SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

Course Title: COMPUTER APPLICATIONS

Code No.: FOR 356-4

Program: FISH & WILDLIFE TECHNOLOGY

Semester: FIVE

Date: AUGUST , 1986

Author: VALERIE WALKER

New: ___X___   Revision: _____

APPROVED: _____   _____
Chairperson   Date

CALENDAR DESCRIPTION

COMPUTER APPLICATIONS	FOR -356-4
Course Name	Course Number

PHILOSOPHY/GOALS: This course reviews basic descriptive statistics, their uses and limitations, followed by problem solving, using the binomial, normal and t-disributions. In addition, the use of confidence limits in hypothesis testing, sample size and the effect of coding is considered. Emphasis is placed on solving typical problems in the student's own specialty using statistical packages and contemporary software.

METHOD OF ASSESSMENT (GRADING METHOD):

TERM TESTS	60%
ASSIGNMENTS	40%
	100%

TEXTBOOK(S):

Schefler, William C., <u>Statistics for the Biological Sciences</u>, 1979. Addison-Wesley Publishing Company, Don Mills, Ontario.

BIOMETRICS - FOR 301-4

COURSE OUTLINE

		HOURS
		NO. OF ~~WEEKS~~
UNIT 1:	Introduction - the misuse of statistics - types of biological data - frequency distributions - accuracy and significant figures	2
UNIT 2:	Populations and Samples - populations - samples from populations - random sampling - parameters and statistics	2
UNIT 3:	Measure of Central Tendency - aritmetic mean - median - mode - weighted mean - geometric mean - effect of coding data	4
UNIT 4:	Measures of Dispersion and Variability - range - mean deviation - variance - standard deviation - coefficient of variation - indices of diversity - effect of coding data	8
UNIT 5:	Testing for Goodness of Fit - chi-square goodness of fit - statistical significance - errors in hypothesis testing - bias	4
UNIT 6:	Contingency Tables - chi-squre analysis - statistical significance - errors in hypothesis testing - bias	4
UNIT 7:	Normal Distribution - symmetry and kurtosis - proportions of a normal distribution - distribution of means - assessing departures from normality	4

UNIT 8: **One-Sample** Hypotheses   8
- two-tailed hypotheses concerning the mean
- one-tailed hypotheses concerning the mean
- confidence limits
- variability about the mean
- sample size and estimation of the population mean
- confidence limits for the population variance
- hypotheses concerning the variance
- effect of coding

UNIT 9: Two-Sample Hypotheses   8
- testing for differences between two variances
- confidence interval for variance ratio
- testing for differences between two means
- confidence interval for means
- sample size and estimation of difference between two population means
- power and sample size
- nonparametric statistical methods
- effect of coding
- testing from differences between two diversity indices

UNIT 10: Paired-Sample Hypotheses   8
- paired sample t test
- confidence limits for population mean difference
- power and sample size in paired-sample testing of means
- paired-sample testing by ranks

UNIT 11: Multisample Hypotheses: The Analysis of Variance   8
- single factor analysis of variance
- confidence limits for means
- power and sample size
- nonparametric ANOVA
- testing for difference between several medians
- effect of coding
- homogeneity of variances

UNIT 12: Multiple Comparisons   4
- Tukey test
- Newman-Keuls test
- confidence intervals
- Scheff's multiple contrasts
- nonparametric multiple comparisons
- nonparametric multiple contrasts
- multiple comparisons among medians
- multiple comparisions among variances

TERM TESTS

Term tests will be written for a total value of 60% of the course grade. Term tests are accumulative.

HOMEWORK ASSIGNMENTS

Problems in the form of homework assignments will constitute the remaining 40% of the course grade. Certain of these problems will be solved using the Minitab data analysis system. Late assignments will be deducted 10% per day for every day late.

Students failing to submit homework assignments will receive an "I" for that assignment. Students with outstanding homework assignments at the end of the semester will be required to submit those assignments, although they will be valued at zero. Failure to submit outstanding assignments will result in an "I" grade for the course regardless of term test results.

Students failing two or more term tests will be required to write a final exam on the entire course content during the rewrite period. A passing grade is 60%.

Students receiving a grade of less than 60% based on term tests and homework assignments will be required to rewrite the unit test on which they performed the poorest during the rewrite period.

Students with a final grade of less 45% will receive an automatic R grade for the course, with no opportunity to rewrite a final exam.

EQUIPMENT :

An electronic calculator is mandatory for classroom and test purposes.

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REFERENCE TEXTS:

Alder, H.L. and E.B. Roessler, 1972. Introduction to Probability and Statistics, Freeman, San Francisco, 373 p.

Finney, D.J., 1966. Experimental Design and Its Statistical Basis, Univ. Chicago Press, Chicago, 169 p.

Giles, R.H. (Editor), 1971. Wildlife Management Techniques, The Wildlife Society, Washington, 633 p.

Levin, R.I. and D.S. Rubin, 1980. Applied Elementary Statistics, Prentice-Hall, Inc., Englewood Cliffs, N.J. 07632.

Ricker, W.E., 1968. Methods for Assessment of Fish Production in Fresh Water, IBP Handbook No. 3, Blackwell, Oxford 313 p.

Sanders, D.H., A.F. Murph and R.J. Eng, 1980. Statistics: A Fresh Approach, McGraw-Hill Book Company, Toronto.

Snedecor, G.W. and W.G. Cochran, 1967. Statistical Methods, 6th Edition, Iowa State University Press, Ames, 593 p.

Sokal, R.R. and F.J. Rohlf, 1969. Biometry, the Principles and Practice of Statistics in Biological Research, Freeman, San Francisco, 776 p.