

MARSHALL UNIVERSITY
DEPARTMENT OF MATHEMATICS
STUDENT INFORMATION SHEET AND SYLLABUS

Course Title/Number	MTH 445/545 – Probability & Statistics I
Section	101
CRN	3095/3112
Semester/Year	Fall 2015
Days/Time	MWF 1:00 - 1:50 PM
Location	SH 435 (Smith Hall)
Instructor	Dr. Avishek Mallick
Office	SH 743C
Phone ext.	304-696-3443
E-Mail	mallicka@marshall.edu
Office/Hours	MW 3:00-4:00 PM TR 10:00-11:30 AM and 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/?page_id=802 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

Course Description and Objectives

This course covers topics in Mathematical Statistics. Topics include probability, random variables, probability distributions, moments, probability functions, cumulative distribution functions, moment generating functions, random vectors, joint, marginal, and conditional distributions, independence, covariance, the distribution of functions of random variables, etc.

The principle objective of the course is to introduce graduate and advanced undergraduate students to many topics in Mathematical Statistics and to prepare them for statistical inference topics like estimation and hypothesis testing as well as applied topics like regression analysis.

Required Texts and Other Materials

Title	: <i>Mathematical Statistics with Applications, 7th edition.</i>
Author	: Wackerly, D., Mendenhall, W., and Scheaffer, R.
ISBN	: 978-0-495-11081-1
Publisher	: Brooks/Cole [Cengage Learning].

MUOnline	: All important course information will be posted on our class MUOnline page.
----------	---

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 outcome in this Course	How student achievement of each outcome will be assessed in this Course
Students will be able to do basic computation of probabilistic quantities by modeling sample spaces and applying rules of combinatorics, additive and multiplicative laws and conditional probability.	Students are required to participate in class discussions, intensive reading of relevant chapters, and most importantly, practice numerous end of the chapter exercises problems.	Homework assignments and exams.
Students will have understanding of random variables, distribution functions, probability mass functions, and probability density functions, including but not limited to the uniform, binomial, Poisson, exponential, and Gaussian distributions.	Students are required to participate in class discussions, intensive reading of relevant chapters, and most importantly, practice numerous end of the chapter exercises problems.	Homework assignments and exams.
Students will have understanding of multivariate distributions, independence, conditioning, and functions of random variables, including the ability to compute expectations, moments, and correlation functions.	Students are required to participate in class discussions, intensive reading of relevant chapters, and most importantly, practice numerous end of the chapter exercises problems.	Homework assignments and exams.

Course Requirements

Prerequisite: Grade C or higher in MTH 231 or by permission.

Homework: Homework assignments will be collected and graded. Make it a habit to do your homework the same day they are assigned. Ensure to submit your homework as at when due. Late assignments will only be accepted with an Excused Absence. Please read the university policy on how to secure an Excused Absence. Most excused absences are obtained from the Dean of Student Affairs. You are welcome to collaborate with other students on homework, although you must turn in your own work, and written in your own style and words. Solutions to problems must be made clear and neat. In cases where solutions require explanation and derivation, a one-number solution will not be accepted.

Attendance Policy

Students are expected to attend all scheduled classes. It is the student's responsibility to find out what was discussed in a missed class. Although, attendance records will not be used to compute grades (except possibly in borderline cases), however, missing class can be expected to significantly reduce your chances of success. Note also that it is the student's responsibility to present approved notice of any absence that would be excused under the terms and regulations stipulated by the university.

Student behavior

Students are advised to turn their cell phones and other noise generating devices off prior to entering the class. In the case where a student awaits any emergency call, the noise should be restricted and made personal. And in this case, I should be notified as soon as the student enters the class. Food items, apart from water or soft drink, are not allowed in the class. Please ensure that other students are respected.

Calculators and Other Technology

You may use a calculator on all work and assignments in this class. You may not use your phone, iPad, laptop, etc. as a calculator on any exam.

No other technology may be used in class without permission.

Grading Policy and Exam dates

Any student caught cheating will receive a 0 on the assignment and test and Academic Affairs will be notified.

The final grade will be based on the following components:

Homework	30%
Examination I	20% [Friday, October 9] (tentative)
Examination II	20% [Friday, November 20] (tentative)
Final Examination	30% (Comprehensive)

Percentage ranges for final grades are as follows:

A = 90-100% B = 80-89% C = 70-79% D = 60-69% F = 0-59%

FINAL EXAMINATION: Friday, December 11 [12:45 – 2:45 PM]

Course coverage

Chapters 1 – 5. If time permits, we may discuss materials in Chapters 6 and 7.

Tentative Topics

- Probability Theory including conditional probability, independence and Baye's Rule.
- Discrete random variables and their probability distribution.
- Continuous random variables and their probability distribution.
- Bivariate and Multivariate probability distributions.
- Functions of random variables. (if time permits)
- Sampling distributions and the Central Limit Theorem. (if time permits)