MEETING TIMES AND PLACES: 2:30PM-3:20PM; M and F in 201 Thomas, W in 111 Boucke.

ACADEMIC CALENDAR: http://www.registrar.psu.edu/, click on Academic Calendars.

TAUGHT BY:
Dr. Michael Akritas, 414 Thomas Bldg, mga@stat.psu.edu, 865-3631
OFFICE HOURS: Monday 1:00PM-2:00PM, Thursday 1:00PM-2:30PM, or by appointment. (Do not use Angel for contacting Dr. Akritas by email.)

TEACHING ASSISTANT:
Mr. John Ensley, 333 Thomas Bldg, john.ensley@psu.edu
OFFICE HOURS: Wednesday 1:00P - 2:30P, Thursday 4:00-5:00PM, or by appointment.

PREREQUISITES: MATH 111 or MATH 141.

TEXT: We will use the book Probability & Statistics with R for Engineers and Scientists, by M. Akritas. The hard cover version of this book is available at the Penn State Book Store, a loose leaf edition is available from www.amazon.com, and an electronic version can be rented from www.coursesmart.com. Used copies should also be available.

COURSE OBJECTIVE: To familiarize students with the basic concepts and ideas of statistics and probability. To provide training in the use of statistical methods and graphics for the analysis and presentation of data encountered in the sciences and engineering. The free software R, used by over 90% of statistics graduate students for their research programming needs, will be used as an integral part of the course. The particular topics covered are:

1. Basic concepts of probability and statistics (sample vs population, simple random sampling, sample and population mean, variance and percentiles, graphical statistics, comparative studies and experimental design).
2. Probability and conditional probability.
3. Univariate and multivariate distributions, correlation and regression.
4. The Central Limit Theorem.
5. Basic concepts of estimation, confidence intervals and hypothesis testing for one sample and regression.
6. Comparison of two means and two proportions (independent and paired data), including rank tests.
7. Comparison of more than two means and proportions. Bonferroni and Tukey simultaneous confidence intervals and multiple comparisons, and rank methods.

SUMMARY OF COURSE REQUIREMENTS: Requirements for the course include two in-class quizzes/mid-terms, homework and lab activities, and a final exam.

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Weight</th>
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</thead>
<tbody>
<tr>
<td>Quizzes</td>
<td>30%</td>
</tr>
<tr>
<td>Homework / lab activities</td>
<td>30% / 10%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>30%</td>
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QUizzes: Two quizzes/mid-terms will be given during class time. The material covered by each quiz will be (approximately) as follows:

- Quiz 1: Chapters 1, 2, 3.
- Quiz 2: Chapters 4, 5, 6.

Each quiz will be given following the completion of the material it covers, after the homework from this material has been graded and returned to you. (See below for the homework policy.) The quiz dates will also be announced, and posted on the course’s homepage. Two double-sided sheets of notes are permitted for each quiz.

If, due to sickness, family emergency, team obligations etc, you need to miss a quiz, you should inform me (e.g., by email) BEFORE the quiz date in order to make alternate arrangements. There will be no make-up quizzes for those who miss a quiz without pre-notification, and a zero grade will assigned for that quiz. Solutions to quiz problems will be posted, typically by the time the quiz is returned to you.

HOMEWORK: The homework will typically be assigned each Friday and will be due next Friday. The assignments will be announced in class and displayed at the course home page.

To avoid grading and recording errors, problems must be handed in in the SAME ORDER as the order they are assigned.

Homework MUST be turned in in class on the due date. There is a 5 point penalty for homework turned in after class, but by 5PM, on the due date. The homework can also be scanned and emailed to the TA’s email address any time before 5pm of the day after the due day. After that, the homework will not be accepted. The penalty for emailing your homework is 10 points.

If, due to sickness, family emergencies etc, you need to miss class when homework is due, you should inform me (e.g., by email) BEFORE the due date to make alternate arrangements for turning in your homework.

Solutions for each homework assignment will be posted on Angel, typically by the time the homework is returned to you. Homework will usually be returned on Monday. It will be placed
in an (roughly) alphabetized stack at the front of the room for you to collect either before or after class time. Homework that is not picked up in class will be kept in my office (414 Thomas), and can be picked up from there. Uncollected homework will be discarded after two weeks.

**COMPUTING (LAB) ASSIGNMENTS:** The purpose of the lab sessions is to reinforce statistical and probabilistic concepts, and to provide hands-on experience in computer-based data analysis and statistical graphics. Each lab session will be followed by a lab assignment the due date of which may be different from that of any homework. In this course we will use the statistical packages R which can be accessed in the computer labs on campus. It is most convenient, however, if you download R on your personal computer (the download is free). To use the computer labs on campus you must obtain an Access Account. Students who are registered for one or more credits are automatically assigned an Access Account. To request activation of the account, students must present a Penn State photo ID to CAC staff at 12 Willard Building, 215 Computer Building, 230 Computer Building or any CAC lab in which a lab attendant is on duty.

**FINAL EXAM:** The final exam will be comprehensive. Because of this it will be open book and open notes. Students using an electronic version of the book should plan to bring more complete notes.

**GRADES (tentative plan):** 90-100 = A, 80-89.9 = B, 70-79.9 = C, 60-69.9 = D, 0-59.9 = F.

**DISABILITIES SERVICES:** Penn State welcomes students with disabilities into the University’s educational programs. If you have a disability-related need for reasonable academic adjustments in this course, contact the Office for Disability Services (ODS) at 814-863-1807 (V/TTY). For further information regarding ODS, please visit the Office for Disability Services Web site at http://equity.psu.edu/ods/.

**SICKNESS AND COMPASSIONATE WAIVERS:** As described under Quizzes and Homework.

**ACADEMIC INTEGRITY:** The University policy on academic integrity, covering cheating, plagiarizing, and other acts of academic dishonesty, given in Section 49-20 of the Student Guide on Policies and Rules of the University (http://www.psu.edu/ufs/policies/), will be adhered to in this course. Any instances of academic dishonesty WILL be pursued under the University and Eberly College of Science regulations concerning academic integrity (http://www.science.psu.edu/academic/Integrity/index.html).

**POLICY FOR CLASSROOM USE:** All food and drink (except bottled water) is disallowed from classrooms. See http://guru.psu.edu/policies/AD62.html for more details.