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SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

COURSE TITLE: STATISTICS

CODE NO.: MTH 255-4 **SEMESTER:** III

PROGRAM: FORESTRY

AUTHOR: J. McGAULEY

DATE: JANUARY 1992 **PREVIOUS OUTLINE DATED:** JUNE 1991

APPROVED:

DEAN DATE

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TOTAL CREDIT HOURS: 64

PREREQUISITE(S): MTH 126

I. PHILOSOPHY/GOALS:

Students will study statistical -.hinking. Topics include descriptive statistics including graphing, measures of central tendency and dispersion, probability sampling, estimation and regression analysis, applied problems are solved using MINITAB.

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:

1. The Nature of Statistics (2 hours)
2. Descriptive Statistics (4 hours)
3. Measures of Location and Variation (8 hours)
4. Probability (6 hours)
5. Probability Distributions (12 hours)
6. Sampling (6 hours)
7. Estimation (8 hours)
8. Linear Regression and Correlation (5 hours)

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IV. LEARNING ACTIVITIES:	**REQUIRED RESOURCES:**
1.0 The Nature of Statistics 1.1 Introduction 1.2 Choice of Actions 1.3 Statistics in Modern Life	Pgs. 3-9
2.0 Descriptive Statistics 2.1 Introduction 2.2 Frequency Distribution 2.3 Other Graphical Techniques 2.4 Minitab Application	Pgs. 23-63 Exercises: pg. 32 #1, 2, pg. 56 #1-10 Assignment
3.0 of Location and Variation 3.1 Introduction 3.2 Summation Notation 3.3 Measures of Central Tendency 3.4 Measures of Variation 3.5 Percentiles and Percentile Rank 3.6 Z - Scores 3.7 Minitab Application	Pgs. 89-114 124-141 Exercises pg. 106 #1, 2, 8, 10, 11 pg. 118 #1-6, 8, 9 pg. 136 #1-4, 7, 8 Assignment
4.0 Probability 4.1 Introduction 4.2 Definition of Probability 4.3 Counting Problems 4.4 Permutations 4.5 Combinations 4.6 Odds and Mathematical Expectation	Pgs. 151-201 Exercises: pg. 164 #1-5 pg. 172 #1-11 pg. 181 #1-17 pg. 193 #1-12 pg, 201 #7-10

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IV. LEARNING ACTIVITIES:(cont'd)	**REQUIRED RESOURCES:**
5.0 Probability Distributions	Pgs. 257-265, 278-301, 318-344
5.1 Introduction	Exercises pg. 290 #1-15
5.2 Discrete Probability Functions	pg. 296 #1-7
5.3 The Binomial Distribution	pg. 300 #1-9
5.4 The Mean and Standard Deviation of the Binomial	pg. 330 #1-12
5.5 The Poisson Distribution	pg. 335 #1-12
5.6 The Standard Normal Curve	pg. 343 #1-9
5.7 The Normal Distribution	
5.8 Some Applications of the Normal Distribution	
5.9 The Normal Curve Approximation to the Binomial Distribution	
5.lOMinitab Application	Assignment
6.0 Sampling	Pgs. 353-376
6.1 Introduction	Exercises: pg. 357 #1-5
6.2 Random Samples	pg. 369 #1-4
6.3 Distribution of Sampling Means	pg. 376 #1-10
6.4 The Central Limit Theorem	
6.5 Applications of the Central Limit Theorem	
6.6 Minitab Application	Assignment

LEARNING ACTIVITIES:(cont'd)	**REQUIRED RESOURCES:**
Estimation	Pages 386-412
7.1 Introduction 7.2 Point and Interval Estimates 7.3 Estimating the Population Mean 7.4 Estimating the Population Standard Deviation 7.5 Determining the Sample Size 7.6 Estimating the Population Proportion	Exercises: pg. 392 #1 pg. 398 #1 pg. 404 #1 pg. 410 #1
7.7 Minitab Application	Assignment
Linear Regression and Correlation	Pgs. 467-511
8.1 Introduction 8.2 Scatter Diagram 8.3 The Coefficient of Correlation 8.4 The Reliability of r 8.5 Linear Regression 8.6 The Method of Least Squares 8.7 The Standard Error of Estimate 8.8 Prediction Intervals	Exercises: pg. 494 #1
8.9 Minitab Application	Assignment

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V. METHOD OF EVALUATION:

As per the Mathematics Department Evaluation Guidelines distributed separately.

Periodic tests and daily assignments based on material in the course outline will be given during the semester. A final exam and a make-up test will be given at the discretion of the professor.

The final mark will be based on the results of several unit tests and Minitao assignments and will be determined using the following weightings:

Unit Tests	70%
Minitab Assignments	15%
Minitab Test	15%
	100%

Grading:

A+ = 90-100%
A = 80- 89%
B = 65- 79%
C = 55- 64%
R = 0- 54%

A passing grade will be based on a minimum average grade of 55%. Students obtaining an average grade of 45-55% may be allowed to write a supplementary examination; for eligibility, please consult the Mathematics Department Evaluation Guidelines.

VI. REQUIRED STUDENT RESOURCES:

1. Text: "Statistics and Probability in Modern Life", 4th Edition, Newmark. (Saunders Publishing)

2. Calculator: Recommended: Sharp Scientific Calculator EL-531H

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VII. ADDITIONAL RESOURCE MATERIALS AVAILABLE IN THE COLLEGE LIBRARY BOOK SECTION:

1. College Library:

   The library has many comparable textbooks which may give you another perspective on a particular topic.

   Under the Library of Congress Catalogue System section: QA

2. The Learning Assistance Center:

   The Learning Assistance Center (L.A.C.) has a PEER TUTORIAL system in place for those who feel they need tutoring. The L.A.C. also has some Computer based Math tutorial programs available to the student.

VIII. SPECIAL NOTES:

Students with special needs (e.g. physical limitations, visual impairments, hearing impairments, learning disabilities) are encouraged to discuss required accommodations confidentially with the instructor or with the SPECIAL NEEDS COUNSELLOR.

Your instructor reserves the right to modify the course as he/she deems necessary to meet the needs of students.