2015

STAT 158 General Statistics II

Richard Pulskamp
pulskamp@xavier.edu

Follow this and additional works at: http://www.exhibit.xavier.edu/
mathematics_syllabi_spring_2015

Recommended Citation
http://www.exhibit.xavier.edu/mathematics_syllabi_spring_2015/49

This Restricted-Access Syllabus is brought to you for free and open access by the Mathematics Syllabi 2015 at Exhibit. It has been accepted for inclusion in Mathematics Syllabi Spring 2015 by an authorized administrator of Exhibit. For more information, please contact exhibit@xavier.edu.
MATH 158
General Statistics II
Spring 2015
January 12, 2015

Instructor: Richard Pulskamp
Office: 117 Hinkle Hall
Phone: 745-3665
Email: pulskamp@xavier.edu

Office Hours: Monday 1:00–3:00 & Wednesday 9:00-10:00.
Also available by drop-in or appointment.


General Statistics II Building upon the introductory material presented in MATH 156 (or equivalent), this is a second course in statistical methods and data analysis. The course objectives are:

1. To study in detail the distinctions between observational studies and controlled experiments, the questions they can address and what types of statistical methods are appropriate for analyzing them

2. To learn some basic statistical tools used to analyze data, such as:
   2 sample t-tests, analysis of categorical data and Goodness-of-Fit tests, multiple comparison procedures, multiple regression, analysis of variance (ANOVA), nonparametric methods (such as the randomization test and the rank-sum test), and log transformations

3. To get hands-on experience analyzing data and computing with data (using R)

4. To gain experience in interpreting the results of a statistical analysis and communicating the results to others.

(Xavier Catalog)

MATH 158 satisfies 3 hours of the core curriculum distribution requirement in Mathematics. The student learning outcomes related to this course are

- Students recognize and cogently discuss significant questions in the humanities, arts, and the natural and social sciences.
• Students evaluate real-world problems using quantitative methods and arguments.

How to be successful in the course

We will investigate various statistical tests and statistical models.

• Try to see the big picture:
  – Know the purpose of each test.
  – Know what conditions and assumptions are required to use each test.
  – Know how to interpret computer output.
  – Know what to do after conducting a test.

• Don’t try to memorize everything. Focus on the general principles.

Technology

Calculators are not required. However, you may find it convenient to have at your disposal a personal TI-83, 83 Plus or 84 graphing calculator. These are permitted on exams.

Use of the “R” statistical computing program is required for the course. It is available on campus computers. If you have a personal computer or laptop you should install R on it. A free copy may be downloaded from www.r-project.org. The RStudio interface (again free) from http://www.rstudio.com is recommended.

The computer stations in our classroom are intended to be used ONLY for learning statistics. They are NOT to be used for any other purpose (email, messaging, facebook, etc.) during class time. Please have all cell/messaging devices off during class. It is inconsiderate of everyone to be disturbed by such. Anyone found using the computer or any other phone/messaging device during class for purposes unrelated to the course will be asked to leave the room for the remainder of that class. The use of any electronic devices (other than your calculator) during an exam is strictly prohibited. Use of phone calculators is forbidden.

Etiquette

Please come to class on time and be prepared to remain in class for the entire period. Arriving late, getting up in the middle of class, or otherwise disrupting it is disrespectful of your classmates.

Course administration and communication

I will make use of Canvas for communication. Copies of assignments, aids for R, solutions to homeworks will be posted there. However, data sets and possibly other
materials will be located on Cerebro, the department computer. This is located at http://cerebro.cs.xu.edu/math/Math158/.

⚠️ Warning

It is important to keep up to date in the course. Assignments will be collected on a semi-regular basis. In-class exercises will be related to the homework and are designed to provide practice with R. Inform me if you cannot attend class. Except for the most dire circumstances, work missed due to absences cannot be made up nor will late work be accepted. Attendance is expected. See below the section on assessment.

Assessment

Your grade for the course is based upon your in-class & homework exercises, projects and tests.

Classroom participation and assignments

Participation in group work during class will be expected. You are encouraged to find study partners, to form study groups outside of class and to learn from one another as opportunities provide. However, turning in the work of another or providing your work to someone else will be considered academically dishonest. Copying solutions from any other person or source without disclosure, will be treated as cheating.

Any outside sources (e.g., study group members, other textbooks, internet sites) used must be cited and referenced.

Projects

Projects are completed by teams of two or three students. Each will consist of a paper and a presentation. Subject to change, the first will be an analysis of a data set. The second will be a review of journal articles related to your major. These projects are intended reinforce the course objectives enumerated above. Complete details will be provided later.

Exams

There will be two exams in addition to the final exam. The first test is planned for February 24 (Chapters 23–27) and the second for March 26 (Chapters 28–29). The final exam is cumulative but emphasizes Chapters 30–31. During exams, absolutely no collaboration with other persons is permitted.

Grading

The summary of work required and its weight is shown below.
### Assessment Weight

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participation</td>
<td>5%</td>
</tr>
<tr>
<td>Exams</td>
<td>30%</td>
</tr>
<tr>
<td>Homework</td>
<td>20%</td>
</tr>
<tr>
<td>Projects</td>
<td>25%</td>
</tr>
<tr>
<td>Final Exam (cumulative)</td>
<td>20%</td>
</tr>
</tbody>
</table>

Letter grades will be assigned according to the following scale:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>93 – 100</td>
</tr>
<tr>
<td>A−</td>
<td>90 – 92</td>
</tr>
<tr>
<td>B+</td>
<td>87 – 89</td>
</tr>
<tr>
<td>B</td>
<td>83 – 86</td>
</tr>
<tr>
<td>B−</td>
<td>80 – 82</td>
</tr>
<tr>
<td>C+</td>
<td>77 – 79</td>
</tr>
<tr>
<td>C</td>
<td>73 – 76</td>
</tr>
<tr>
<td>C−</td>
<td>70 – 72</td>
</tr>
<tr>
<td>B+</td>
<td>87 – 89</td>
</tr>
<tr>
<td>B</td>
<td>83 – 86</td>
</tr>
<tr>
<td>B−</td>
<td>80 – 82</td>
</tr>
<tr>
<td>C+</td>
<td>77 – 79</td>
</tr>
<tr>
<td>C</td>
<td>73 – 76</td>
</tr>
</tbody>
</table>

### Academic Honesty

The pursuit of truth demands high standards of personal honesty. Academic and professional life requires a trust based upon integrity of the written and spoken word. Accordingly, violations of certain standards of ethical behavior will not be tolerated at Xavier University. These include theft, cheating, plagiarism, unauthorized assistance in assignments and tests, unauthorized copying of computer software, the falsification of results and material submitted in reports or admission and registration documents, and the falsification of any academic record including letters of recommendation.

All work submitted for academic evaluation must be the student’s own. Certainly, the activities of other scholars will influence all students. However, the direct and unattributed use of another’s efforts is prohibited as is the use of any work untruthfully submitted as one’s own.

Penalties for violations of this policy may include one or more of the following: a zero for that assignment or test, an “F” in the course, and expulsion from the University. The dean of the college in which the student is enrolled is to be informed in writing of all such incidents, though the teacher has full authority to assign the grade for the assignment, test, or course. If disputes of interpretation arise, the student, faculty member, and chair should attempt to resolve the difficulty. If this is unsatisfactory, the dean will rule in the matter. If disputes of interpretation arise, the student, faculty member, and chair should attempt to resolve the difficulty. If this is unsatisfactory, the dean will rule in the matter. As a final appeal, the academic vice president will call a committee of tenured faculty for the purpose of making a final determination. (University Catalog)
**Assistance**

Let me know if you are experiencing any difficulties in this class. It is better to deal with problems early rather than when it is too late.

The Mathematics Tutoring Lab located in Conaton Learning Commons Room 419 is open from 10:00 am to 8:00 pm Monday through Thursday, 10:00 am to 2:00 pm Friday and 2:00 to 8:00 pm Sundays. It is available for students enrolled in MATH 105 – MATH 171. The lab does not provide R help. Staff who can aid with statistics are there during these hours:

- **Monday:** 10:00 – 1:00 and 2:00 – 5:00
- **Tuesday:** 10:00 – 1:00 and 4:00 – 5:00
- **Wednesday:** 10:00 – 1:00 and 5:00 – 8:00
- **Thursday:** 10:00 – 1:00 and 2:00 – 6:00
- **Friday:** 10:00 – 2:00
- **Sunday:** 2:00 – 8:00