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SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

COURSE TITLE: STATISTICS

CODE NO.: MTH 270-4 **SEMESTER:** IV

PROGRAM: ARCHITECTURAL, CIVIL ENG. & MECHANICAL TECHN.

AUTHOR: W.O MAKI

DATE: JUNE 1991 **PREVIOUS OUTLINE DATED:** JUNE 1988

APPROVED: **DEAN** **D#TE** £??/r

STATISTICS — MTH 270-4

Course Name — Course Number

TOTAL CREDIT HOURS: 64

PREREQUISITES): MTH 119 OR MTH 120

I. PHILOSOPHY/GOALS:

Statistical thinking and introduction. Summarizing data and using frequency tables, mean, median and mode, probability and probability distributions, normal, bionomial and Poisson. Regression and correlation analysis. Sampling methods and sampling distribution.

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. Introduction - 1 period
2. Describe Statistics - 5 periods
3. Measures of Location and Variation - 8 periods
4. Probability - 8 periods
5. Probability Distributions - 12 periods
6. Sampling - 5 periods
7. Estimation - 8 periods
8. Linear Regression and Correlation - 8 periods

STATISTICS — Course Name

MTH 270-4 — Course Number

IV. LEARNING ACTIVITIES:	**REQUIRED RESOURCES:**
1.0 INTRODUCTION Upon successful completion of this unit the student will be able to:	Text: Ch. 1 Read pp. 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: Ch. 2 Questions: 1 - 12 p. 24 13 - 20 pp. 28 30 21 - 24 pp. 37 39 pp. 42 43
2.1 Understand nominal, ordinal, interval and ratio measurement scales	
2.2 Understand distinction between qualitative and quantitative data	
2.3 Construct and interpret frequency tables, bar graphs and pie charts	
2.4 Construct and interpret frequency distributions, histograms, frequency polygons and ogives	

STATISTICS — Course Name

MTH 270-4 — Course Number

IV. LEARNING ACTIVITIES:

REQUIRED RESOURCES:

3.0 MEASURES OF LOCATION AND VARIATION

Upon successful completion of this unit the student will be able to:

3.1 Compute and interpret mean, median and mode for a set of data

3.2 Compute range, variance, standard deviation and coefficient of variation for grouped and ungrouped data

3.3 Use Z-scores, Chebyshes Theorem and empirical rule

Text: Ch,

Questions:

1 - 8	pp. 66 - 67
9 - 14	p. 74
15 - 18	pp. 78 & 79
19 - 22	pp. 82 & 83

4.0 PROBABILITY

Upon successful completion of this unit the student will be able to:

4.1 Compute the probability of an event from outcomes

4.2 Use rules of probability to compute the probability of events

4.3 Understand experiment, sample space, mutually exclusive events

Text Ch,

Questions:

2 - 13	pp. 105	107
14 - 22	pp. 110	111
23 - 31	pp. 117	118
32 - 39	pp. 124	125

STATISTICS — Course Name

MTH 270-4 — Course Number

IV. LEARNING ACTIVITIES:

REQUIRED RESOURCES:

5.0 PROBABILITY DISTRIBUTIONS

Upon successful completion of this unit the student will be able to:

5.1 Understand random variables and their use

5.2 Understand the nature of probability distribution

5.3 Use and interpret Binomial distribution

5.4 Use and interpret Poisson distribution

5.5 Use and interpret Normal distribution

Text; Ch.

Questions
1 - 4 pp. 142 & 143
5 - 12 pp. 146 & 147
22 - 39 pp. 163 - 165
40 - 45 p. 168

Text: Ch. 6

Question:
8 - 24 pp. 197 199

6.0 SAMPLING AND SAMPLING DISTRIBUTIONS

Upon successful completion of this unit the student will be able to:

6.1 Select random samples

6.2 Understand characteristics and use of sampling distributions

6.3 Understand Central Limit Theorem

6.4 Use other sampling techniques

Text: Ch,

Questions:
5 - 16 pp. 224 - 225
30 - 36 pp. 238 - 239
37 - 48 pp. 241 - 243

Complete reading pp. 243 - 246

STATISTICS — MTH 270-4

Course Name — Course Number

IV. LEARNING ACTIVITIES:	REQUIRED **RESOURCES:**
7.0 ESTIMATION Upon successful completion of this unit the student will be able to:	Text: Ch. 8 Questions: 1 - 4 pp. 258 5 - 22 pp. 265 - 266 46 - 56 pp. 291 - 292
7.1 Construct and interpret interval estimates of population mean	
7.2 Understand confidence level	
7.3 Understand the concept of sampling error	
1^7.4 Determine sample size	
7.5 Understand t-distribution	
8.0 REGRESSION AND CORRELATION Upon successful completion of this unit the student will be able to:	Text: Ch. 13 Questions: 1 - 8 pp. 454 - 455 37 - 43 pp. 487 - 498
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	
4 Compute and interpret sample correlation coefficient	

STATISTICS	MTH 270-4
Course Name	Course Number

V. EVALUATION METHODS: (INCLUDES ASSIGNMENTS, ATTENDANCE REQUIREMENTS ETC.)

4 TESTS :

- length and content explained by instructor
- weighting according to instructor
- a letter grade of A+, A, B, C or R explained on handout used for evaluation
- attendance is expected

VI. REQUIRED STUDENT RESOURCES

Introduction to Statistics - 2nd ed.
Concepts & Applications
- Anderson, Sweeney & Williams

VII. 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.

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