



Random Mathematics

2020秋随机数学

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School of Information and
Communication Engineering





Course-Syllabus

- Course Objective
- Text Books & Reference
- Course Content
- Grading
- Instruction Info

Objective - I

➤ Understand:

- Probability
- Random Variables
- Distributions
- Expectation, Variance, Moments, M.G.F.
- The Law of Large Numbers
- The Central Limit Theorem
- Estimation
- Sampling Distribution
- Testing Hypotheses
- Linear Regression
- Random Process

Objective - 2

➤ Conduct:

- Probability calculation
- Compute p.f./p.d.f or c.d.f of different *R.V.s*
- Calculate mean, variance, covariance, correlation, m.g.f
- Apply distribution models into real-world problems

➤ Estimate:

Parameters from given data

➤ Test :

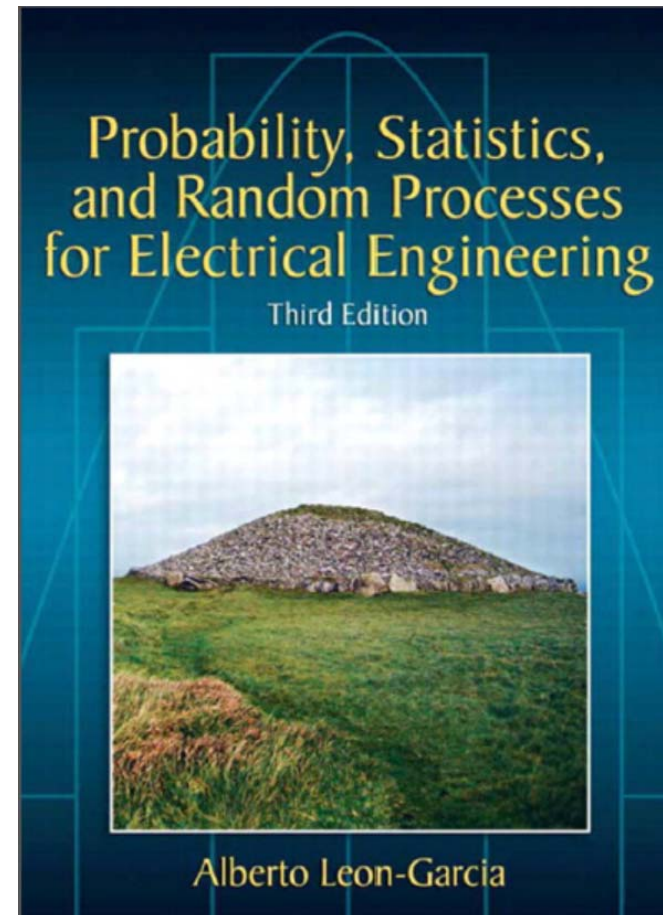
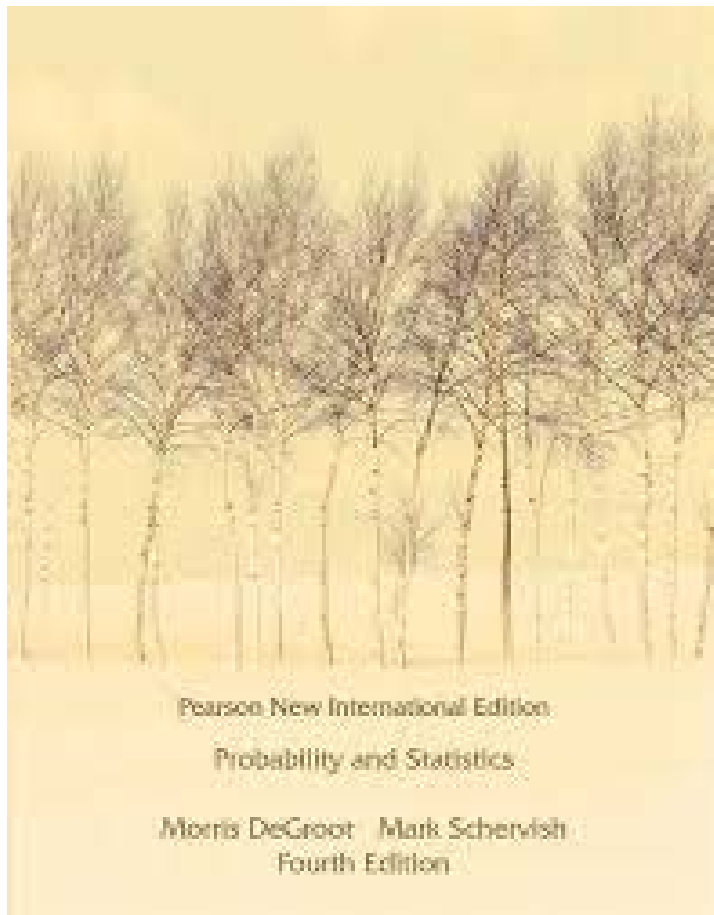
A hypothesis from given data

➤ Perform:

- Project1-SNR analysis of a wireless detection system
- Project2-Statistical channel modelling of UWB soil data

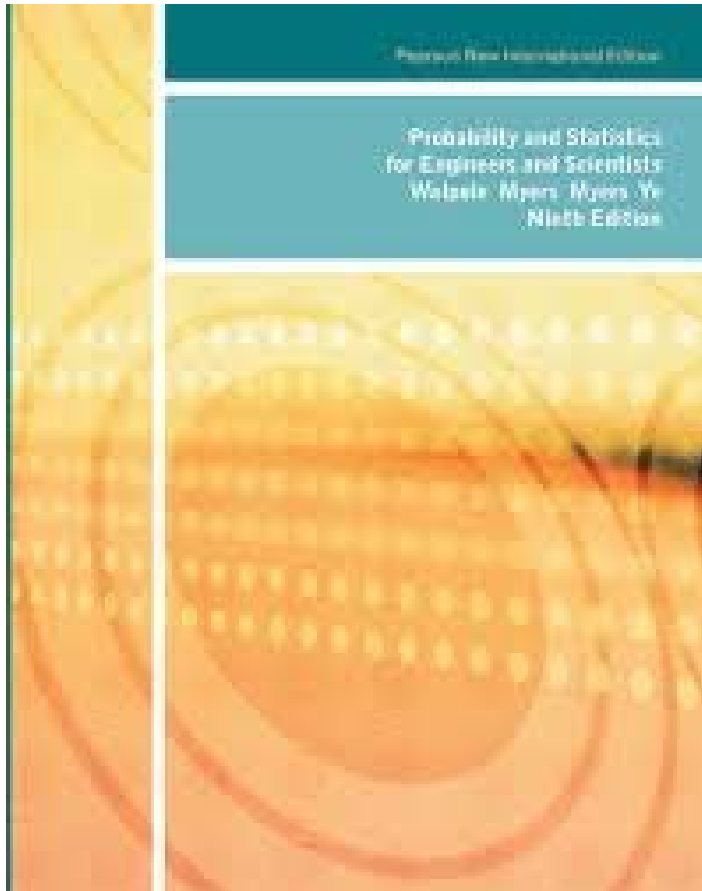
Text books

- 1: Morris H. Degroot & Mark J. Schervish. Probability and Statistics (Forth Edition), Addison-Wesley, 2011.**
- 2: Alberto Leon Garcia, Probability, Statistics and Random Processes for Electrical Engineering (3rd Edition), Prentice Hall, 2008.**

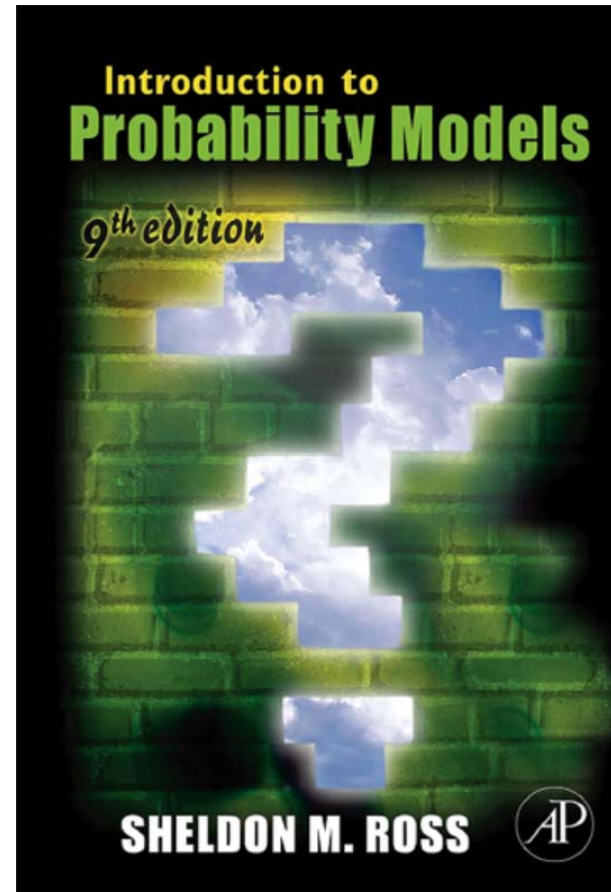


References

Ronald E. Walpole et al.
Probability & Statistics for
Engineers & Scientists (Ninth
Edition), Prentice Hall, 2012.



Sheldon M. Ross,
Probability and Statistics
(Forth Edition), Elsevier,
2007.



Content

Textbook I:

- Chap.1 Introduction to Probability (4 credit hours)
- Chap.2 Conditional Probability (5 credit hours)
- Chap.3 Random Variables and Distributions (19 credit hours)
- Chap.4 Expectation (10 credit hours)
- Chap.5 Special Distributions (merge into chap.3-4)
- Chap.6 Large Random Samples (4 credit hours)
- Chap.7 Estimation (9 credit hours)
- Chap.8 Sampling Distributions of Estimators (6 credit hours)
- Chap.9 Testing Hypothesis (9 credit hours)
- Chap.11 Linear Statistical Models (1 credit hour)

Textbook2:

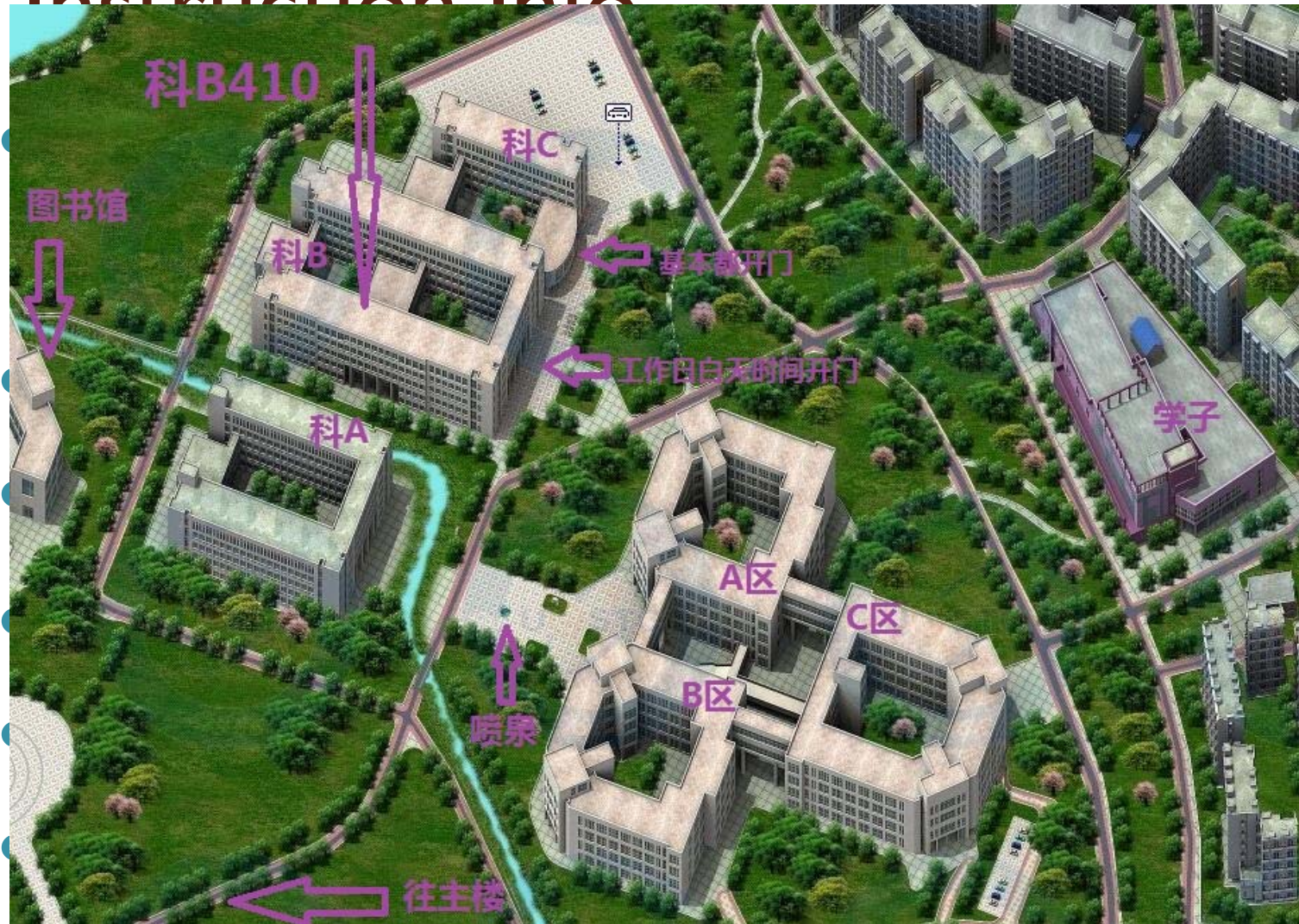
- Chap 9 Random Process (2 credit hours)

Teaching 54, Exercise class 15, Course project 5, Quiz 4,
Midterm 2 – 80 in total

Grading

- Homework 20%
 - Open-book Pop Quiz 2 times 20%
 - Course Projects 10%
 - Q&A (Supplement) 5%
- } Usual Performance
- Closed-book midterm 20%
 - Cover Text1 chap. 1-5
 - Closed-book final exam 30%
 - Cover Text1 chap. 1-9, 11, Text2 chap. 9
- } Test Performance

Instruction Info



- Office: Research Building B – 410