SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

STATISTICS
COURSE TITLE:

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

FORESTRY
PROGRAM:

J. McGAULEY
AUTHOR:

DATE: JULY 1992   **PREVIOUS OUTLINE DATED:** JAN 1992

APPROVED: *EAN   July/6/?2-
DATE

STATISTICS   MTH 255-4

COURSE NAME   **COURSE NUMBER**

TOTAL CREDIT HOURS: 64

PREREQUISITE(S): MTH 126

I. PHILOSOPHY/GOALS:

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 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)

STATISTICS   MTH 255-4

COURSE NAME   **COURSE NUMBER**

IV. LEARNING ACTIVITIES: **REQUIRED RESOURCES:**

1.0 <u>The Nature of Statistics</u>   Pgs. 3-9

    1.1 Introduction
    1.2 Choice of Actions
    1.3 Statistics in Modern
        Life

2.0 <u>Descriptive Statistics</u>   Pgs. 23-63

    2.1 Introduction   Exercises: pg. 32 #1, 2,
    2.2 Frequency Distribution   pg. 56 #1-10
    2.3 Other Graphical
        Techniques
    2.4 Minitab Application   Assignment

3.0 <u>Measures of Location and</u>   Pgs. 89-114
       Variation   124-141

    3,.1 Introduction   Exercises pg. 106 #1, 2,
    3..2 Summation Notation   8, 10, 11
    3..3 Measures of Central   pg. 118 #1-6, 8, 9
        Tendency-   pg. 136 #1-4, 7, 8
    3..4 Measures of Variation
    3..5 Percentiles and [1]
        Percentile Rank
    3..6 Z - Scores
    3.7 Minitab Application   Assignment

4.0 <u>Probability</u>   Pgs. 151-201

    4.1 Introduction   Exercises: pg. 164 #1-5
    4.2 Definition of   pg. 172 #1-11
        Probability   pg. 181 #1-17
    4.3 Counting Problems   pg. 193 #1-12
    4.4 Permutations   pg. 201 #7-10
    4.5 Combinations
    4.6 Odds and Mathematical
        Expectation

STATISTICS   MTH 255-4

COURSE NAME   **COURSE NUMBER**

IV.   LEARNING ACTIVITIES:(cont'd)   **REQUIRED RESOURCES:**

5.0 <u>Probability Distributions</u>   Pgs. 257-265, 278-301,
                                               318-344

     5.1 Introduction   pq. 290 #1-15
     5.2 Discrete'Probability   pg- 296 #1-7
          Functions   pq. 300 #1-9
     5.3 The Binomial   pg. 330 #1-12
          Distribution   pg. 335 #1-12
     5.4 The Mean and Standard   pg. 343 #1-9
          Deviation of the
          Binomial
     5.5 The Poisson
          Distribution
     5.6 The Standard Normal
          Curve
     5.7 The Normal
          Distribution
     5.8 Some Applications of
          the Normal
          Distribution
     5.9 The Normal Curve
          Approximation to the
          Binomial Distribution
     5.10 Minitab Application   Assignment

6.0 <u>Sampling</u>   Pgs. 353-376

     6.1 Introduction   Exercises: pg. 357 #1-5
     6.2 Random Samples   pg. 369 #1-4
     6.3 Distribution of   pg. 376 #1-10
          Sampling Means
     6.4 The Central Limit
          Theorem
     6.5 Applications of the
          Central Limit Theorem
     6.6 Minitab Application   Assignment

A IV.   LEARNING ACTIVITIES:(cont'd)   REQUIRED RESOURCES:

7.0 <u>Estimation</u>   Pages 386-412

   7.1 Introduction   Exercises: pg. 392 #1-8
   7.2 Point and Interval   pg. 398 #1-9
      Estimates   pg. 404 #1-10
   7.3 Estimating the   pg. 410 #1-9
      Population Mean
   7.4 Estimating the
      Population Standard
      Deviation
   7.5 Determining the Sample
      Size
   7.6 Estimating the
      Population Proportion
   7.7 Minitab Application   Assignment

8.0 <u>Linear Regression and</u>   Pgs. 467-511
      <u>Correlation</u>

   8.1 Introduction   Exercises: pg. 494 #1-4
   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   Assignment
   8.9 Minitab Application

STATISTICS   MTH 255-4

COURSE NAME   **COURSE NUMBER**

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
Minitab 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-531P

STATISTICS   MTH 255-4

COURSE NAME   **COURSE NUMBER**

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 <u>PEER TUTORIAL</u> 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.