

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

COURSE OUTLINE

COURSE TITLE: STATISTICS
CODE NO.: MTH 276-4 SEMESTER: IV
PROGRAM: BUSINESS (ACCOUNTING;
AUTHOR: W.O. MAKI
DATE: SEPTEMBER 1993 PREVIOUS OUTLINE DATED: JULY 1992

APPROVED:



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STATISTICS

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TOTAL CREDIT HOURS: 64

PREREQUISITE(S): MTH 262

I. PHILOSOPHY/GOALS:

The student will study confidence limits, hypothesis testing, Chi-square and analysis of variance and their applications to business, regression and correlation.

The goals of this course are, first to show that statistics does play a most important role in the development and understanding of the various fields of business and, secondly to ensure that students acquire the statistical, mathematical and critical thinking skills necessary to analyze and solve business problems.

II. TERMINAL PERFORMANCE OBJECTIVES:

After studying each of the following topics the student should be able to perform the objectives that follow:

Topic 1: Estimation

1. Understand the concept of point and interval estimates.
2. Understand the concept of confidence limits and confidence levels.
3. Calculate interval estimates of the mean from large samples.
4. Calculate interval estimates of the proportion from large samples.
5. Calculate interval estimates using the t-distribution.
6. Determine the sample size in estimation.

Topic 2: Hypothesis Testing

1. Understand the basic concepts to testing procedures.
2. Conduct tests of hypotheses for the population mean.
3. Conduct tests of hypothesis for the population proportion.
4. Conduct tests of hypotheses for differences between means and proportions.

Topic 3: Chi-Square and Analysis of Variance

1. Use chi-square as a test of independence.
2. Use chi-square as a test of goodness of fit.
3. Use analysis of variance.
4. Make inferences about a population variance.
5. Make inferences about two population variances.

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II. TERMINAL PERFORMANCE OBJECTIVES:

Topic 4: Regression and Correlation

1. Estimate the linear relationship between two variables using the regression line.
2. Use the method of least squares to obtain the regressions equation.
3. Calculate the coefficient of correlation and understand correlation analysis.
4. Make inferences about population parameters.

III. TOPICS TO BE COVERED:

TIME FRAME:

- | | |
|--|------------|
| 1. Estimation - Internal & Point Estimates | 10 periods |
| 2. Hypothesis Testing | 20 periods |
| 3. Chi-square and Analysis of Variance | 20 periods |
| 4. Regression and Correlation | 10 periods |

IV. LEARNING ACTIVITIES:

REQUIRED RESOURCES!

- | | | | | |
|---|-------------------------------|----------------|-------------------|-------------------------|
| 1.0 ESTIMATION | Text: Ch. | | | |
| | Questions: | | | |
| 1.1 Point estimate | 7 - 11: | P- | 306 | |
| 1.2 Interval estimate | 12 - 18 | PP | 309 | • 310 |
| 1.3 Confidence intervals from large samples & proporitons | 19 - 26
27 - 34
35 - 43 | PP
PP
PP | 312
315
319 | • 313
• 316
• 320 |
| 1.4 T-distribution & interval estimates | 44 - 50 | P- | 325 | • 326 |
| 1.5 Sample size | | | | |
| 2.0 HYPOTHESIS TESTING | Text: Ch, | | | |
| | Questions | | | |
| 2.1 Basic concepts | 13 25 | pp. | 356 | 357 |
| 2.2 Testing of means | 26 33 | pp. | 361 | 362 |
| 2.3 Testing of proportions | 38 43 | pp, | 369 | |
| 2.4 Testing for differences between means and proportions | 44 51
52 69 | pp.
pp. | 372
391 | 373
393 |

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3.0	CHI-SQUARE AND ANALYSIS OF VARIANCE	Text: Ch. 9 Questions		
3.1	Chi-square test for independence	1 - 5 :	pp. 416 -	417
3.2	Chi-square test for goodness of fit	6 - 12: 14 - 24	pp. 428 - pp. 434 -	429 435
3.3	Analysis of variance	25 - 38	pp. 447 -	450
3.4	Inferences about population variance	39 - 47	pp. 455 -	456
3.5	Inferences about two population variances	48 - 54	pp. 460 -	461
4.0	REGRESSION AND CORRELATION	Text: Ch. 10		
4.1	Estimation using regression line	Questions;		
4.2	Estimation using regression equation	1 - 12: 13 - 24:	pp. 484 pp. 502	485 505
4.3	Correlation analysis and standard error	25 - 32: 33 - 40:	pp. 512 pp. 517	513 518
4.4	Using regression and correlation			
5.0	PROBABILITY DISTRIBUTIONS	Text: Questions	Ch. 5	
5.1	Binomial Distribution	18 - 26	pp. 212	213
5.2	Poisson Distribution	27 - 36	pp. 218	219
5.3	Normal Distribution	37 - 50	pp. 232	233
6.0	SAMPLING AND SAMPLING DISTRIBUTION	Text: Questions:	Ch. 6	
6.1	Random sampling & others	8 - 18:	pp. 265	266
6.2	Sampling distributions & Central Limit Theorem	19 - 26 27 - 39	pp. 268 pp. 278	269 279
6.3	Standard error & sample size	40 - 49	pp. 282	283

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

1. Four tests per semester.
2. Final grade is a weighted average of these tests. Test questions will be of near equal difficulty to questions assigned in the exercises.
3. Attendance and grading policy are supplied in the Mathematics Department Evaluation Guideline handout.

Grading: A+ = 90 - 100%
 A = 80 - 89%
 B = 65 - 79%
 C = 55 - 64%
 R = Repeat

VI. REQUIRED STUDENT RESOURCES:

1. Text - Statistics for Management - 5th ed. Levin and Rubin. Prentice-Hall
2. Calculator: Recommended; SHARP Scientific Calculator EL-531G

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.