**STAT4710/7710: Introduction to Mathematical Statistics**

*Fall Semester, 2015*

Section 7

**Time:** 11:00-12:15, Tuesday-Thursday

**Location:** MDLBH 132

**Instructor:** Athanasios Christou Micheas, Ph.D.

**Office:** 134G Middlebush Hall

**Office Hours:** 10:00-10:50, 12:25-12:50, Tuesday-Thursday (Also by appointment)

**Phone:** 884-8828

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**Course Web Site:**


- The web site will be frequently updated and should be visited often for news on homeworks, exam dates, etc...

**Text:**


**Prerequisites:** MATH 2300 or instructor’s consent

## Topics to cover

<table>
<thead>
<tr>
<th>Week</th>
<th>Sections</th>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1.1-1.3</td>
<td>Overview of prob &amp; stat, sample spaces, events, permutations &amp; combinations</td>
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<tr>
<td>2</td>
<td>2.1-2.4 &amp; 3.1</td>
<td>Axioms &amp; properties of prob, conditional prob, multiplicative rule, independence, Bayes theorem, random variables</td>
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<tr>
<td>3</td>
<td>3.2-3.5</td>
<td>Discrete prob densities, expectations, geometric, mgfs, binomial</td>
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<tr>
<td>4</td>
<td>3.5, 3.8, 4.1, 4.2</td>
<td>more on binomial, Poisson, pdfs, expectations. Reading assignment: Section 3.7 hypergeometric &amp; uniform, p27 of workbook</td>
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<tr>
<td>5</td>
<td>4.3-4.4</td>
<td>Gamma, exponential, chi-square, normal</td>
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<tr>
<td>6</td>
<td>4.5-4.7 &amp; 5.1</td>
<td>Normal prob rule, normal approximation to binomial, Weibull, joint densities</td>
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<tr>
<td>7</td>
<td>5.1-5.4</td>
<td>more on joint densities, expectations, correlation, conditional distributions</td>
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<tr>
<td>8</td>
<td>6.1-6.4</td>
<td>Random sampling, introduce software, graphical &amp; numerical summaries, boxplots optional, Reading assignment: Stem-and-leaf diagrams.</td>
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<tr>
<td>9</td>
<td>7.1-7.4 &amp; 8.1</td>
<td>Estimation, distribution of sample mean, central limit theorem, interval estimates, interval estimates of $\sigma^2$, mles optional</td>
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<tr>
<td>10</td>
<td>8.2-8.5</td>
<td>Interval estimates of $\mu$, t-distribution, hypothesis testing, significance testing, tests about $\mu$</td>
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<tr>
<td>11</td>
<td>8.6,8.7,9.1</td>
<td>Tests about $\sigma^2$, nonparametric methods, estimating proportions</td>
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<tr>
<td>12</td>
<td>9.2,9.4,10.1</td>
<td>Tests for one and two proportions, estimating the difference of two means. Reading assignment: Section 9.3 confidence intervals for the difference of two proportions.</td>
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<tr>
<td>13</td>
<td>10.2-10.6</td>
<td>Comparing variances (software), comparing means with equal variances, with unequal variances (software), paired t, nonparametric procedures.</td>
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</table>

**IMPORTANT:**

In situations where undergraduate and graduate students are enrolled in a cross-leveled course like this one (4710/7710), university policy requires that graduate students be required to do something above and
beyond the requirements of undergraduates in order to justify the awarding of graduate credit. This means **graduate students are required to conduct additional problems in each homework set in order to earn graduate credit.**

**Homework:**

- There will be about seven problem sets assigned during the semester.
- **Late homework will not be accepted.**
- Your lowest homework score will be dropped in determining your overall homework performance. The lowest homework score will not be dropped if it is zero. Make sure you do all the problem sets.
- When submitting your homework:
  - Display clearly on the top of the first page: your name (last, first), the course name and section and the assignment number. Write clearly and show your work to get full credit.
  - Homework should be done on standard-size paper (8 1/2" by 11").

**Exams:**

- There will be two midterm examinations and a comprehensive final exam. The dates for the exams are as follows (same room for all, MDLBH 132):
  - Midterm I: Thursday, October 1
  - Midterm II: Thursday, November 19
  - FINAL EXAM: TBA
- Examinations must be taken at the scheduled times. Make-up exams **will not be given.**
- All exams are closed book. However, you will be allowed to bring one standard-size page of notes (8 1/2" by 11", front and back) for the first and second midterms, and two sheets of notes for the final examination. Calculators are allowed to help in numerical calculations. Bring the simplest possible, standard scientific calculator you can find, e.g., it should not be able to produce integrals, derivatives etc.

**Grading:**

- Your grade will be based on a weighted average of your midterm scores (20% each), homework average (35%), and final exam score (25%).

**Cell Phones:**

It is your responsibility as a student of this university to have your cell phones, ipods, kindles etc **CLOSED** before entering the classroom. Using cell phones in class is not proper university conduct and will be treated as such. If you are expecting an important phone call, and you absolutely must have the phone on, make sure you inform the instructor ahead of time.