

Instructor: Dr. G. Slade, Math Annex 1211, 604-822-3781, slade@math.ubc.ca.

Office hours: Mon. 15:00–15:50, Wed. 13:00–13:50, Fri. 10:00–10:50, or by appointment.

Course webpage: <http://www.math.ubc.ca/~slade/318-web-13.html>

Text: The course text is S.M. Ross, “Introduction to Probability Models,” 10th edition, Academic Press, (2010). The 9th edition is indistinguishable for our purposes apart from possible changes to page numbers, and you should feel free to use it. Problems assigned from the text will be identical in both the 9th and 10th editions.

An optional more advanced reference is G.R. Grimmett and D.R. Stirzaker, “Probability and Random Processes,” 3rd edition, Oxford, (2001).

Outline: The course is designed for physics and engineering physics students but students in mathematics and other disciplines may also find it useful. The course will be based primarily on topics from the first five chapters of Ross. Highlights include:

1. Probability spaces
2. Independence and conditional probability
3. Discrete and continuous random variables
4. Expectation
5. Generating functions and characteristic functions
6. Convergence of random variables
7. Law of large numbers and central limit theorem
8. Confidence intervals
9. Discrete Markov chains
10. Random walk
11. Poisson process

Evaluation: There will be homework assignments, two tests, and a final exam.

Homework: Nine assignments will be given and marked for credit. Assignments are due at the beginning of class on the due date. No late assignments will be accepted. The assignment schedule is as follows:

| <u>Assignment given</u> | <u>Assignment due</u> |
|-------------------------|-----------------------|
| January 4 | January 11 |
| January 11 | January 18 |
| January 18 | January 25 |
| January 25 | February 1 |
| February 8 | February 15 |
| February 15 | March 1 |
| March 1 | March 8 |
| March 8 | March 15 |
| March 22 | April 3 |

Tests: There will be two 50-minute tests held during the regularly scheduled class hours on the following dates:

Wednesday, February 6, Wednesday, March 20.

Missing a test normally results in a mark of zero. Exceptions may be granted in two cases: prior consent of the instructor or a medical emergency. In the latter case, the instructor must be notified within two working days of the missed test, and presented with a doctor's note immediately upon the student's return to UBC. When an exception is granted for a missed test, there is no make-up test, and the final exam mark will be used.

Final exam: There will be a final examination during the April examination period.

Final mark: The final mark will be calculated as follows:

Homework: 10%

Tests: 20% each

Final exam: 50%

Prerequisites: You must have taken one of MATH 152, MATH 221, MATH 223 and also one of MATH 215, MATH 255, MATH 256, MATH 265, and you must either have taken or currently be taking one of MATH 256, MATH 257, MATH 267, MATH 316. You cannot receive credit for this course as well as credit for any one of MATH 302, MATH 303, STAT 241, STAT 251, STAT 302, COMM 290.

GNU Octave software: Some assignment questions require the use of GNU Octave software. You should download this onto your computer as soon as possible; it is free and there are links and instructions on the course webpage. If you prefer, you may use MATLAB instead.

Updated January 2, 2013.