

STP 231: STATISTICS FOR BIOSCIENCES
Fall 2017 Syllabus

SLN/Place/Time:	Instructor:
Office:	Office Hours:
	E-mail:
Instructor's STP 231 web page address:	

ASU COURSE CATALOG DESCRIPTION: Concepts and methods of statistics, display and summary of data, interval estimation, hypothesis testing, correlation, regression. Applications to biological sciences.

Prerequisites: Students of STP 231 are expected to complete MAT 142 (College Mathematics) or MAT 117 (College Algebra) with a grade of A, B or C

Textbook: *Statistics for the Life Sciences, Fifth Edition*, by Myra Samuels, Jeffrey Witmer, and Andrew Schaffner

Calculator: A scientific calculator may be used for this course. Examples of highly recommended models are the TI 83/84, TI Nspire CX, Casio 9850 GB Plus, or Casio Prizm. Calculators with QWERTY keyboards or that perform symbolic algebra are not permitted. For example, the TI-89, TI Nspire CAS, Casio FX2 or Casio 9970Gs cannot be used. **NOTE: Graphing calculators may only be used for basic arithmetic operations. You cannot write or use any programs or notes in your calculator that perform algebraic steps for you or that calculate a solution to a problem**

COURSE CONCEPTS:

- Frequency Distribution
- Descriptive Measures of Center and Spread
- Mean, Median, Mode, Standard Deviation, Variance, Inter-Quartile Range, 5-Number Summary, Boxplots
- Random Sampling
- Probability Rules
- Binomial Distributions
- Normal Distributions
- Sampling Distributions of Proportions and Means
- Confidence Intervals for Means and Proportions
- Two Population Hypothesis tests and Confidence Intervals for Means-Paired and Independent Data
- Statistical Principles of Design
- Chi-square tests for Categorical Data-Goodness of Fit test and Contingency Tables

- Regression, Correlation, Coefficient of Determination

I reserve the right to alter this information at any time.
These changes will be announced in class or on my web page.

Outline of the course

No.	Week	Sections Covered (Tentative)	Comments
1	Aug. 17 – Aug. 18	Intro, 1.1: Statistics and Life Sciences 1.2: Types of Evidence	
2	Aug. 21 – Aug. 25	1.3: Random Sampling 2.1: Introduction 2.2: Frequency Distributions	
3	Aug. 28 – Sep. 1	2.3: Descriptive Measures-Measures of Center 2.4: Box Plots 2.5: Relationships between Variables	
4	Sep. 4– Sep. 8	2.6: Measures of Dispersion 2.7: Effect of Transformations of Variables 2.8: Samples and Population-Statistical Inference 2.9: Perspective and Summary 3.1: Probability and Life Sciences 3.2: Introduction to Probability	Monday, September 4 is the Labor Day Holiday
5	Sep. 11– Sep. 15	3.2: Introduction to Probability Review for Test 1	Exam 1 (Tentatively)
6	Sep. 18– Sep. 22	Test 1 3.3: Probability Rules 3.4: Density Curves	
7	Sep. 25– Sep. 29	3.5: Random Variables 3.6: Binomial Distribution 4.1: Normal Distribution Introduction 4.2: Normal Curves 4.3: Areas Under a Normal Curve	Academic Status Reports 1 (9/25- 10/2)
8	Oct. 2 – Oct. 6	4.4: Assessing Normality 5.1: Sampling Distribution 5.2: Sample Mean 5.3: Central Limit Theorem 6.1: Statistical Estimation	
9	Oct. 9 – Oct. 13	6.2: Standard Error of the Mean Review for Test 2	Fall Break (10/9- 10/10)
10	Oct. 16 – Oct. 20	Test 2 6.3: Confidence Interval for μ	Exam 2 (Tentatively)

No.	Week	Sections Covered (Tentative)	Comments
11	Oct. 23 – Oct. 27	6.4: Planning a Study to Estimate μ 6.6: Computing Two Means 6.7: Confidence Interval for $\mu_1 - \mu_2$ 7.1: Hypothesis Testing: The Randomization Test 7.2: Hypothesis Testing: The t-Test	Academic Status Reports 2 (10/25-10/30)
12	Oct. 30 – Nov. 3	7.3: Further Discussions of the t-Test 7.5: One Tailed Test 8.1: Introduction 8.2: The Paired Sample t-Test and Confidence Interval	Course withdrawl Deadline (11/1)
13	Nov. 6– Nov. 10	9.1: Dichotomous Observations 9.2: Confidence Interval for a Population Proportion 9.4 Inference for Proportions: the Chi-Square Review for Test 3	Veteran's Day Holiday on 11/10
14	Nov. 13– Nov. 17	Test 3 9.4 Inference for Proportions: the Chi-Square 10.1: Introduction	Exam 3 (Tentatively)
15	Nov. 20– Nov. 24	10.2: The Chi-Square Test for 2 X 2 Contingency Tables 10.5: The R X K Contingency Table	Thanksgiving Holiday on 11/23 and 11/24
16	Nov. 27– Dec. 1	12.1: Introduction 12.2: The Correlation Coefficient 12.3: The Fitted Regression Line Review for Test 4	Withdraw from all Courses (12/1)
17	Dec. 4 – Dec. 8	Final Exams	

Classroom behavior: Make sure you arrive on time for class

Excessive tardiness will be subject to sanctions. **Under no circumstances should you allow your cell phone to ring during class.** Any disruptive behavior, which includes ringing cell phones, listening to your mp3/iPod player, text messaging, constant talking, eating food noisily, reading a newspaper will not be tolerated. The use of laptops (unless for lecture note taking), cell phones, MP3, IPOD, etc are strictly prohibited during class. Students who engage in disruptive classroom behavior may be subject to various sanctions. The procedures for initiating a disruptive behavior withdrawal can be found at <http://clas.asu.edu/classroom/disruptive>.

Homework, Quizzes & Projects: Students are expected to read relevant sections of the textbook prior to attending class. Written homework, quizzes, and projects will be graded. Students may work together on homework, but each individual student is required to submit their own work. Homework will be collected in class at the beginning of the class period, due dates will be given in class, and are on posted on my web page. **Late assignments will not be accepted. This includes missing class due to illness.** Quizzes and projects are given at the discretion of the instructor and frequently reflect

material that has recently been discussed in class. To encourage attendance, instructors **will not give makeup quizzes or projects.**

Studying and Preparation Time: The course requires you to spend time preparing and completing assignments. A three-credit course requires at least 135 hours of student work over the 15 week semester. For a fifteen week course, expect to spend approximately a minimum of 9 hours a week preparing for and actively participating in this course.

Midterm Exams: You will take three exams during the semester. Each will involve a mix of mechanical skills and conceptual reasoning. The best possible preparation for them is regular **attendance** and completion of assigned **homework**. These exams are taken in class during class time. *It is your responsibility to make sure that you take the exam on the exam date. "Forgetting" the dates of the exam, or arriving late are NOT acceptable excuses to miss an exam*

No test grade will be dropped from your grade record.

Any student who accesses a phone or any internet-capable device during an exam for any reason automatically receives a score of zero on the exam. All such devices must be turned off and put away and made inaccessible during the exam

Final Exam: The final exam will be according to the [final exam schedule](#)

Exam	Dates	Material Included
Exam 1	Monday 9/18 for (MWF classes) and Tuesday, 9/19 for (T/Th classes)	Chapters 1 - 2
Exam 2	Monday 10/16 for (MWF classes) and Tuesday, 10/17 for (T/Th classes)	Chapters 3 - 5
Exam 3	Monday 11/13 for (MWF classes) and Tuesday, 11/14 for (T/Th classes)	Chapters 6 - 8
Exam 4	According to the Final Exam Schedule	Chapter 9, 10, 12

Grading Criteria: Final Exam

Point Allocation	
3 Exams and Final Exam	80%
Homework, Quizzes, Attendance, Projects, Modeling (Instructor Discretion)	20%

Grading Scale:

A	90-100%
B	80-89.9%
C	70-79.9%
D	60-69.9%

E 0-59.9%

Tutoring: There are various locations for tutoring on the Tempe campus. You must have a valid ASU "Sun Card" in order to be admitted to any of the in person Tutoring Sites. More information may be found at this site <https://math.asu.edu/resources/math-tutoring-center>.

Extra credit: If you come to class and do the homework, your grade will take care of itself. Any opportunity for extra credit will be offered to the class as a whole, usually as part of a test or exam. **No individual requests for extra credit projects will be considered.**

The instructor reserves the right to make changes to this syllabus as necessary. Changes will be considered official if they are announced in class, placed on my web site or sent to you via e-mail to your officially assigned ASU e-mail address.

First Year Mathematics Courses: Fall Semester 2017
Departmental and University Policies and Procedures

Course withdrawal (online):	Wednesday, November 1, 2017
Complete withdrawal:	Friday, December 1, 2017

Course Withdrawal: A student may withdraw from a course with a grade of W during the withdrawal period. The instructor's signature is not required. It is a student's responsibility to verify that they have in fact withdrawn from a class.

Instructor-Initiated Drop: At the instructor's discretion, any student who has not attended class during the first week of classes may be administratively dropped from the course. However, students should be aware that non-attendance will NOT automatically result in their being dropped from the course. **Thus, a student should not assume they are no longer registered for a course simply because they did not attend class during the first week. It is the student's responsibility to be aware of their registration status.**

The grade of Incomplete: A grade of incomplete will be awarded only in the event that a documented emergency or illness prevents the student who is doing **acceptable work** from completing a **small** percentage of the course requirements. The student must provide written documentation and be passing the class at the time to receive an Incomplete. Make-up final exams will NOT be given for reasons of a non-refundable airline tickets, vacation plans, work schedules, weddings, family reunions, and other such activities. Students should consult the final exam schedule before making end-of-semester travel plans. The guidelines in the current general ASU catalog regarding a grade of incomplete will be strictly followed. *The Dean of the student's college must approve any exceptions to these rules.*

Final Exam Make-up Policy: The final exam schedule listed in the Schedule of Classes (<http://students.asu.edu/final-exam-schedule#spring>) will be strictly followed. Except to resolve those situations described below, no changes may be made in this schedule without prior approval of the Dean of the college in which the course is offered. Under this schedule, if a conflict occurs, or a student has more than three exams on one day, the instructors may be consulted about an individual schedule adjustment necessary, the matter may be pursued further with the appropriate dean(s). This procedure applies to conflicts among any combination of Downtown Phoenix campus, Tempe campus, Polytechnic campus, West campus, and/or off campus class.

Make-up final exams will NOT be given for reasons of a non-refundable airline tickets, vacation plans, work schedules, weddings, family reunions, and other such activities. Students should consult the final exam schedule before making end-of-semester travel plans.

Students with Disabilities

Disability Accommodations: Qualified students with disabilities who will require disability accommodations in this class are encouraged to make their requests to me at the beginning of the semester either during office hours or by appointment. Note: Prior to receiving disability accommodations, verification of eligibility from the Disability Resource Center (DRC) is required. Disability information is confidential.

Establishing Eligibility for Disability Accommodations

Students who feel they will need disability accommodations in this class but have not registered with the Disability Resource Center (DRC) should contact DRC immediately. Their office is located on the first floor of the Matthews Center Building. DRC staff can also be reached at: 480-965-1234 (V), 480-965-9000 (TTY). For additional information, visit: www.asu.edu/studentaffairs/ed/drc. Their hours are 8:00 AM to 5:00 PM, Monday through Friday.

Academic Dishonesty

Academic honesty is expected of all students in all examinations, papers, laboratory work, academic transactions and records. The possible sanctions include, but are not limited to, appropriate grade penalties, course failure (indicated on the transcript as a grade of E), course failure due to academic dishonesty (indicated on the transcript as a grade of XE), loss of registration privileges, disqualification and dismissal. For more information, see <http://provost.asu.edu/academicintegrity>.

Policy on Threatening Behavior

All incidents and allegations of violent or threatening conduct by an ASU student (whether on-or off campus) must be reported to the ASU Police Department (ASU PD) and the Office of the Dean of Students. If either office determines that the behavior poses or has posed a serious threat to personal safety or to the welfare of the campus, the student will not be permitted to return to campus or reside in any ASU residence hall until an appropriate threat assessment has been completed and, if necessary, conditions for return are imposed. ASU PD, the Office of the Dean of Students, and other appropriate offices will coordinate the assessment in light of the relevant circumstances.

Absences related to religious observances/practices: If you will be absent from class due to a religious observance or practice, it is your responsibility to inform the instructor during the first week of class. Your instructor will work with you on alternative and reasonable arrangements for any time missed.

Absences related to university sanctioned events and activities: If you will be absent from class due to participation in a university sanctioned event/activity, it is your responsibility to inform the instructor during the first week of class. Your instructor will work with you on alternative and reasonable arrangements for any time missed.

Absences not related to religious observances/practices or to university sanctioned events and activities: Attendance will be taken on a regular basis as studies have shown that students that attend class regularly are more likely to complete their courses successfully. For classes that meet three days a week (MWF, for example), the maximum number of allowed absences is six (6). For classes that meet two days a week (TTh for example), the maximum number is four (4). **Students who exceed the maximum number of absences will receive a grade of E.**