Welcome to Probability! The objectives of this course are twofold: one, to develop the intuition and computational skills needed to solve a range of probabilistic problems, and two, to develop proficiency in manipulating mathematical language. The former is imminently practical: it will serve you well in Las Vegas, on Wall Street, and at the Churchill Downs. The latter is important for the same reasons that good writing is always important. The capacity to write sharp mathematical proofs can be leveraged as a means of communicating ideas, as a declaration of personal style, and as a technique for understanding the world.

BASICS


Class Hours and location:  Monday, Wednesday, and Friday, 12:00-12:50, Thursday, 1:00-1:50, Thompson 391. Please keep Thursday 12:30-1:50 free to allow for longer exams.

Course webpage:  http://math.pugetsound.edu/~ctoews/teaching/spring14/prob/

Contact Information:  
Thompson Hall 390H  
Tel:  (253) 879-3839  
ctoews@pugetsound.edu

Office Hours:  Monday and Wednesday, 10:00-11:00 am, Thursday, 11:00-11:30am, Friday, 2:00-3:00am.  
Also feel free to drop by or to make an appointment.

HOW THIS COURSE WORKS

This course essentially covers the first eight chapters of the textbook. We will skip certain sections, and add others, so the “first eight chapters” summary is only approximate. Broadly speaking, our goal is to find ways of understanding, characterizing, and making use of the ubiquitous phenomenon known as randomness.

The target audience for this course is people who want a rigorous introduction to the field, which generally means those who wish to continue on in some technical or scientific endeavor. It is a difficult course, and you should be prepared to work hard. As a student, your job primarily consists of a) reading the text, b) attending lectures, c) doing the homework, and d) taking quizzes and exams. Here are a few comments on each of these activities:

Reading

The on-line course calendar shows exactly which sections will be covered in which lecture periods. It is your job to read each section before I lecture on it. Reading a math text can be difficult, of course, but it’s a skill worth learning. You don’t need to read every word, but you should at least understand the statements of the main theorems, and have a basic familiarity with the worked examples. Coming to class with this level of preparation will make my lectures vastly more intelligible, and allow us to devote class time to understanding advanced concepts.
Lectures

Lectures are an opportunity to discuss and develop your understanding of the course material. Note that they are not the place to see the material for the first time: lectures are a supplement to your reading. To make proper use of lecture time, you need to have done the reading in advance, take notes, ask questions, and be engaged. Your participation grade (see below) will be based on how energetically you do these things.

Homework

You learn mathematics by solving problems: the importance of doing homework cannot be overstated. It is your job to check that you have done the work correctly. I facilitate this process by assigning problems whose answers are contained in the back of the book. It is up to you to check your answers and make sure you understand the assignments. If you get stuck, or are not sure about what you’re doing, you should seek help (see the “Getting Help” section below.) Any homework problem is fair game on any quiz.

Testing

Testing is odious. Unfortunately, it is really handy when it comes to assigning grades: for better or for worse, a good portion of your final grade will be based on how you do on written performance evaluations. There are three “categories” of tests in this class: quizzes, regular tests, and the final exam. There is no qualitative difference between the kinds of problems that will appear in these three venues, so if you do well on quizzes you should do well on tests, and if you do well on tests you should do well on the final.

Questions will in general fall into one of two categories: 1) homework-style question (taken either directly or with very slight modifications from the homework), or 2) conceptual questions (testing your understanding big ideas and your capacity to use language precisely.) The best preparation for type 1 questions is to do the homework. The best preparation for type 2 questions is take active part in class discussions.

HOW YOU WILL BE GRADED

In an ideal world, I would write a personal evaluation for each student at the end of the term, commenting on strengths and weakness and generally assessing how you did in the class. Alas, we do not live in a perfect world: I need to give you a letter grade. The letters will be assigned according to the following scheme (the numbers on the right represent “total percentages.”)

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<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>A</td>
<td>92-100</td>
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<tr>
<td>A-</td>
<td>90-91.9</td>
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<tr>
<td>B+</td>
<td>88-89.9</td>
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<tr>
<td>B</td>
<td>82-87.9</td>
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<tr>
<td>B-</td>
<td>80-81.9</td>
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<tr>
<td>C+</td>
<td>78-79.9</td>
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<td>C</td>
<td>72-77.9</td>
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<td>C-</td>
<td>70-71.9</td>
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<td>D</td>
<td>60-69</td>
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<td>F</td>
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Your net numerical percentage will be based on your performance on homework, quizzes, exams, and the final, along with participation. These scores will be posted on the class webpage, which you can check at any point during the term should you be interested in knowing your grade. Each graded item is assigned a weight. Here are the weights, along with descriptions of each grade item:

Homework (40%)

I will assign a relatively large number of homework problems for each chapter. Homework will be of two “kinds”: one kind is exercise problems, which are mostly computational in flair. These problems will not
be collected, but will form the basis of our weekly quizzes. Every Thursday we will discuss the exercise problems, and you are expected to come to these discussions well prepared.

The other kind of homework problem is theory problems. These problems require formal proofs, and will need to be written up with the software Latex and submitted for a grade. The grade will be a point value between 0 and 10. Values of less than 7 will be marked “redo” and you will be asked to rewrite them; values of 7 through 10 represent “accepted” problems, and you are not allowed to redo them. Over the course of the semester you must have at least 12 problems accepted, and your homework grade will be the average of your top scores (lower scores get dropped if you have more than 12 accepted.)

To prevent you from submitting all your problems on the last day of class, I propose the following rules:

• The semester will be divided into three sections, Jan 21-Feb 18, Feb 19-Mar 25, and Mar 26-May 6.
• You must have at least three problems accepted from each section. (Resubmittals are allowed up to three days past the end of each section.)
• The penalty for not having at least three problems accepted in a given section is a homework penalty of 10 points.
• The penalty for not having at least 12 problems accepted by the end of the term is again 10 points.

Quizzes (15%)

With few exceptions, there will be a quiz every week, usually on Friday. Each quiz will examine a topic recently covered in class. The exact material covered on any given quiz will be listed on the class website. Often, quiz problems will be taken verbatim from the exercise homework.

Exams (30%)

There will be two cumulative in-class exams, spaced at roughly equal intervals throughout the semester. Each exam is 15% of your final grade. As with the quizzes, the exact content of any given exam will be listed on the class website. Tentative dates for the three exams are Thursday, February 27 and Thursday, April 17.

Final Exam (15%)

A comprehensive take home exam will be distributed the last week of class. It will be due at the conclusion of the regularly scheduled final exam for this class, i.e. Monday, May 12 at 2pm.

GETTING HELP

Probability is a difficult course, and we'll be moving quickly: if you feel you need extra explanation about certain topics, seek out help as soon as possible. Three obvious resources:

• Friends or classmates. Your peers are a valuable resource, and you are encouraged to discuss the course material. (Caveat: homework can be solved in groups, but should be written up independently.)
• Tutors. It is unlikely that there will be any tutors in the math department who deliberately target a course like this, but there will be tutors who have taken it: ask around and see if there is anyone who can discuss things with you. Tutor information is available on the white sheets posted on the math lounge walls.
• The professor. Nothing is worse than languishing alone in empty office hours: drop by, say hello, ask questions. If the office hours don’t work, drop in some other time, or shoot me an email, or give me a call.
A FEW OTHER MATTERS

Email Etiquette: Email is a great way to get a hold of me, and I encourage you to use it freely. I would ask that you exercise the same basic attention to civility in email as you would in other forms of communication: include a salutation, sign off with your name, and acknowledge that an exchange has been satisfactorily terminated. Also note that I generally check my email first thing in the morning and then again late in the day. You should thus count on a more or less 12 hour response time (in other words, don’t shoot me an email five minutes before an exam saying you missed the bus.)

Attendance: The UPS student handbook states that “Regular class attendance is expected of all students. When non-attendance is in the instructor’s judgment excessive, the instructor may levy a grade penalty or may direct the Registrar to drop the student from the course.” With this as background, you should note that I do not take roll, and you can miss the occasional day of class with no penalty and without explaining to me where you were. In general, your presence or absence is noted only as a broad impression. Over time, however, that broad impression becomes fairly accurate: I know who attends my classes and who does not. Try to make it as often as possible.

I do not give make-up quizzes. Instead, I drop your two lowest quizzes at the end of the term. This policy of two dropped quizzes is specifically designed to accomodate the occasional illness. Please do not ask me if you can make up quizzes: the answer is no. If we take 11 quizzes, your quiz grade will be based on your 9 best scores. Under extraordinary circumstances I will allow you to base your quiz grade on a smaller number of scores, but I would be hard pressed to think about what these circumstances might be.

Accessibility Statement If you have a physical, psychological, medical or learning disability that may impact your course work, please contact Peggy Perno, Director of the Office of Accessibility and Accommodations, 105 Howarth, 253.879.3395. She will determine with you what accommodations are necessary and appropriate. All information and documentation is confidential.

Academic integrity It is your responsibility to understand the academic integrity policy of the university. You can find this policy in the Academic Handbook, and it is also available online at: http://www.pugetsound.edu/student-life/student-resources/student-handbook/academic-handbook/academic-integrity/.

Not citing other peoples work, turning in the same work to satisfy two different classes, citing false information, or plagiarism are all violations of the academic integrity policy. Such violations are taken very seriously, and will be reported if discovered.

Emergency Response Information The university would like you to review emergency response protocols. They have requested that the following appear in every syllabus:

Please review university emergency preparedness and response procedures posted at www.pugetsound.edu/emergency/. There is a link on the university home page. Familiarize yourself with hall exit doors and the designated gathering area for your class and laboratory buildings.

If building evacuation becomes necessary (e.g. earthquake), meet your instructor at the designated gathering area so she/he can account for your presence. Then wait for further instructions. Do not return to the building or classroom until advised by a university emergency response representative.

If confronted by an act of violence, be prepared to make quick decisions to protect your safety. Flee the area by running away from the source of danger if you can safely do so. If this is not possible, shelter in place by securing classroom or lab doors and windows, closing blinds, and turning off room lights. Stay low, away from doors and windows, and as close to the interior hallway walls as possible. Wait for further instructions.