

Stat 355: Introduction to Probability and Statistics for Scientist and Engineers (Spring 2017)

Instructor : Dr. DoHwan Park

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Office Hours : MoWe 11:00-12:00 PM, or by appointment.

Class Website : Use Blackboard at <http://my.umbc.edu>

Teaching Assistant : Mr. Qing Ji

Email: jiq1@umbc.edu

TA Office : MP 422A

TA Office Hours : MoWe 2:15-3:15 PM.

Class Meetings :

- LECTURE : MoWe 5:30-6:45 pm, Physics 101 (by Dr. Park)
- DISCUSSION 05 : Mo 7:10-8:00 pm, Math & Psychology 103 (by Mr. Ji)
- DISCUSSION 06 : We 7:10-8:00 pm, Math & Psychology 103 (by Mr. Ji)

Prerequisite : Math 142, 152, 225 or 251. You will need calculus for the course, especially, how to calculate derivatives and integrals including integration by parts.

Textbook : *Probability and Statistics for Engineering and the Sciences, 9th edition (2016)* by Jay L. Devore.

Tentative Material to be covered : Chapters 1; Chapter 2, Sections 2.1 - 2.5; Chapter 3, Sections 3.1 - 3.4; Chapter 4, Sections 4.1 - 4.4; Chapter 5, Sections 5.1, 5.2, 5.4, and 5.5; Chapter 6, Sections 6.1 and 6.2; Chapter 7, Sections 7.1 - 7.3; Chapter 8, Sections 8.1, 8.2, and 8.4; Chapter 9, Sections 9.1 - 9.3.

Objective : This is a course for students who wish to learn basic theory and methods in order to analyze simple studies and experiments. This course will present the basic methods of applied statistics, utilizing R. Students will be provided with readily understandable and intuitive descriptions of statistical analyses. The topics to be covered include: basic descriptive statistics for univariate and bivariate data, vary elementary probability theory, random samplings from populations and random allocation to experimental treatments, sampling distributions, concepts of confidence interval and hypothesis testing and tests of means in one-sample, two-sample, paired-sample. Upon completion of this course, a student should be able to perform a basic statistical analysis on a set of data, including tests of hypotheses and report the results. The student should also be able to interpret statistical results reported by others. Students should be able to make decisions based on statistical inferences.

Lecture and Discussion : You are responsible to all the material provided in Lecture and Discussion sessions including course material and other announcement. Discussion sessions with TA will be used to review the material from the lecture and learn the statistical software, R. You are required to silence your cell phones during class. The use of smart phones, tablets, and laptops during class should be focused only on course material. If texting, social media and web browsing becomes a distraction during class, electronic devices may be banned.

Calculator and Software : A calculator that will add, subtract, multiply, divide, compute factorials, and raise numbers to powers is required for the course. You will be allowed to use a calculator on all exams and quizzes so bring it to all the classes. You do not need a calculator with built-in statistical functions. Your calculator may only be used to assist in mathematical computations. You **MAY NOT, under any circumstances, use a cell phone or other wireless communication device as a calculator.** You are also encouraged to utilize any statistical computer package, but I recommend R which is available on campus and free to download at <http://www.r-project.org/>.

Grading : Midterms (2x20%, March 8th (Wed); April 5th (Wed), Quizzes (15%), Pop Quizzes and attendance (5%), Projects (15%), Comprehensive Final exam (25%, TBA)

Grade	A	B	C	D	F
Minimum Score	90 %	80	70 %	60 %	below 60 %

Homework and Quizzes : You will find a list of suggested Homework problems in this syllabus. The problems are tentative and they may be added or removed. These problems should be completed as soon as possible after you have covered the corresponding material in class. While you are strongly encouraged to complete these problems, **they will not be collected or graded.** You will find brief solution at the blackboard. Working these problems should serve as good preparation for the exams and quizzes you will take in this course. Quizzes will be given on every Wednesday lecture (at the beginning or ending of class) for 10-15 minutes. You are encouraged to discuss homework problems with other students. One lowest score from quiz will be dropped from the final grade.

Ch 1: \$2. 10, 26, \$3. 34, \$4. 48, 56

Ch 2: \$1. 4, 8, 9, \$2. 12, 16, 18, \$3. 30, 32, 38, \$4. 50, 60, 62, \$5. 76, 88

ch 3: \$1. 6, \$2. 14, 16, 24, \$3. 32, 36, 38, \$4. 50, 56, \$6. 80, 86

ch 4: \$1. 2, 4, 8, \$2. 12, 14, 20, 22, \$3. 28, 30, 38, 42, 54, \$4. 60, 66, 67

ch 5: \$1. 2, 6, 8, \$2. 22, 26, 30, \$4. 46, 49, 50, 52, 54, \$5. 58

ch 6: \$1. 3, 9, 16, 19 \$2. 20, 22, 23

ch 7: \$1. 2, 3, 6, \$2. 16, 20, 22, \$3. 28, 33, 37

ch 8: \$1. 6, 9, 10, \$2. 16, 18, 24 \$4. 48, 50, 52

ch 9: \$1. 10(a), 12, \$2. 23, 24, \$3. 36, 46

Pop Quizzes: There will be unannounced pop quizzes throughout lectures or discussion sections. Attendances for both lecture and discussion sections are very important in this course and pop quizzes can be part of the proof for attendance.

Project : Three projects will be assigned and taught by TA during the discussion sessions.

The Official UMBC Academic Integrity Policy: By enrolling in this course, each student assumes the responsibilities of an active participant in UMBC's scholarly community in which everyone's academic work and behavior are held to the highest standards of honesty. Cheating, fabrication, plagiarism, and helping others to commit these acts are all forms of academic dishonesty, and they are wrong. Academic misconduct could result in disciplinary action that may include, but is not limited to, suspension or dismissal. To read the full Student Academic Conduct Policy, consult the UMBC Student Handbook, the Faculty Handbook, or the UMBC Policies section of the UMBC Directory.