STAT 101
Elementary Statistics & Data Analysis
Spring Semester 2005
M, W, F from 11:00 to 11:50 in Griffin 6

INSTRUCTOR
Prof. Bernhard Klingenberg
Bronfman Science Center 201
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Office hours: M,W: 3 - 5 PM
(or by appointment)

TEACHING ASSISTANTS
Caleb Bliss, Julia Tingley
and Robin Young.

Hours:
Mon-Wed: 7 – 9 PM
Thursday: 7 – 10 PM
(all in Bronfman 119)

COURSE DESCRIPTION:
STAT 101 covers material in applied statistical methods and inference. It will teach you graphical and analytical tools to conduct basic scientific data analysis essential for gaining knowledge in almost any field. The five major topics are:

<table>
<thead>
<tr>
<th>Topic</th>
<th>Goals</th>
<th>Weeks</th>
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<tbody>
<tr>
<td>Exploring data</td>
<td>Understand, characterize and visualize data from surveys or experiments.</td>
<td>1-2</td>
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<tr>
<td>Relationships between variables</td>
<td>Find out about associations between two quantitative or qualitative (categorical) variables.</td>
<td>3-6</td>
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<tr>
<td>Collecting data</td>
<td>Know what makes a good survey or experiment.</td>
<td>7</td>
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<tr>
<td>Randomness and probability</td>
<td>Understand and use the concept of probability. The Law of Large numbers and the Central Limit Theorem. Simulate random events.</td>
<td>8</td>
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<tr>
<td>Statistical inference about proportions and means</td>
<td>Formulate research questions through hypotheses and draw conclusion from data. Compare two populations in terms of proportions or means.</td>
<td>9-12</td>
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TEXTBOOK:
Intro Stats, De Veaux and Velleman, Addison Wesley 2004
**Homework, Projects, Exams and Grading:**

Homework will be assigned (on Blackboard) and collected weekly. You are welcome (or actually encouraged) to discuss and work on homework in groups, but you must submit your own work. If computer output is required, you must obtain the output yourself, not cut and paste from others. Don’t turn in redundant computer output and always label or reference in the text what you turn in. Occasionally, homework will consist of applied (group) projects, where you carry out statistical analysis on your own data sets. Most homework solutions will be posted on Blackboard. The homework and projects carry a total possible score of 50.

There will be 2 midterms given during class time, each worth 50 points, and a cumulative final exam, worth 100 points. The final grade will be based on the percentage out of the total of 250 points.

The dates for the two midterms are:

- Midterm 1: Friday, March 4
- Midterm 2: Friday, April 15

Please mark them in your calendars. NO MAKE UP exams will be given without profound and documented excuse and notification of the instructor PRIOR to the scheduled exam!

**Classroom Policies:**

Students are responsible for all the material and handouts covered in class and assigned as homework. Statistics courses progress quickly, so it is very important that you keep up with the material. You are encouraged to study and work on homework in groups. The Williams College “Academic Honesty and Honor Code” as outlined in the Student Handbook applies.

**Statistical Computing**

Modern statistical computing and software have greatly advanced the field of statistics, at the same time increasing the risk of misinterpretation and wrong conclusions from data analytic projects. Everyone can employ user-friendly software to run a simple statistical analysis, but many make mistakes in critically interpreting the results. The latter is one of the goals of this course.

We are going to use the statistical software package **SPSS** (available on most College owned computers) for the statistical analysis in class and on the homework. The best way to learn any statistical software package is to play around with it, so I encourage you to fool around and go crazy exploring and clicking! There is nothing you can break, and a few frozen screens are not bad (remember, though, to always save your data before trying something new).

If it is not already on your computer, you might be able to download and install SPSS (for both PC and Mac) from the OIT website: [http://oit.williams.edu/oit/software/](http://oit.williams.edu/oit/software/)

**Help with Stat 101 Outside the Classroom**

If you have any question concerning the material in class or homework assignments, please come and see me in my office hours. TAs are available Monday through Thursday night (see front page) in Bronfman 119 (close to where my office is). The textbook also contains a CD-ROM called **ActivStats** with videos and tutorials about the course content. You can treat it as a “TA on a CD” with infinite patience.