Description: This course will integrate exploratory data analysis and nonparametric statistical inference. The emphasis will be on analysis and interpretation of data. We will also be working with R software. This can be downloaded free for MAC or PC here http://www.r-project.org/

Text: The text for this course is *Introduction to Modern Nonparametric Statistics*, by James Higgins. The ISBN is 0534387756

Course Website: All assignments, announcements, and due dates are posted on the PSU ANGEL page for this course. Please check it daily.

Grading: Required work is divided into weekly homework assignments and exams.

30% 10 homework assignments
40% 2 midterm exams
30% Comprehensive final exam

Homework: The homework consists of weekly exercises assigned throughout the week and collected during class the following Wednesday, except before the midterms, where they are collected on Monday. Late work is subject to at least a 10% deduction and accepted only if solutions have not been posted. Collaborative work is allowed, but each submission must be individually written or typed---copying is not allowed.

Exams: The two midterms are scheduled for Wed, Sep 28, and Wed, Nov 9. The final exam schedule will be available later. All exams are closed-book, but you may prepare a letter-sized (8.5x11 inch) note sheet. This may be double-sided. Conflicts on exam dates must be resolved in advance. An unexcused absence will incur at least a 10% penalty and may result in a score of 0. Allow 24 hours for email response.

Letter Grades: Semester grades are assigned according to this scale.

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<tr>
<th>Score Range</th>
<th>Grade</th>
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<tbody>
<tr>
<td>93 – 99%</td>
<td>A</td>
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<td>90 – 92%</td>
<td>A-</td>
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<td>87 – 89%</td>
<td>B+</td>
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<td>83 – 86%</td>
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<td>80 – 82%</td>
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<td>70 – 76%</td>
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<td>60 – 69%</td>
<td>D</td>
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<td>0 – 59%</td>
<td>F</td>
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Academic Integrity: All Penn State and Eberly College of Science policies regarding academic integrity apply to this course. See http://science.psu.edu/current-students/Integrity/Policy.html for details.
**Code of Mutual Respect**: The Eberly College of Science Code of Mutual Respect and Cooperation ([http://science.psu.edu/climate/code-of-mutual-respect-and-cooperation/Code-of-Mutual-Respect%20final.pdf/view](http://science.psu.edu/climate/code-of-mutual-respect-and-cooperation/Code-of-Mutual-Respect%20final.pdf/view)) 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.

**Disabilities Statement**: 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/](http://equity.psu.edu/ods/).

**Campus Emergencies**: Campus emergencies, including weather delays, are announced on Penn State Live ([http://news.psu.edu/](http://news.psu.edu/)) and communicated to cell phones, email

**Tentative List of Topics**:

**Review**
- Statistical Software: Minitab and R
- Data Exploration
- What is Nonparametrics?
- Intro to Permutation Tests

**One-Sample Tests**
- Empirical CDF and Density Estimation
- Sign Test
- Confidence Interval for the Median
- Confidence Interval for Percentiles

**Two-Sample Tests**
- Permutation Tests
- MWW Test
- Wilcoxon Rank-Sum

**Test for Variances/Comparing Two-Sample Tests**
- Ansari-Bradley Test
- Kolmogorov-Smirnov
- Comparing Two-Sample Tests

**One-Way Layout**
- Permutation Test
- Kruskal-Wallis
- Multiple Comparisons

**Trends and associations**
- Permutation Test
- Contingency Tables
- Bootstrap Methods