

DEPARTMENT: MATHEMATICS AND STATISTICS

COURSE PREFIX: MAT

COURSE NUMBER: 135

CREDIT HOURS: 4

I. TITLE:

Introduction to Probability and Statistics

II. COURSE DESCRIPTION AND PREREQUISITE(S):

Elementary probability, the binomial, normal, student's and chi-square distributions, random sampling, regression and correlation.

Prerequisite(s): ACT math standard score of at least 20 or MAT 097.

III. COURSE OBJECTIVES:

The student will:

- A. Have the tools that will enable them to understand and appreciate the role probability and statistics plays in the process of gathering data and drawing information from it;
- B. Understand experimental design, random sampling and sampling variability;
- C. Learn and implement strategies for summarizing and displaying data in ways that aid the investigator in drawing conclusions;
- D. Be able to apply concepts like measures of central tendency, dispersion and correlation will be applied to a variety of examples from different discipline;
- E. Understand the role of probability in quantifying the uncertainty in the decision process will be emphasized;
- F. Learn elementary probability concepts through problem solving;
- G. Be able to use probability distributions like the binomial and normal distributions in the context of applications where they are the appropriate tools for analysis;
- H. Understand the role of formal inference procedures such as confidence intervals and hypothesis testing as general strategies for making decisions;
- I. Understand and be able to implement these strategies in a few common settings (e.g. the t-test for a mean).

IV. CONTENT OUTLINE:

- A. Have the tools that will enable them to understand and appreciate the role probability and statistics plays in the process of gathering data and drawing information from it;
- B. Describing and summarizing data (Graphical and Numerical)
- C. Relationships in data (Correlation, Linear regression, least squares principle, categorical data, contingency tables)
- D. Producing data (Experimental design, randomization, Sampling, random samples, simulation, sampling variability, bias)
- E. Probability concepts (Random variables and probability distributions, Binomial distributions, Normal distributions, sampling distributions)
- F. Inference (Confidence intervals, Hypothesis testing-general strategy, Applications [one sample-means and proportions, two sample-means and proportions])

V. INSTRUCTIONAL ACTIVITIES:

Lecture, daily assignments, group work, projects, reading assignments, oral presentations, and quizzes the material, as per instructor course design.

VI. FIELD, CLINICAL, AND/OR LABORATORY EXPERIENCES:

None

VII. TEXT(S) AND RESOURCES:

Intro Stats, by De Veaux, Velleman, and Bock; Addison Wesley; Along with the text and a graphing calculator, the video series *Against All Odds: Inside Statistics* (26 half-hour programs), produced by the Consortium for Mathematics and It's Applications, is available for use in the classroom and/or by students outside the classroom. A graphing calculator is required for portions of this course and will be necessary for exams. The TI-83 and TI-84 are preferred, since they have a statistical package which will be used in the course. The TI-80, TI-81, TI-89, and TI-92 are not allowed

VIII. EVALUATION AND GRADING PROCEDURES:

A. These are instructor specific, based on Exams, Homework, Quizzes, Projects, and the Final Exam. However the grading scale is standard.

Grading Scale:

90 - 100 % A

80 - 89 % B

70 - 79 %	C
60 - 69 %	D
Below 60%	E

B. Auditing: If you seek to change your status to audit, you must continue to do all the graded assignments, to attend classes regularly after the audit is given, to miss no more than 5 class periods after the audit is given, and to maintain a grade of at least 70% of the grade they had upon taking the Audit. If these requirements are not followed, then an “E” will be earned for this course.

IX. ATTENDANCE POLICY:

Students are expected to adhere to the MSU Attendance Policy outlined in the current MSU Bulletins.

X. ACADEMIC HONESTY POLICY:

Murray State University takes seriously its moral and educational obligation to maintain high standards of academic honesty and ethical behavior. Instructors are expected to evaluate students’ academic achievements accurately, as well as ascertain that work submitted by students is authentic and the result of their own efforts, and consistent with established academic standards. Students are obligated to respect and abide by the basic standards of personal and professional integrity.

Violations of Academic Honesty include:

Cheating - Intentionally using or attempting to use unauthorized information such as books, notes, study aids, or other electronic, online, or digital devices in any academic exercise; as well as unauthorized communication of information by any means to or from others during any academic exercise.

Fabrication and Falsification - Intentional alteration or invention of any information or citation in an academic exercise. Falsification involves changing information whereas fabrication involves inventing or counterfeiting information.

Multiple Submission - The submission of substantial portions of the same academic work, including oral reports, for credit more than once without authorization from the instructor.

Plagiarism - Intentionally or knowingly representing the words, ideas, creative work, or data of someone else as one’s own in any academic exercise, without due and proper acknowledgement.

Instructors should outline their expectations that may go beyond the scope of this policy at the beginning of each course and identify such expectations and restrictions in the course syllabus. When an instructor receives evidence, either directly or indirectly, of academic dishonesty, he or she should investigate the instance. The faculty member should then take appropriate disciplinary action.

Disciplinary action may include, but is not limited to the following:

- 1) Requiring the student(s) to repeat the exercise or do additional related exercise(s).
- 2) Lowering the grade or failing the student(s) on the particular exercise(s) involved.
- 3) Lowering the grade or failing the student(s) in the course.

If the disciplinary action results in the awarding of a grade of E in the course, the student(s) may not drop the course.

Faculty reserve the right to invalidate any exercise or other evaluative measures if substantial evidence exists that the integrity of the exercise has been compromised. Faculty also reserve the right to document in the course syllabi further academic honesty policy elements related to the individual disciplines.

A student may appeal the decision of the faculty member with the department chair in writing within five working days. Note: If, at any point in this process, the student alleges that actions have taken place that may be in violation of the Murray State University Non-Discrimination Statement, this process must be suspended and the matter be directed to the Office of Equal Opportunity. Any appeal will be forwarded to the appropriate university committee as determined by the Provost.

XI. NON-DISCRIMINATION POLICY AND STUDENTS WITH DISABILITIES:

Policy Statement

Murray State University endorses the intent of all federal and state laws created to prohibit discrimination. Murray State University does not discriminate on the basis of race, color, national origin, gender, sexual orientation, religion, age, veteran status, or disability in employment, admissions, or the provision of services and provides, upon request, reasonable accommodation including auxiliary aids and services necessary to afford individuals with disabilities equal access to participate in all programs and activities. For more information, contact the Executive Director of Institutional Diversity, Equity and Access, 103 Wells Hall, (270) 809-3155 (voice), (270) 809-3361 (TDD).

Students with Disabilities

Students requiring special assistance due to a disability should visit the Office of Student Disability Services immediately for assistance with accommodations. For more information, students should contact the Office of Student Disability Services, 423 Wells Hall, Murray, KY 42017. 270-809-2018 (voice) 270-809-5889 (TTD).

XII. Other required departmental or collegiate committee information