks they earned divided by the maximum clicker marks obtainable, times 2%.

2. ASSIGNMENTS

(i) Traditional 'work it out on paper' assignments will be distributed every 2 weeks. A hand-in box will be available in the Jr. Labs area in the basement of Science Theatres. These written assignments are due on Friday's at 12:00 noon, starting Sept. 16th. The only exception will be during the week of Reading break. That week, the written assignment is due Wednesday Nov. 9th. Please follow the format details below so that your work can be handed back as quickly as possible after it is marked. Marked work will be returned during your tutorial. Solutions will be posted on Blackboard.

2. (i) Assignments (con't)

Format of Assignments
Follow the example below as closely as possible for **the top of the first page** of your homework assignments. Please **PRINT** your name (and **UNDERLINE** your **SURNAME**). In the upper Right Hand corner of each inner page write your ID number. Number all pages as shown.

Physics 323 Fall, 2011	Assignment #__	Page 1 of __ Firstname, Lastname Tutorial Sec __, Day, Time

Your assignment solutions should be easily legible, with diagrams carefully drawn (neatness counts!). State the laws of physics being applied where appropriate. Briefly justify important steps in your solution. Missing steps or disjointed reasoning will probably lead to a deduction in marks. It is generally best to write equations in symbols first and perform derivations using symbols. Number equations and refer to them by number. Substitute in numerical values at the very end. Underline final answers for clarity. Numerical final answers must contain correct units.

Follow these assignment guidelines or risk losing marks!

(ii) Online "Mastering Physics" Assignments are due by 23:59 on the same day that the written assignments are due (Friday's except the week of Reading Days, in which case it's due on the Wednesday). Students having taken Phys 211/221 and Phys 223 in the 2010-2011 Fall and Winter semesters will be familiar with MP assignments. Your subscription is good for 2 academic years, and so you should not have to pay any additional registration fees for Phys 323.
Students will still have to sign-up for our particular course on the MP website. Our MP course name is MPLANGILL90191. Go to; http://www.masteringphysics.com/

3. TUTORIALS

Each student in Physics 323 is enrolled by the Registrar's Office in a tutorial session. You will find that most of the lecture time will be taken up covering the theory and concepts central to the topics of geometrical and physical optics, and electromagnetism. Unfortunately, in order for those concepts to have any chance of reaching your psyche and become a part of your greater understanding of these topics, you must attempt as many relevant problems as possible (read: put pencil to paper).
These tutorial sessions are a special time set aside for students to reinforce their physics problem solving skills, and test their understanding of the concepts relevant to this course. Tutorial questions are taken primarily from the textbook and will be assigned in enough time for students to attempt them before coming to the tutorial. During your tutorial session the TA will solve the assigned questions, providing students the opportunity to check their methods and answers, ask questions, and follow along.

4. COURSE GRADES

As your term work items (labs, assignments and exams) accumulate, the marks for students in Phys323 will be posted on phas.ucalgary.ca/phys223/. The marks that appear on this website are the marks that will be used to determine each student's overall course grade. Check your marks frequently. **Missing or incorrectly posted term work marks should be reported to your Instructor as soon as they are noticed.** You should be prepared to produce the original work to verify the requested correction.

Overall Physics 323 percentages are converted into a final course letter grade using the following thresholds:

92% - 100%	A+	75% - 80%	B+	60% - 65%	C+	45% - 50%	D+
85% - 92%	A	70% - 75%	B	55% - 60%	C	40% - 45%	D
80% - 85%	A-	65% - 70%	B-	50% - 55%	C-	00% - 40%	F

Policy regarding missed elements of term work: Students who miss a lab (assignment) because of ill health, or for other valid reasons, will be granted an excused absence by their Instructor provided that alleged problems are supported in writing by a person in a position of authority (physician, counselor, etc.). Once substantiated, the student's final mark for their labs (assignments) will be calculated by averaging the revised number of labs (assignments) which are subsequently due.

Physics 323 Tentative Schedule – Fall 2011

Week of	Topics	Textbook readings	Lab
Sept 12th	Coulomb's Law and Electric field of point charges. **E** of dipoles. (1)	26.4 - 26.5 27.2	-
Sept 19th	**E** of continuous charge distributions. Dipoles in electric fields.	27.3 – 27.5 27.7	Error Analysis
Sept 26th	Electric flux and Gauss's Law (2)	28.1 – 28.6	Linear Regression
Oct 3rd	**B** produced by moving charges and current. Ampere's Law	33.3 – 33.4 33.6	Oscilloscopes & Multimeters
Oct 10th	Magnetic Flux and Faraday's Law Induced E and intro to Electromagnetic Waves (3) *** Thanksgiving – no classes on Monday ***	34.3, 34.5 34.6	Parallel plate capacitors
Oct 17th	Displacement Current, Maxwell's Eqn's, EM waves and their properties, Malus's Law	35.2 – 35.7	Electromagnetic Induction
Oct 24th	Light & Sound, power and intensity. (4)	20.5, 20.6	Malus's Law
Oct 31st	Doppler Effect, Interference in 1D, Thin film interference. ***Midterm Exam – Monday Oct. 31st 6:00 pm ***	20.7, 21.5, 21.6	Fraunhofer Diffraction
Nov 7th	Interference and Diffraction of light. (5) *** Reading Days – Nov. 10th to Nov. 13th - no classes ***	22.1 – 22.5	-
Nov 14th	Interferometers, Reflection & Refraction, Dispersion	22.6, 23.2, 23.5	Reflection and Refraction
Nov 21st	Image Formation by Refraction. Thin Lenses. (6)	23.4, 23.6, 23.7	Concave Mirrors
Nov 28th	Image formation by Spherical Mirrors. Lenses in combination. Cameras and the eye.	23.8, 24.1 – 24.3	Thin Lenses & Optical Instruments
Dec 5th	Microscopes, telescopes and resolution. (7)	24.4 – 24.5	-
	Final Exam Period: Dec. 12th to 21st		