

LAST REVIEW: 2009-10
2008-2009

NEXT REVIEW: 2014-15
2013-2014

STATUS: A
A

COURSE TITLE: Quantitative Methods in Business

COMMON COURSE NUMBER: QMB2100

CREDIT HOURS: 3

CONTACT HOUR BREAKDOWN
(per 16 week term)

CLOCK HOURS:
(Voc. Course ONLY)

Lecture: **48** Lab:
Clinic: Other:

PREREQUISITE(S): None

COREQUISITE(S): None

PRE/COREQUISITE(S):

COURSE DESCRIPTION:

This course applies quantitative methods to business problems with emphasis on learning to select the appropriate problem solving method, applying the chosen method, and interpreting the solution. The use of quantitative methods in managerial decision making is a continuous focus of this course. Management problems are used and written managerial recommendations are required.

UNIT TITLES

1. Quantitative Applications in Business and Economics
2. Descriptive Quantitative Tools and Approaches
3. Introduction to Probability
4. Sampling and Sampling Distributions
5. Business Hypothesis Testing
6. Experimental Design and Analysis of Variance
7. Simple Linear Regression and Correlations in Business
8. Decision Analysis in Business, Economics, Accounting, Marketing and Management

EVALUATION:

Evaluation may include but is not limited to the following:

Exams, Quizzes, Presentations, Portfolios, Discussions, Class Participation, Attendance, Projects, Co-ops, Practicum, Internships, Externships, and Research Reports.

**** Complete the following only if course is seeking general education status ****

GENERAL EDUCATION Competencies and Skills *:

Please highlight in **green** font all Competencies/Skills from the list below that apply to this course. In the box to the right of the Competency/Skill, enter all specific learning outcome numbers (i.e. 1.1, 2.7, 5.12) that apply.

1. Read with critical comprehension	
2. Speak and listen effectively	
3. Write clearly and coherently	
4. Think creatively, logically, critically, and reflectively (analyze, synthesize, apply, and evaluate)	
5. Demonstrate and apply literacy in its various forms: (highlight in green ALL that apply) (1. technological, 2. informational, 3. mathematical, 4. scientific, 5. cultural, 6. historical, 7. aesthetic and/or 8. environmental)	
6. Apply problem solving techniques to real-world experiences	
7. Apply methods of scientific inquiry	
8. Demonstrate an understanding of the physical and biological environment and how it is impacted by human beings	
9. Demonstrate an understanding of and appreciation for human diversities and commonalities	
10. Collaborate with others to achieve common goals.	
11. Research, synthesize and produce original work	
12. Practice ethical behavior	
13. Demonstrate self-direction and self motivation	
14. Assume responsibility for and understand the impact of personal behaviors on self and society	
15. Contribute to the welfare of the community	

* General Education Competencies and Skills endorsed by '05-'06 General Education Task Force

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UNITS

Unit 1. Quantitative Application in Business Economics

General Outcome:

- 1.0 The students should be able to explain the role of quantitative tools in business in our society and analyze the various quantitative methods.**

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 1.1 Explain the rationale of business quantitative methods in today's society.**
- 1.2 Discuss the importance of quantitative methods and applications in Accounting, Finance, Marketing, Production and Economics.**
- 1.3 Identify the different methods of data presentation.**
- 1.4 Calculate and measure the different scales of quantitative and qualitative data.**
- 1.5 Recognize data collections and procedures, source of data, statistical studies and possible data-acquisition errors.**
- 1.6 Differentiate between descriptive statistics and statistical/quantitative differences.**

Unit 2. Descriptive Quantitative Tools and Approaches

General Outcome:

- 2.0 The students should be able to explain the descriptive quantitative tools and their approaches to the business world.**

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 2.1 Recognize the importance of frequency distributions, summarizing qualitative data by relative frequency distribution, bar graphs and pie charts.**
- 2.2 Summarize qualitative data by frequency distribution, relative frequency distribution, histogram and cumulative relative frequency distribution.**
- 2.3 Explore data analysis by giving business cases.**
- 2.4 Measure the central tendency of both grouped and ungrouped data.**
- 2.5 Recognize the values of the mean as opposed to the median, and mode.**
- 2.6 Synthesize the mean, median and mode into a useful description of a set of data.**
- 2.7 Recognize the procedures involved in the calculation of the measure of central tendency of both grouped and ungrouped data.**
- 2.8 Measure the dispersions of both grouped and ungrouped data.**
- 2.9 Recognize the procedures involved in the calculation of fractiles.**
- 2.10 Measure the values of the standard deviation as opposed to the average deviation.**
- 2.11 Recognize the procedure involved in the calculation of the measures of dispersion of both grouped and ungrouped.**
- 2.12 Measure normal and abnormal distribution with regard to dispersion and skewness.**
- 2.13 Synthesize the average deviation, standard deviation and quartile deviation into a useful description of a set of data.**

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Unit 3. Introduction to Probability

General Outcome:

3.0 The students should be able to use probability knowledge to read and interpret business reports, newspaper and magazine articles and television commentaries.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 3.1 Recognize the concept of probability, discrete probability distribution and continuous probability distribution.**
- 3.2 Recognize basic probability theory.**
- 3.3 Measure permutations and combinations.**
- 3.4 Apply permutations.**
- 3.5 Assign probabilities to experimental outcomes by classical methods.**
- 3.6 Apply combinations.**
- 3.7 Measure the binomial distribution.**
- 3.8 Measure the proportional distribution under the normal curve.**
- 3.9 Measure the proportional distribution under the normal curve.**
- 3.10 Recognize sampling methods for statistical analysis.**
- 3.11 Recognize the Central Limit Theorem.**

Common Course Number: QMB2100

Unit 4. Sampling and Sampling Distribution

General Outcome:

- 4.0 The students should be able to develop and select the appropriate method to solve a business problem to apply the chosen method and to interpret the solutions(s).**

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 4.1 Recognize the procedures used in establishing sample sizes.**
- 4.2 Recognize and apply the techniques known as Null Hypothesis Testing.**
- 4.3 Analyze the difference between tow means, both large and small samples.**
- 4.4 Recognize Type I and Type II errors.**
- 4.5 Analyze the difference between tow proportions, both large and small samples.**

Common Course Number: QMB2100

Unit 5. Hypothesis Testing

General Outcome:

- 5.0 The students should be able to demonstrate to hypothesize the research topic either to accept the decision or to reject the alternatives in the real business world.**

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 5.1 Develop null and alternative hypotheses in decision making.**
- 5.2 Develop research hypotheses and test the validity of assumptions.**
- 5.3 Interpret one-sample hypothesis testing for means and percentages.**
- 5.4 Interpret two-sample hypotheses testing for means and percentages.**

Common Course Number: QMB2100

Unit 6. Experimental Design and Analysis of Variances

General Outcome:

- 6.0 The students should be able to design research topics by using experimental tools and analysis of variances in business related topics.**

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 6.1 Measure business decisions by data collection and design considerations.**
- 6.2 Analyze variance procedure for completely randomized designs.**
- 6.3 Develop ANOVA table.**

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Unit 7. Simple Linear Regression and Correlation in Business

General Outcome:

7.0 The students should be able to demonstrate an understanding of the simple relationship between and among the business decision variable and to interpret the meaning and significance of coefficient of correlation between them.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 7.1 Recognize and understand simple regression analysis.**
- 7.2 Recognize the least square methods.**
- 7.3 Measure and understand regression model and its basic assumptions.**
- 7.4 Measure and understand the coefficient of correlations.**
- 7.5 Test the significance of a coefficient of correlation.**
- 7.6 Interpret co-variance and coefficient of correlation from the regression analysis.**
- 7.7 Develop forecasting models.**

Common Course Number: QMB2100

Unit 8. Decision Analysis in Business, Economics, Accounting, Marketing and Management

General Outcome:

8.0 The students should be able to differentiate quantitative methods used in business decision making, how to select the most appropriate one, how to apply it, and how to make interpretations of the solution.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 8.1 Recognize decision theory as applied to business decisions in the selection of alternatives.**
- 8.2 Develop decision matrix tables with different payoffs.**
- 8.3 Develop decision trees with different payoffs.**
- 8.4 Develop decision making without probabilities.**
- 8.5 Develop decision making with probabilities.**
- 8.6 Develop expected value of sample information.**
- 8.7 Recognize the concepts of linear programming, waiting lines and simulation.**