

Marshall University

MTH 464 – 101: Statistical Computing (Fall 2014)

CRN 3277

Class Time: MWF 5:00 – 6:15 pm

Location: Smith Hall 514

(Tentative Syllabus)

INSTRUCTOR: Dr. Raid Al-Aqtash

OFFICE: Smith Hall 325

OFFICE PHONE: 304-696-3044

E-mail: alaqtash@marshall.edu

OFFICE HOURS: MWF 12:00 noon – 1:50 pm, others by appointment.

UNIVERSITY POLICIES: By enrolling in this course, you agree to the University Policies listed below. Please read the full text of each policy by going to www.marshall.edu/academic-affairs and clicking on “Marshall University Policies.” Or, you can access the policies directly by going to

<http://www.marshall.edu/academic-affairs/policies/>

Academic Dishonesty/ Excused Absence Policy for Undergraduates/ Computing Services Acceptable Use/ Inclement Weather/ Dead Week/ Students with Disabilities/ Academic Forgiveness/ Academic Probation and Suspension/ Academic Rights and Responsibilities of Students/ Affirmative Action/ Sexual Harassment

CLASS RULES:

1. **SILENT YOUR PHONES.**
2. If you need to leave the class early, inform your instructor before the class begins. Please **show your respect** to your classmates and your instructor.
3. **Good attendance is a major key to success in this (or any) class!** Students are expected to attend all scheduled classes.

COURSE DESCRIPTION AND OBJECTIVES:

Introduction to the commonly used statistical computing techniques, procedure and methods, with extensive use of R language and environment “and/or SAS” for statistical computing and graphics. Material includes classical statistical computing topics in optimization, numerical integration, density estimation, simulation and Monte Carlo Markov Chain (MCMC) methods, amongst others. The principle objective of the course is to introduce the students to the very powerful facilities that the programming language R provides for statistical computing, and many more. R is an open-source (free software) interactive programming language and environment, created as an integrated suite of software facilities for data manipulation, simulation, calculation, and graphical display. Prerequisites: MTH 445 or MTH 446.

STUDENT LEARNING OUTCOMES: The table below shows the following relationships: How each student learning outcomes will be practiced and assessed in the course:

Course Student Learning Outcomes	How students will practice each	How student achievement of each outcome will be assessed in this Course
	outcome in this Course	
manipulate data	Homework	Homework, Project, and Exam Problems
carry out statistical analyses with the use of R	Homework	Homework, Project, and Exam Problems
write both mathematical and statistical functions	Homework	Homework, Project, and Exam Problems
carry out simulations of statistical events	Homework	Homework, Project, and Exam Problems
produce graphical display in R	Homework	Homework, Project, and Exam Problems
estimate parameters in density functions	Homework	Homework, Project, and Exam Problems

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TEXT: *Statistics and Data with R*, 1st Edition, 2018, by Y. Cohen & J.Y. Cohen.

MATERIAL: Students are introduced to various assumptions that lie behind statistical tests and modeling, taking a critical approach, but involving little or no statistical theory and assuming no strong background in mathematics or statistics. However, knowledge in previous classes in statistics, algebra and calculus would serve as advantage.

You are advised to visit the R home page <http://www.r-project.org/> or <http://en.wikipedia.org/wiki/R> and download the R programming language/software from your preferred CRAN mirror. These sites contain more information about R and instructions for downloading and installation. The software is the platform of our discussion. You are encouraged to bring your laptops to class. But please do not use it for any activities other than our discussions in the classroom.

GRADED WORK:

1. Final Exams (Projects):

There will be an intensive comprehensive project assigned as TAKE-HOME Final Exam, worth 25% of total score. In case of extreme emergency, serious illness, or university related activity, when I have been notified with evidence or approval, or excused absences approved by the Dean of Student Affairs, the student will be allowed to make up the missed exam.

Final Exam (Project): Due on Monday, December 8th, 2014 at 5:00 pm (25% of total score)

2. Homework Assignments:

(75% of total score)

Homework assignments, TBD, will be assigned on weekly basis. Homework problems will be assigned and posted on blackboard. When collected, homework is due at the beginning of class. Late homework will not be accepted. **You should turn in all input programs and outputs. Annotate your output**, either with a word processor or by hand, to that the grader can determine that you have accomplished the goals of the assignment.

Roughly speaking 90% is at least an A–, 80% is at least a B–, 70% is at least a C–, 60% is at least a D–. Final grades will be determined by the end of the semester.

Academic Integrity:

The University Rules, including the Code of Conduct, and other documented policies of the department, college, and university related to academic integrity, will be enforced. **Any violation of these regulations, including acts of plagiarism or cheating, will be dealt with on an individual basis according to the severity of the misconduct.**

Note that plagiarism (the submission as one's own work of any oral, graphic, or written material wholly or in part created by another), is a form of academic dishonesty. Sanctions for academic dishonesty shall be imposed in accordance with university's guidelines on such matter.

Note that in a case where a student is suspected to have cheated, the student may be asked to retake the test. And where the student is found or confirmed to have cheated, a zero grade will be awarded to the student

ATTENDANCE POLICY: Attendance is a *major key for success*. Students are expected to attend all scheduled classes. It is the student's responsibility to find out what was discussed in a missed class. Attendance will be recorded; however attendance records will not be used to compute grades.

DROP: The last day to drop class (no entry to academic record) is August 29th 2014.

Withdrawals: October 31st, 2014 is the last day to withdraw "W" from the class.

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Special Needs Policy:

Students with special needs should meet with the instructor as soon as possible to arrange for reasonable provisions to ensure an equitable opportunity to meet all of the requirements of this course. At the discretion of the instructor, some accommodations may require prior approval by Disability Services.

Blackboard / Electronic Communications:

Blackboard will be used to post pertinent class information and course documents. For technical problems with Blackboard contact IT Services Desk 304-696-3200.