

SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ON

COURSE OUTLINE

COURSE TITLE: Statistics

CODE NO: MTH 255-4

SEMESTER: Three

PROGRAM: Forestry Technician

AUTHOR: J. McGauley

DATE: June 1997

PREVIOUS OUTLINE DATED: June 1996

APPROVED:


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TOTAL CREDITS:

PREREQUISITES: MTH 126

SUBSTITUTE(S): MTH 256

LENGTH OF COURSE:

TOTAL CREDIT HOURS: 48

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I. COURSE DESCRIPTION:

Students will study statistical thinking. Topics include descriptive statistics including graphing, measures of central tendency and dispersion, probability sampling, estimation and regression analysis. Applied problems are solved.

II. STUDENT PERFORMANCE OBJECTIVES:

The basic objectives are that the student develop an understanding of the methods studied, demonstrate a knowledge of the facts presented and show an ability to use these in the solution of problems. To accomplish these objectives, exercises are assigned. Test questions will be of near equal difficulty to questions assigned in the exercises. The level of competency demanded is the level required to obtain an overall passing average on the tests. The material to be covered is listed below.

III. TOPICS TO BE COVERED:	Approximate Time Frame
1. Introduction	2 periods
2. Descriptive Statistics	6 periods
3. Measures of Location and Variation	8 periods
4. Probability	3 periods
5. Probability Distributions	10 periods
6. Sampling	3 periods
7. Estimation and Hypothesis Testing	12 periods
8. Linear Regression and Correlation	4 periods

IV. LEARNING ACTIVITIES:

TOPIC NUMBER	TOPIC DESCRIPTION	REFERENCE CHAPTER ASSIGNMENTS
1.0	INTRODUCTION Upon successful completion of this unit, the student will be able to:	Text: Chapter 1 Read pages 2-15
1.1	Define and understand the nature of statistics	
2.0	DESCRIPTIVE STATISTICS Upon successful completion of this unit, the student will be able to:	Text: Chapter 2 Ques: 1-10 pages 27-29 Ques: 11-20 pages 35-38 Ques: 22-24 page 45
2.1	Understand distinction between qualitative and quantitative data	
2.2	Construct and interpret frequency distributions, bar graphs and pie charts	
2.3	Construct and interpret histograms, frequency polygons, ogives and stem and leaf displays	
3.0	MEASURES OF LOCATION AND VARIATION Upon successful completion of this unit, the student will be able to:	Text: Chapter 3 Ques: 1-12 pages 69-71 Ques: 17-26 pages 79-80 Ques: 29-34 pages 84&85
3.1	Compute and interpret the mean, median and mode for a set of data	
3.2	Compute the range, variance, standard deviation and coefficient of variation for grouped and ungrouped data	
3.3	Use Z-scores, Chebyshev's Theorem and empirical rule, percentiles and quartiles.	
4.0	PROBABILITY Upon successful completion of this unit, the student will be able to:	Text: Chapter 4 Ques: 1-18 pages 119-120 Ques: 21-22 page 124 Ques: 31 page 131
4.1	Compute the probability of an event from outcomes	
4.2	Use rules of probability to compute the probability of events	

IV. LEARNING ACTIVITIES (Continued):

TOPIC NUMBER	TOPIC DESCRIPTION	REFERENCE CHAPTER ASSIGNMENTS
5.0	<p>PROBABILITY DISTRIBUTIONS</p> <p>Upon successful completion of this unit, the student will be able to:</p>	<p>Text: Chapter 5</p> <p>Ques: 27-42 pages 181-183 Ques: 50-62 pages 187-188</p> <p>Text: Chapter 6</p> <p>Ques: 8-26 pages 215-218 Ques: 27-32 pages 220-221</p>
5.1	Understand random variables and their use.	
5.2	Understand the nature of probability distribution	
5.3	Know why and how to use the Binomial distribution	
5.4	Know why and how to use the Poisson distribution	
5.5	Know why and how to use the Normal distribution	
6.0	<p>SAMPLING AND SAMPLING DISTRIBUTIONS</p> <p>Upon successful completion of this unit, the student will be able to:</p>	<p>Text: Chapter 7</p> <p>Ques: 28-30 pages 250-251 Ques: 34-42 pages 255-256</p>
6.1	Select random samples	
6.2	Understand the characteristics and use of sampling distributions	
6.3	Understand the Central Limit Theorem	
6.4	Use other sampling techniques	

IV. LEARNING ACTIVITIES (Continued):

TOPIC NUMBER	TOPIC DESCRIPTION	REFERENCE CHAPTER ASSIGNMENTS
7.0	ESTIMATION AND HYPOTHESIS TESTING Upon successful completion of this unit, the student will be able to:	Text: Chapter 8 Ques: 1-14 pages 276-277 Ques: 15-22 pages 284-285 Ques: 27-36 pages 288-289 Ques: 45-56 pages 303-305 Text: Chapter 9 Ques: 1-14 pages 347-349 Ques: 16-28 pages 354-355 Ques: 34-44 pages 359-360
7.1	Construct and interpret interval estimates of the population mean and population proportion	
7.2	Understand confidence level	
7.3	Understand the concept of sampling error	
7.4	Determine sample size	
7.5	Understand t-distribution	
7.6	Conduct hypothesis tests about a population mean or a population proportion	
8.0	REGRESSION AND CORRELATION Upon successful completion of this unit, the student will be able to:	Text: Chapter 13 Ques: 1-8 pages 507-509
8.1	Use least squares to develop a regression equation	
8.2	Compute and interpret coefficient of correlation	
8.3	Use regression equations for estimation and prediction	
8.4	Compute and interpret sample correlation coefficient	

V. REQUIRED RESOURCES / TEXTS / MATERIALS:

1. Text: Introduction to Statistics - 3rd Ed., Concepts & Applications - Anderson, Sweeney & Williams.
2. Calculator: (Recommended) SHARP Scientific Calculator EL-531G. The use of some kinds of calculators may be restricted during tests.

VI. EVALUATION PROCESS/GRADING SYSTEM:**MAJOR ASSIGNMENTS AND TESTS**

While regular tests will normally be scheduled and announced beforehand, there may be an unannounced test on current work at any time. Such tests, at the discretion of the instructor, may be used for up to 30% of the overall mark.

At the discretion of the instructor, there may be a mid-term exam and there may be a final exam, each of which can contribute up to 30% of the overall mark.

The instructor will provide you with a list of test dates. Tests may be scheduled out of regular class time.

ATTENDANCE

It is your responsibility to attend all classes during the semester. Research indicates there is a high correlation between attendance and student success.

If you are absent from class, it is your responsibility to find out from your instructor what work was covered and assigned and to complete this work before the next class. Your absence indicates your acceptance of this responsibility.

Unexcused absence from a test may result in a mark of zero ("0"). Absence may be excused on compassionate grounds such as verified illness or bereavement. On return from an excused absence, you should ask your instructor to schedule the writing of a make-up test. Failure to do so will be considered as an unexcused absence.

VI. EVALUATION PROCESS/GRADING SYSTEM (Continued):**METHOD OF ASSESSMENT (GRADING METHOD)**

A+	Consistently outstanding	(90%-100%)
A	Outstanding Achievement	(80% - 89%)
B	Consistently above average achievement	(70% - 79%)
C	Satisfactory or acceptable achievement in all areas subject to assessment	(55% - 69%)
X or R	A temporary grade, limited to situations with extenuating circumstances, giving a student additional time to complete course requirements (See below)	(45% - 54%)
R	Repeat - The student has not achieved the objectives of the course, and the course must be repeated	(0% - 44%)
CR	Credit exemption	

The method of calculating your weighted average will be defined by your instructor. Since grades are based upon averages, it follows that good marks in some tests can compensate for a failing mark in another test.

Make-Up Test (if applicable)

An "X" grade may be assigned at the end of the regular semester if you have met ALL of the following criteria:

- an overall average between 45% and 54% was achieved
- at least 50% of the tests were passed
- at least 80% of the scheduled classes were attended
- all of the topic tests were written

If you are assigned an "X" grade, you may convert it to a "C" grade by writing a make-up test on topics agreed to by the instructor. This test will be available at the time agreed to by your instructor.

At the end of the regular term, it is your responsibility to obtain your results from your instructor and, in the event of an "X" grade, to inquire when the make-up test will be available.

The score you receive on this make-up test will replace your original test score and be used to re-calculate your weighted average. If the re-calculated average is 55% or greater, a "C" grade will be assigned. If the re-calculated average is 54% or less, an "R" grade will be assigned.

VI. EVALUATION PROCESS/GRADING SYSTEM (Continued):**"R" and "X" Grades at the end of the Semester**

If an "X" grade is not cleared by the specified date, it will become an "R" grade. Except for extenuating circumstances, an "X" grade in Math will not be carried into the next semester.

"R" Grades during the Semester

A student with a failing grade and poor attendance (less than 80% attendance) may be given an "R" at any time during the semester.

VII. SPECIAL NOTES:

Students with special needs (e.g. physical limitations, visual impairments, hearing impairments, learning disabilities), are encouraged to discuss required accommodations with the professor and/or contact the Special Needs Office.

Advanced Standing

Students who have completed an equivalent post-secondary course must bring relevant documents to the Coordinator, Mathematics Department:

- a copy of course outline
- a copy of the transcript verifying successful completion of the equivalent course

Note: A copy of the transcript must be on file in the Registrar's Office.

VIII. PRIOR LEARNING ASSESSMENT:

Students who wish to apply for advanced credit in the course should consult the instructor or the Prior Learning Assessment Office (E2203).