

STA 4102/5106 Computational Methods in Statistics I

Fall 2015

Course Information

Class Meeting Place: 205 HCB
Class Meeting Time: M W 9:30am - 10:45am (Lecture)
Class URL: http://stat.fsu.edu/~wwu/STA4102_5106/

Instructor: Dr. Wei Wu

E-mail: wwu@stat.fsu.edu
Office: 106B OSB
Office Hours: M W 12-1pm
Mailbox location: 214 OSB (accessible during 8:00am - 5:00pm on working days)

Teaching Assistant: Yang Yu

E-mail: y.yu@stat.fsu.edu
Office: 204 OSB
Office Hours: M 1-2pm

Textbook: *Computational Statistics*, by G. H. Givens and J. A. Hoeting (Optional)

Course Objectives: To gain an understanding of the techniques and ideas used in implementing mathematical/statistical formulations on computers, with a focus on common statistical approaches. Students will obtain practice in using MATLAB. The use of Python is optional.

Prerequisite: basic probability and statistics, linear algebra, and advanced calculus.

Topics

- Linear Methods for Regression Analysis
- Principal Component Analysis
- Nonlinear Methods for Maximum Likelihood Estimation
- Elementary Pattern Recognition
- Simulation of Random Variables
- Monte-Carlo Methods for Integration
- Dynamic Programming
- Spline Functions

Grading: Homework (40%), Quizzes (20%), Midterm Project (20%), Final Project (10%), Attendance (10%). The midterm project is graded for both the report (15%) and the presentation (5%). The final project is graded only for the report.

Exception: For students who finish homework programming problems using both MATLAB and Python, they have an option to skip midterm and final projects, and their grade distribution will be: Homework (70%), Quizzes (20%), Attendance (10%).

Course Policy

- **Classroom policies:**
 - You are **required** to attend all classes
 - Come to the class **on time**
 - Be quiet
- **Homeworks:** The homework problems will be assigned every Wednesday and be due the next Wednesday. The homework must be neatly written, preferably typed. You can work with other students, but each student must independently finish his/her own solutions. **No late homework!**
- **Quizzes:** There will be a quiz in class every two weeks except holidays or project periods. The quizzes are open-book. If a student cannot make a quiz due to personal illness, family emergency, or conflict of university events, he/she must inform the instructor before or within one day after the test. A make-up test can be arranged if sufficient document on the absence is provided.
- **Academic honor policy:** The Florida State University Academic Honor Policy outlines the University's expectations for the integrity of students' academic work, the procedures for resolving alleged violations of those expectations, and the rights and responsibilities of students and faculty members throughout the process. Students are responsible for reading the Academic Honor Policy and for living up to their pledge to “. . . be honest and truthful and . . . [to] strive for personal and institutional integrity at Florida State University.” (Florida State University Academic Honor Policy, found at <http://dof.fsu.edu/honorpolicy.htm>.)
- **Students with disabilities:** Students with disabilities needing academic accommodation should:
 - (1) register with and provide documentation to the Student Disability Resource Center; and
 - (2) bring a letter to the instructor indicating the need for accommodation and what type.
 This should be done during the first week of class.
 For more information about services available to FSU students with disabilities, contact the:

Student Disability Resource Center
 97 Woodward Avenue, South
 108 Student Services Building
 Florida State University
 Tallahassee, FL 32306-4167
 (850) 644-9566(voice)
 (850) 644-8504 (TDD)
 sdr@admin.fsu.edu
<http://www.disabilitycenter.fsu.edu/>