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# MA 455 Syllabus

## I. Catalog Description

MA 455 Seminar in Teaching Probability and Statistics

1 credit  
1 lecture hour  
0 lab hour  
(1c-0l-1sh)

Prerequisites: None

Seminars are designed for the pre-student teacher. Students in each class will gain insights into the problems in teaching each topic and become aware of the materials available and methods of instruction geared to the secondary mathematics student. Education majors only.

## II. Course Objectives:

The students will explore learning and teaching statistics and probability by

1. developing methods of collecting, organizing, representing and describing data concretely, pictorially, and symbolically.
2. constructing, interpreting, and analyzing graphs.
3. making predictions, generating hypotheses, and developing theories based on given

## 2. Teaching and Learning

- A. Graphs (5 weeks)
- i. Line graphs and number line plots
  - ii. Bar graph and histogram
  - iii. Circle graph
  - iv. ~~Cylinder~~
  - v. Stem-and-leaf plot
  - vi. Box-and-whiskers plot
  - vii. Scatter plot
- B. Mean, median, quartiles, and outliers (1 week)
- C. Linear regression (1 week)
- D. Standard deviation and variance (1 week)
- E. Experimental and Theoretical Probability (2 weeks)
- F. Projects (2 weeks)
- i. Surveys
  - ii. Experiments
  - iii. Observational studies

3. Alternative assessment including projects and portfolios (1 week)

## IV. Evaluation Methods

The final grade for the course will be determined as follows:

35% Homework, Quizzes, and Class Participation

25% Short Lesson Plans and Presentations

40% Project and Presentation

**Grading Scale:** 93-100...A; 87-92...B; 75-86...C; 65-74...D; 0-64...F

## V. Required textbooks, supplemental books and readings

Textbook: Landwehr, J.M. and Watkins, A.E. Exploring Data. (Teacher's Edition. Palo Alto, CA: Dale Seymour Publications, 1996.

## VI. Special resource requirements

Students will be expected to have a graphing calculator.

## VII. Bibliography

Burrill, G. and Hopfensperger, P. Exploring Linear Relations. Palo Alto, CA: Dale Seymour Publications, 1998.

D. W. Moore. Data Analysis and Statistics. Reston, VA: National Council of

## Course Analysis Questionnaire

### Section A: Details of the Course

The Mathematics Department currently offers 1-hour seminars in teaching General Mathematics, Algebra, and Geometry for students majoring in Mathematics Education. This course, Seminar in Teaching Probability and Statistics, would provide an additional opportunity for students to develop techniques and materials for integration into the 7-12 curriculum.

- A2 Does this course require changes in the content of existing courses or requirements for a program?

This course does not require changes in existing courses or requirements. In fact,

B1 Will this course be taught by one instructor or will there be team teaching?

It will be taught by one instructor.

B2 What is the relationship between the content of this course and the content of courses offered by other departments? Summarize your discussions (with other departments) concerning the proposed changes and indicate how any conflicts have been resolved.

The course will not affect any other department.

B3 Will this course be made available to students in the School of Continuing

Education?

Yes, if the student in an education major.

### **Section C: Implementation**

C5 How many sections of this course do you anticipate offering in any single semester?

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18. How many sections of this course do you anticipate offering in any single semester?

19. How many sections of this course do you anticipate offering in any single semester?

20. How many sections of this course do you anticipate offering in any single semester?