

SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY
SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

Course Title: INTTRODUCTORY STATISTICS
Code No. MTH 255-4
Program: PULP & PAPER ENGINEERING TECHNOLOGY
Semester: IV
Date: MAY 13, 1985
Author: E.A.N. SUGDEN

New:

Revision:

APPROVED


Chairperson

Date y

PULP & PAPER ENGINEERING TECHNOLOGY
WATER RESOURCES ENGINEERING TECHNOLOGY

MTH 255-4
INTRODUCTORY STATISTICS

CALENDAR DESCRIPTION

INTRODUCTORY STATISTICS

MTH 255-4

Course Name

Course Number

PHILOSOPHY/GOALS;

The course is designed to familiarize students in the Pulp & paper and in the Water Resources Engineering Technology programs with basic statistical methods that will be used in their program. wherever possible examples will be included from relevant industrial sources.

On completing the course, students will be able to present data and summaries of data in tables, histograms, pie charts, etc. They will be able to compute means, medians and modes from grouped and ungrouped data. Students will be able to determine the probability of events, calculate the mathematical expectation, and calculate the mean and standard deviation of probability distributions. They will be able to understand normal distribution and to make practical application of it. The student will be able to perform, interpret and evaluate simple linear regressions of Y on X.

METHOD OF ASSESSMENT (GRADING METHOD):

Students will be graded on the basis of their performance in at least 4 tests to be given at appropriate intervals during the semester. In addition and at the instructor's discretion, a number of problem sets will be assigned. The marks to be given for each of the tests and assignments will be communicated to the students within the first week of the semester. The final grade for the course will be based entirely on the total of the marks. Letter grades will be assigned as follows:

- A - > 79%
- B - 69-79%
- C - 59-69%
- R - -59%

Students with an R standing and who have at least 50% as their final mark will be permitted to write a supplemental test.

TEXTBOOK(S):

Newmark, J., statistics and Probability in Modern Life, 3rd. Edition, Saunders, Philadelphia, 1983.

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OBJECTIVES;

On completion of the course the student will be able to:

- Construct frequency tables from raw data
- Sketch the graphs resulting from these tables
- Sketch the bar graphs, pie charts, ogives, etc. from data
- Determine arithmetic mean and weighted mean from raw data and from frequency tables
- Determine the probability of events
- Calculate the mathematical expectation
- Understand and use the addition and multiplication rules of probability
- Calculate the mean and standard deviation of probability distributions
- Understand normal distribution
- Make practical use of the normal distribution
- Understand and calculate random sample and sample size
- Calculate standard error
- Use Central Limit Theorem and standard error of the mean
- Calculate regression equations for Y on X
- Calculate and interpret the coefficient of correlation and sketch scatter diagrams

REFERENCES:

- Freund, Modern Elementary Statistics
- Snedecor & Cochran, Statistical Methods
- Dixon & Massey, Introduction to Statistical Analysis
- Sanders, Murph & Eng. Statistics, A Fresh Approach
- C.P.P.A., Statistical Methods Manual

NATURE OF PRESENTATION:

This is a theory course consisting of 4 separate meetings a week. Topic will be taught, discussed and examples of problems worked on in class as assignments.

COURSE TOPICS;

<u>Week</u>	<u>Topics Covered</u>
1	INTRODUCTION TO STATISTICS (Chapter 1) <ul style="list-style-type: none">- Definition, history and subdivisions of statistics- Course outline, evaluation
2	FREQUENCY TABLES & GRAPHS (Chapter 2) <ul style="list-style-type: none">- Collection of data- Population and samples- Construction of frequency tables, histograms, frequency polygons, curves and ogives
3,4	DESCRIPTIVE MEASURES (Chapter 3) <ul style="list-style-type: none">- Measures of central tendency- Arithmetic mean- Weighted mean- Median and mode
5,6	MEASURE OF VARIABILITY (Chapter 3) <ul style="list-style-type: none">- Meaning of dispersion, range, variance and standard deviation
7,8	REGRESSION AND CORRELATION (Chapter 11) <ul style="list-style-type: none">- Scatter diagrams- Estimation using regression line- Correlation analysis- Use of regression and correlation analysis
9	PROBABILITY (Chapters 4 & 5) <ul style="list-style-type: none">- Two types of probability- Rule of addition- Rule of multiplication
10	PROBABILITY DISTRIBUTION (Chapter 6) <ul style="list-style-type: none">- Meaning of probability- Distribution- Types of distribution- Random variable
11	NORMAL DISTRIBUTION (Chapter 7) <ul style="list-style-type: none">- Characteristics- Area under the curve- Standard normal curve and its application
12	SAMPLING (Chapter 8) <ul style="list-style-type: none">- Purpose and definition- Different types of sampling- Sampling distribution- Standard error

- 13 ESTIMATION (Chapter 9)
- Point and interval estimation
 - Criteria of a good estimator
 - Large and small sample estimation for mean and proportion
 - Determination of sample testing
- 15,16 ANALYSIS OF VARIANCE (ANOVA) & REVIEW
- Fundamentals of ANOVA
 - Uses and limitations of ANOVA