

MATH/STAT 415

(Section 001, *Spring 2018*)

Course Introduction to Mathematical Statistics

Objectives To familiarize students with the basic concepts of theoretical treatment of statistical inference. Topics to be discussed include Point Estimation, Interval Estimation, Hypothesis Testing, Analysis of Variance, Chi-square Test, Likelihood Ratio Test and Bayesian Method.

Lecture 9:05am—9:55am Monday & Wednesday
Room 213 Buckhout Building

Recitation 9:05—9:55am, Friday at 213 Buckhout Building

Textbook *Probability and Statistical Inference, 9th Ed.*
(2015, By Hogg, Tanis & Zimmerman)—required.
Stat software: Minitab, Excel or JMP (optional)

Instructor Dennis K. J. Lin, University Distinguished Professor
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Teaching Assistant

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Office hour: 3:00—4:30 pm Tu, & Thu (or by appointment)

Course Grade	Quizzes	20 %	Weekly, on Friday Recitation
	First Exam	25 %	February 21 st , Wednesday
	Second Exam	25 %	March 28 th , Wednesday
	Final Exam	30 %	To Be Announced

Other course information will be distributed through CANVAS at
<psu.instructure.com>

Course Outline (tentative)

Week	Dates	Topics	Reading	Assignment
1	1/8,10,12	Probability Distribution: Review	2 & 3 & 5	
2	1/17	Point Estimation	6.1-6.4 & 6.7	Quiz#1
3	1/22,24	Interval Estimation	7.1 & 7.3	Quiz#2
4	1/29,31	Hypothesis Testing—General	8.1, 8.3 & 8.5	Quiz#3
5	2/5,7	Two-Population Problems	7.2 & 8.2	Quiz#4
6	2/12,14	ANOVA (k-population)	9.3 & 9.4	Quiz#5
7	2/19, 21	Review, Q&A, Exam#1		Exam#1
8	2/26,28	Likelihood Ratio Test	8.7	Quiz#6
9	3/5,7	Spring Break		No Class
10	3/12,14	Linear Model	6.5 & 7.6	Quiz#7
11	3/19,21	Linear Model	9.6	Quiz#8
12	3/26,28	Review, Q&A, Exam#2		Exam#2
13	4/2,4	Nonparametric Methods	8.4 & 7.5	Quiz#9
14	4/9,11	Nonparametric Methods	9.1 & 9.2	Quiz#10
15	4/16,18	Bayesian Methods	6.8 & 6.9	Quiz#11
16	4/23,25	Statistical Process Control	9.7	Quiz#12

General Course Policies:

1. Friday Class is designated as recitation—there will be review, problem solving, Q&A, and Quiz.
2. Quizzes are 15 minutes long (during Recitations), Exams #1 & #2 are 50 minutes long (during the regular lecture session), and the Final Exam is two (2) hours long.
3. All tests are open book; meaning, textbook, class notes, calculator, etc, can be used.
4. No makeup quiz for whatever reason.
5. Grading errors (quizzes, Exams etc) should be noted in writing and this should be done within 7 days of the date on which it was returned. Your failure to pick up quiz or exam does not extend this deadline, unless the cause was a lengthy medical, family emergency or religious/cultural issues, in which case you **MUST** contact Dr. Lin (in advance, if at all possible).
6. For those who missed either Exam#1 or Exam#2 (but not both) with legal reason, there will be a Makeup Exam on April 13th. You will need to request and be approved **in advance**. This is not designated as a replacement of poor performance in existing Exam.
7. Attend All Classes. Experience shows that there is a high correlation between class attendance and exam performance. If you must miss, **it is your responsibility** to check your classmate or TA for material and announcement you've missed. All class information are available through our course website.

Academic Integrity:

All Penn State and Eberly College of Science policies regarding academic integrity apply to this course. See <http://www.science.psu.edu/academic/Integrity/index.html> for details.

A Message from President's Office

Special Fall 2009 Flu Protocols -In compliance with Pennsylvania Department of Health and Centers for Disease Control recommendations, students should NOT attend class or any public gatherings while ill with influenza. Students with flu symptoms will be asked to leave campus if possible and to return home during recovery. The illness and self-isolation period will usually be about a week. It is very important that individuals avoid spreading the flu to others.

Most students should be able to complete a successful semester despite a flu-induced absence. Faculty will provide students who are absent because of illness with a reasonable opportunity to make up missed work. Ordinarily, it is inappropriate to substitute for the missed assignment the weighting of a semester's work that does not include the missed assignment or exam. Completion of all assignments and exams assures the greatest chance for students to develop heightened understanding and content mastery that is unavailable through the weighting process. The opportunity to complete all assignments and exams supports the university's desire to enable students to make responsible situational decisions, including the decision to avoid spreading a contagious virus to other students, staff, and faculty, without endangering their academic work.

Students with the flu do not need to provide a physician's certification of illness. However, ill students should inform their teachers (but not through personal contact in which there is a risk of exposing others to the virus) as soon as possible that they are absent because of the flu. Likewise students should contact their instructors as quickly possible to arrange to make up missed assignments or exams.

For health-related questions you can email Dr. Margaret Spear, director, University Health Services, at uhsinfo@sa.psu.edu.

Eberly College of Science Climate Committee

The Eberly College of Science Code of Mutual Respect and Cooperation

<[www.science.psu.edu/climate/Code-of-Mutual-Respect final.pdf](http://www.science.psu.edu/climate/Code-of-Mutual-Respect%20final.pdf)>

embodies the values that we hope our faculty, staff, and students possess and will endorse to make The Eberly College of Science a place where every individual feels respected and valued, as well as challenged and rewarded.