



DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE  
SPRING 2016  
Course Syllabus

Course Number	MATH 2411-01 Basic Statistics (3-0)
Instructor	Anilkumar Devarapu, PhD.
Days and Time	Tue, Thurs. 11:15am-12:30pm
Classroom	202 Simmons Hall
Office:	335 Simmons Hall
Office Hours:	Mon/Wed: 10:30am-1:30pm Tue/Thurs: 1:30pm-3:30pm.
Office:	335 Simmons Hall
Telephone Number	229-430-1833
<b><u>Required Text:</u></b>	Introductory Statistics by Barbara Illowsky and Susan Dean, and others). OpenStax College, Rice University ISBN-13: 978-1-938168-20-8, Revision-ST-1-000-RS. @2013.

**COURSE DESCRIPTION:** This course includes an introduction to probability and basic concepts of descriptive and inferential statistics. Topics include frequency distributions, graphs, and histograms, averages, variance, standard deviation, other measurements of variation and percentiles, counting techniques, elementary probability, correlation, regression and hypothesis testing.  
Prerequisite: MATH 1111-College Algebra

**Goal of this course: Students will acquire the knowledge and understanding of basic statistical techniques and tools needed to solve a variety of real-life problems.**

**Learning Outcomes:**

All students will learn to:

1. Organize, summarize, interpret data, analyze, and communicate their understanding of data results in written and verbal forms.
2. Apply various sampling techniques, perform probability experiments, and use various probability methods to solve problems encountered in applications, in science, social sciences, business, and technology.
3. Understand counting principles, binomial distribution, normal distribution, and standard normal distribution.
4. Solve problems dealing with regression and correlation and carry out hypotheses testing.
5. Use technology such as the TI-84 Plus, Excel, SPSS, and R to perform data analysis or solve a variety of statistical problems.

6. Communicate their understanding and work in oral and written forms.

**Specific Objectives:** At the end of the course, the student should be able to:

1. Describe with examples the use of statistics in real life.
2. Discuss and distinguish between descriptive and inferential statistics with examples.
3. Define, describe, and give examples of data, population, sample, measurement scales, variables, discrete variables, and random variables.
4. Construct a frequency tables.
5. Plot graphs of frequency distributions and cumulative frequency distributions, and draw pie chart, bar chart, time series graphs.
6. Discuss the various parameters of a population and statistics of a sample and state their relations and differences.
7. State and apply Chebyshev's Theorem, and discuss Data Analysis and Percentiles.
8. Discuss counting principles and their applications to probability
9. Discuss statistical sampling methods, events, dependent and independent events, and sample spaces.
10. Define and calculate the probabilities of events, normal, and binomial distributions.
11. Elaborate with practical examples statistical tests such as test of difference of means, test of proportions, and Hypothesis testing.
12. Solve a variety of problems Pearson Product Moment Correlation Coefficients and Spearman Rank Correlation Coefficients.
13. Discuss the Central Limit Theorem, and Confidence Interval.
14. Compute the correlation coefficients and plot regression lines.

### **COURSE CONTENT**

1. Sampling and Data
2. Descriptive Statistics
3. Probability Topics
4. Discrete Radom Variables
5. Continuous Random Variables
6. The Normal Distribution
7. The Central Limit Theorem
8. Confidence Interval
9. Hypothesis Testing with One Sample
10. Hypothesis Testing wirth Two Sampes
11. The Chi-Square Distribution
12. Linear Regression and Correlation
13. F-Distribution and One-Way ANOVA

**DESCRIPTION OF COURSE ASSESSMENTS:** There will be four class tests and a final exam. All five tests will have equal weight. There will be in-class announced and unannounced quizzes. Homework problems will be assigned and students will sometimes be expected to complete them on D2L, or when completed upload them on Dropbox. Furthermore, there will be a class project involving using technology (especially R) to do data analysis. The data analysis project could constitute one of the tests. All these

assessments will be used to determine the overall student performance and hence grade. All students are expected to meet all the requirements of this course. Additional student obligations will be appended on this syllabus. Also, details concerning the dates and times for the exams will be announced in the class.

**COURSE GRADING POLICY**

**Grades – Final Letter grades will be assigned as follows:**

**A= 90 - 100 B= 80 - 89 C = 70-79 D = 60 - 69 F = Below 60**

**CLASSROOM ATTENDANCE POLICY AND OTHER ESSENTIAL INFORMATION**

**Required Attendance Regulations: Class Attendance**

Class attendance at Albany State University is compulsory; Students' grades are based on daily class participation and performance. Professors will not administer examinations and quizzes to students who have been absent from class for reasons other than official business of the University, sickness, or emergencies such as death in the immediate family, jury duty, court summons, etc. When students are absent for emergency reasons, the number of excused absences permitted should not exceed the number of credit hours awarded for the course except for the most extreme unavoidable emergencies ( e.g., death of family members, jury duty, etc.). The instructor will officially certify all excused absences.

**Attendance:** As stated above, class attendance is compulsory. A student's grade may drop to a lower grade letter if he/she misses more than two classes without permission. Makeup tests will be permitted under exigencies; in that case, adequate acceptable documentation will be required of the student.

Writing is integral to teaching and learning in all disciplines. Writing in this course will be evaluated with rubrics established for the different online class activities. Writing activities in this course will be evaluated and may include in-class and out-of-class writing assignments and essay writing required on examinations. All written work must reflect good English composition.

**ACADEMIC HONESTY:**

*See Student Code of Conduct for policy on academic integrity (policy below).*

**ACADEMIC DISHONESTY (UNDERGRADUATE)**

The intentional misrepresentation of one's work to deceive for personal gain, when in fact said work is not that person's or assisting another to do the same. Academic Dishonest includes, but is not limited to cheating plagiarism, and fabrication.

**SANCTIONS:** Probation and a recommended grade of "F" in the course, University suspension for not less than one year.

**Students with Disabilities:**

If you are a student with a disability, you should consult with the [*Insert information about Office for Students with Disabilities*] to identify which accommodations might be needed for this course. Please contact the course instructor as soon as possible to discuss your needs. Assignments/exams prior to receiving disability approval cannot be covered by the disability decision.

**\*NOTE:** “ASU RAMmail account is the university’s official means of electronic communication with students. Students are required to use the ASU website ([www.asurams.edu](http://www.asurams.edu)) and RAMmail for important university’s official information on financial aid, current class schedule, registration holds, account balances, etc. In order to communicate with students by other means as needed, each student is required to provide the university with his/her current telephone number(s) and mailing address via BannerWeb.”

**Integration of Technology**

The use of technology is integral to the course design. You should have access to a computer (e.g., computer lab, library, home, or work), a general knowledge of the operation and care of a computer, and know some basic troubleshooting techniques. You should also have some basic understanding of how to use the Internet to seek, find, and retrieve information.

Additionally, you must have a workable (functioning) ASU e-mail account, know how to send and retrieve e-mail messages with and without an attached file, know how to attach a file to an e-mail message, and how to download and open attached files. To ensure that you receive timely communications, it is your responsibility to notify the professor immediately if there are any changes to your e-mail address.

**ADDITIONAL COURSE POLICY**

1. All assignments must be neatly done and all papers must be headed with your name, date, course and section, at the top of the first sheet of the assignment. All assignments must be typed unless otherwise specified by the Instructor.
2. Assignments must be turned in no later than the designated hour on the due date. Exceptions may be allowed with previous permission only. Homework is due at the beginning of class upon the request of the instructor.
3. Students must participate in problem solving sessions at the board or on the computer. All students must obtain the designated textbook for the course.
4. Students must attend classes regularly and be on time. If a student is late then he or she should enter quietly without disturbing others or disrupting the class. Students are encouraged to attend class every day.
5. Students are not permitted to sit with their feet in or on desks.

6. If the instructor is late, students must remain in class orderly working (studying) until the instructor arrives or until class is officially dismissed by a person of authority (Faculty, Secretary, etc).
7. If students are absent or if they leave class early, they are still held responsible for all assignments given in class.
8. Males are not permitted to wear hats, caps or other headpieces in class. Males are requested to remove headwear before entering the classroom. Females are requested to minimize headwear. Undergarment should not be visible upon entering class or during class.
9. Beepers and cellular telephones must be turned off during class sessions. Points may be deducted from final grade for each violation of this rule.
10. Make-up examinations will be given only in cases of illness or emergencies. If a make-up examination is given, it must be taken within one class day of the original examination date unless otherwise stated by the instructor. Students are responsible for contacting the instructor for arranging make-up examinations.
11. If a student misses a pop quiz, it cannot be made-up (taken) at a later time; unless the excused absent is official.
12. Cheating or plagiarism is a serious offense. Any student caught cheating will automatically receive a grade of "0" on that exam/quiz and an F for the course.
13. Statement of Disruptive and Obstructive Behavior (see page 43 of the Albany State University 20108 – 2012 Undergraduate Catalog)
14. The final examination will be administered in accordance with the University's schedule for final examinations. All students must take the final examination during the official final examination scheduled period.
15. If you are a student with a disability who requires special materials or accommodations, please discuss this with the professor during the first week of class (preferably, immediately after the first class period). Students with a verifiable disability will be permitted to use appropriately modified academic accommodations to address course requirements. It is the student's responsibility to contact the Office of Disability Services and notify that office of their disability. The professor will, upon receipt of a letter from the Office of Disability Services, make appropriate academic accommodations for the students as recommended.
16. "ASU RAMmail account is the university's official means of electronic communication with students. Students are required to use the ASU website ([www.asurams.edu](http://www.asurams.edu)) and RAMmail for important university's official information on financial aid, current class schedule, registration holds, account balances, etc. In order to communicate with students by other means as needed, each student is required to provide the university with his/her current telephone number(s) and mailing address via BannerWeb."

\*All Tests and Final Exams will have test items that will require writing skills.

**THERE IS ZERO TOLERANCE FOR SEXUAL HARRASSMENT AT ALBANY STATE UNIVERSITY**

**TENTATIVE CLASS CALENDAR/SCHEDULE**

<b>SPRING 2016 TUESDAY/THURSDAY CLASS</b>		
<b>Dates</b>	<b>Assignments</b>	
	<b>Tuesday</b>	<b>Thursday</b>
Week 1 January 9, 2016		<b>Chapter 1: Sampling and Data Introduction</b> <a href="#">1.1: Definitions of Statistics, Probability, and Key term</a>
Week 2: January 14, & January 16	<a href="#">1.2 Data, Sampling, and Variation</a> <a href="#">1.3. Frequency Tables and levels measurement</a>	<a href="#">1.3. Frequency Tables and levels measurement</a> <a href="#">1.4: Experiments Design and Ethics</a>
Week 3: January 21 & January 23	<a href="#">1.4: Experiments Design and Ethics</a> <a href="#">1.5: Data Collection Experiment</a> <a href="#">1.6: Sampling Experiment</a>	1 <b>Chapter 2: Descriptive Statistics</b> <a href="#">2.1: Stem-and-Leaf, Line and Bar Graphs</a> <a href="#">2.2: Histograms, Frequency Polygons</a>
Week 4 : January 28, and January 30	<a href="#">2.2: Histograms, Frequency Polygons, and Time Series Graphs</a>	<a href="#">2.3: Measures of the Location of the Data</a>
Week 5: February 4, and February 6	<a href="#">2.5. : Measures of Center of the Data.</a>	<b>Test 1</b>
Week 6: February 11, and February 13	<a href="#">2.6.: Skewness and the Mean, Median and Mode</a>	<a href="#">2.7: Measures of the Spread of the Data</a>
Week 7: February 18, and February 20	<a href="#">2.8: Descriptive Statistics</a>	<a href="#">2.8: Descriptive Statistics</a>
Week 8: : February 25, and February 27	<a href="#">2.4: Box Plots</a>	<a href="#">3.1: Probability Terminology</a>
Week 9: March 4, and March 6	<b>Test II/Midterm</b>	<a href="#">3.2.: Independent and Mutually Exclusive Events</a>
Week 10: March 11, and March 13	<a href="#">3.3: Two basic rules of Probability</a>	<a href="#">3.4.: Contingency Tables</a>
Week 11: March 18, and March 20	<a href="#">3.5.: Tree and Venn Diagrams</a> <a href="#">3.6. Probability Topics</a>	<b>Chapter 4. Discrete Random Variables</b> <a href="#">4.1:Probability Distribution Function</a>
Week 12: March 24, 2013- March 28, 2013	<b>SPRING BREAK</b>	
Week 13: April 1, and April 3	<a href="#">4.2Mean or Expected Value and Standard Deviation</a> <a href="#">4.3: The Binomial Distribution</a>	<a href="#">4.3: The Geometric Distribution</a> <a href="#">4.5: Poisson Distribution</a>
Week 14: April 8, and April 10	<b>Chapter 6: The Normal Distribution</b> <a href="#">6.1: The Standard Normal Distributions</a> <a href="#">6.2: Applications of the Normal Distribution</a>	<b>Chapter 7. The Central Limit Theorem</b> <a href="#">7.1: The Central Limit Theorem for Sample Means and Sums</a> <a href="#">7.2.: Central Limit Theorem Applications</a>
Week 15: April 15, and April 17	<a href="#">7.4: The Normal Approximation to Binomial Distribution</a>	<b>Test IV</b>
Week 16: April 22, and April 24	<b>Chapter 8: Confidence Intervals</b> <a href="#">8.1: Confidence Interval for the Mean when sigma is known</a>	<a href="#">8.2: Confidence Interval for the Mean when sigma is unknown</a>
Week 17: April 29	<a href="#">8.3: Confidence Intervals and Sample Size for Proportions</a>	<b>Classes End</b>
May 2-7	<b>Final Examinations for end of term for all students</b>	