

Hong Kong Baptist University
Faculty of Science
Department of Mathematics

Title (Units): STAT 1620 Computer Aided Statistics (3,3,0)

Course Aims: This course deals with the statistical analysis using commercial grade computer software. It provides statistical concepts and methods so that the students learn how to make correct statistical inference by using appropriate methods.

Antirequisite: BUS 1200 Statistics for Business, STAT 1210 Probability and Statistics, or STAT 1131 Statistical Methods and Theory I

Prepared by: Liu K I

Learning Outcomes (LOs):

Upon successful completion of this course, students should be:

No.	Learning Outcomes (LOs)
	Knowledge
1	Able to understand what statistics and probability are
2	Able to know different ways to summarize data
3	Able to understand some common distributions
4	Able to understand the statistical inference in different situations
5	Able to know the organization of data in SPSS
6	Able to understand the information from SPSS
	Skills
7	Able to calculate the probabilities in different situations
8	Able to present the data in different formats using SPSS
9	Able to carry out statistical inferences using SPSS
10	Able to interpret the outputs of SPSS correctly
	Attitude
11	Aware of the importance of computer-aided statistics in many branches of science

Assessment:

No.	Assessment Methods	Weighting	Remarks
1	Continuous Assessment	20%	Continuous Assessment are designed to measure how well the students have learned the operations of summarizing data and statistical inference using SPSS.
2	Midterm Test	20%	Midterm Test is designed to measure how well the students have learned the basic concepts in statistics and probability, calculation of probability and interpretation of SPSS output.
3	Final Examination	60%	Final Examination questions are designed to see how far students have achieved their intended learning outcomes. The students solve the examination problems by using computers. Questions will primarily be analysis and skills based to assess the student's ability in presenting the data to SPSS, carrying out the statistical inference and interpretation of SPSS output.

Learning Outcomes and Weighting:

Contents	LO No.	Teaching (in hours)
I Introduction to SPSS	5,6	3
II Summarizing Data	1,2,8	6
III Introduction to Probability	1,3,7	4
IV Inference on Population Proportion	3-6,9-11	6
V Inference on Population Mean and Variance	3-6,9-11	5
VI Comparing Means and Variances of Normal Populations	3-6,9-11	8
VII Regression Analysis	3-6,9-11	8

Textbook: Milton and Arnold, Introduction to Probability and Statistics: Principles and Applications for Engineering and the Computing Sciences, McGraw-Hill, 2002.

References: Pallant, SPSS Survival Manual, 4th Ed., McGraw Hill, 2010.
McClave and Sincich, Statistics, 10th Ed., Pearson, Prentice Hall, 2006.
Kinnear and Gray, SPSS 14 Made Simple, Psychology Press, 2006.

Software: SPSS

Course Contents in Outline:

	<u>Topics</u>	<u>Hours</u>
I.	Introduction to SPSS A. File commands in SPSS B. Data entry and definition C. Transforming data and creating new variables	3
II.	Summarizing Data A. Graphical descriptions B. Tabular presentations C. Statistics as numerical summaries of data	6
III.	Introduction to Probability A. Probability as idealized proportion B. Simple rules for probability C. Random variable and distribution D. Mean and variance E. Sampling distribution and central limit theorem	4
IV.	Inference on Population Proportion A. Binomial distribution for binary data B. Estimation and confidence interval C. Test for hypotheses and p-values D. Comparing two proportions	6
V.	Inference on Population Mean and Variance A. Justifications for using normal distribution for continuous data B. Inference on the mean C. Inference on the variance	5
VI.	Comparing Means and Variances of Normal Populations A. Comparing two means with common variance B. Testing the equality of two variances C. Comparing two means with unequal variances D. Comparison of two means using paired observations E. Comparing several means with common variance: ANOVA F. Testing the equality of several variances G. Multiple comparisons of means after ANOVA	8
VI.	Regression Analysis A. Multiple linear regression B. Regression with categorical predictors	8