

Math507M: Statistics for Medical and Public Health Researchers

Instructor: Professor Nan LIN
Office: Room 205, Cupples I
Email: nlin@wustl.edu
Time and location: 10- 11:30am MW, Farrell Teaching/Learning Center 214 (map)
Office hours: 11:30am-12:30pm on Thursday or by appointment.
Graders: TBA

General information

Textbook: Michael J. Campbell, David Machin, Stephen J. Walters (2007) *Medical Statistics*, 4th edition, Wiley, ISBN 0470025190.

Reference: Shahbaba, B. (2011) *Biostatistics with R*, Springer, ISBN 146141301X.

Course Description

This course is an introductory course to basic statistical analysis, particularly aimed at graduate students in medicine and related fields. Topics that will be covered include: measurement, study design, exploratory data analysis, graphical analysis, random variables and some distributions, estimation, confidence intervals, p-values, analysis of variance and regression.

Computing

We will be using the statistical package R for this course. R is free software that is extensively used in research. R can be downloaded [here](#).

Grading

The final course grade depends on your performance on the exams and homework according to the following formula.

$$\text{Final percentage grade} = 70\% * \text{Homework} + 30\% * \text{Final Report}$$

The letter grade is then given according to the following scale. Cr means D or better if you elect “Credit/No Credit.”

[95, 100]	A+	[83, 85)	B+	[65, 75)	C
[87, 95)	A	[77, 83)	B	[60, 65)	D
[85, 87)	A-	[75, 77)	B-	< 60	Fail

- **Homework:** There will be weekly homework assignments. No late homework will be accepted. You will receive no credits for solutions with no work or justifications. The instructor reserves the right to deduct points for messy papers. Students are encouraged to discuss homework problems with others in class, but must write your homework independently. Duplicating others’ homework constitutes a violation of the university academic integrity policy. When handing in homework, you must:
 - include your name (printed), course number (Math507M) on the first page.
 - write legibly. You are encouraged to produce printed homework.
 - staple the pages together on the upper left-hand corner to prevent pages from getting lost. Do not use paper clips.

- **Final Report (due Dec 7):** The final report should be presented as a thorough statistical analysis report of an original study related to your research. Essential components include motivation and background of the study, design of the experiment/sampling, validity of the design, sample size calculation, description of the data, statistical model and justification of its usage, computer code for data analysis, analysis output (tables and graphs), summary of the analysis results and discussion on limitations of the study. The report will be graded based on the validity, originality and completeness of the design and analysis, clarity in summarizing the analysis results, and writing quality.

Learning Tips

1. Try to show up in all the lectures. Make good notes.
2. Ask questions in class. Your questions may be others' as well. No questions are too elementary, and all deserve to be answered.
3. Discuss with your classmates about your questions.
4. Finish homework in time.

Class Policies

1. No auditing allowed.
2. Late homework: No late homework is accepted. If a student can not complete a homework assignment due to justifiable reasons (proofs required), such as illness or conflict with conferences, that homework grade will be dropped and the rest assignments will be reweighed. Students who miss more than two homework assignments will be given a grade of 'Incomplete', no matter for what reason.
3. Exam conflicts: Students need to contact the instructor about exam conflict at least two weeks in advance. Students who miss the final exam will receive 'Incomplete' regardless the reason.
4. Collaboration: I encourage discussion of homework in broad conceptual terms where one student tries to educate another without giving away the answer, but **all work turned in must be your own.**
5. Academic Integrity: All students are expected to adhere to the university's academic integrity policy. Any student who is found to have cheated on an assignment or exam will receive a zero score for that work, regardless of the extent of the offense.

Statement on plagiarism: The handouts used in this course are copyrighted. By "handouts," I mean all materials generated for this class including the syllabus, exams, in-class materials, and computer examples. Because these materials are copyrighted, you do not have the right to copy the handouts, unless I expressly grant the permission.