

**PHYS 157M/CH 157M Information, Quantum Mechanics, and DNA
(Winter 2014); CRN: 26115/ 22519
Class Meetings: T, Th 3:30-5:20 pm, Room 41 Knight Library**

Instructors:

Michael Raymer; email: raymer@uoregon.edu phone: 346-4785
Office: 276 Willamette (on the side of the building closest to 13th Ave.)
Office hours: Tuesday 10:00-11:00 (first half of term)

Marina Guenza; email: mguenza@uoregon.edu phone 346-2877
Office 136 Klamath (on the side of the building closest to Franklin Blvd.)
Office hours: Tuesday 10:00-11:00 (second half of term)

Co-Instructors:

Kadar Gelinaz; email: kadarg@uoregon.edu
Office: 160A Klamath, Office hours: Monday 12:00-1:00 and Wed 11:00-12:00.

Max Dickinson; email: maxwelld@uoregon.edu

Grader: Ian Snyder snyder@uoregon.edu

Office Wil 315 Office hours: Monday 3:00-4:00

Office visits can also be arranged any time by appointment (best to use email).

Course Home Page: Blackboard system, <https://blackboard.uoregon.edu/webapps/login/>
Course announcements, Lecture slides, Homework assignments, Reading quizzes, and other materials will be posted.

Course Description: A non-science major's introduction to the concepts that explain how information is stored in and transmitted by physical objects, including DNA and the related molecules that are necessary for life. The course is interdisciplinary, spanning physics and chemistry. See the document *Course Purpose*.

Use of Math: You will need to employ some basic math skills—fractions, simple algebra, square roots, exponents and scientific notation, how to use a calculator, and how to draw and interpret graphs.

Prerequisites: No formal requirements.

Needed Materials:

Calculator: You will need a scientific calculator for this course, and you must bring it to all exams, and we encourage you to bring it to class. At minimum, it should be able to calculate using scientific notation for large and small numbers.

i>clicker: **You need to purchase an i>clicker** from the UO bookstore (about \$35 new, with good resale value). You will use this to respond to class polls and to take in-class reading quizzes (see the grades

section below). You must bring your clicker to every class, and we expect you to **obtain and register one prior to the second week of classes**. You will need to register your clicker following instructions on **Blackboard** in the *Course Information* section for this course. (**NOT on the iClicker website!**)

Text: The only required reading for this course is the Course Packet, available online in Blackboard.

We will post lecture notes for the course (the slides we show in class) on the course Blackboard site. In general, these notes will be available within a couple of days after the material is covered in class. You should still plan to take your own notes during class.

Grading: Grades for the course will be based on:

- * Daily Classroom Participation (i>clicker-based Polls 10%)
- * At-home On-Line Reading Pre-Class Questions: 5% (for correct answers)
- * Homework: 30%
- * Midterm exam 1 (Thurs. Feb. 6): 15% [one double sided 8.5 x 11 in. page of notes permitted]
- * Midterm exam 2 (Thurs. March 6): 15% [one double sided 8.5 x 11 in. page of notes permitted]
- * Final exam: 25% [two double sided 8.5 x 11 in. pages of notes permitted]

Exam Format: The midterms and final exams will consist of some multiple choice and some short-answer questions. At least 50% will be taken from homework, in-class examples, on-line Pre-Class Questions, or previous exams in this term.

Grading scale: The expected grading scale for this course is:
100-85 = A(+/-), 85-75 = B(+/-), 75-65 = C(+/-), 65-50 = D, <50 : in danger of F.
If necessary, we may apply a curve to achieve a higher average final grade. However, you are guaranteed at least the grade listed here based on your course average. Pass/fail grading option: A passing grade requires at least the equivalent of a C- grade.

Clicker Polls: Classes will involve poll questions, which will be answered with your clicker. It doesn't matter whether or not you get these questions right, as long as you give some answer. Your responses are known only to you and to the Instructors.

Attendance: You will need to attend class to earn participation points through clicker exercises.

Homework: Weekly homework sets will be assigned on Blackboard. We encourage you to work together in solving homework problems, but you must write up the solutions on your own, in your own words. See the document *How to Study for Science Courses* provided on Blackboard. We will try to post solutions to each homework assignment within one day after it is due. Homework is due at the start of class on the due date, normally Thursdays. We will accept **late homework no more than 24 hours late** (3:30 pm the day after the due date). Put these into the Late Homework In-Box outside Prof. Raymer's office Wil 276. Up to 24-hour-late homework will have 20% deducted.

At-Home On-Line Pre-Class Questions: The day before each class there will be a brief set of graded questions to answer on Blackboard, to assist you in understanding the assigned readings. These will be posted on Blackboard soon after the prior class. They will be due at **noon** before the relevant class.

Suggestion Box: If you have suggestions for improving anything about how the course is going, please drop a note (can be unsigned) in the Late-Homework box outside Prof. Raymer's office.

Makeup exams (NONE): The exams are pre-scheduled so you can avoid scheduling conflicts. **Thus, there will be no makeup exams for this course, so please check the dates now.** If you have a *serious and documented* reason for missing a Midterm Exam (death in the family, serious illness), your final-exam score will count in place of the missed midterm exam score. That is, your final-exam score will count for more than it would otherwise.

Final exam: The final exam will be 13:00 (1:00 pm) Wed., Mar. 19, 2014. Please verify this on the UO calendar of exams. You must take the exam at this time. (No exceptions, except for medical reasons.) You must bring a calculator to the final.