

# Northern Marianas College

## CURRICULUM ACTION REQUEST

Course: MG303 Business Statistics

Effective Semester / Session: Spring 2026

### Type of Action:

- New
- Modification
- Move to Inactive (Stop Out)
- Cancellation

Course Alpha and Number: MG303

Course Title: Business Statistics

### Reason for initiating, revising, or canceling:

This course guide is being revised to: (1) Align the content of MG303 to similar first courses in business statistics offered elsewhere, (2) Put more emphasis on inferential statistics than what is currently allocated under the course guide, (3) Include Big Data and Business Intelligence tools, and (4) Update the textbook edition.

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Willhelm Maui  07/11/25

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**Proposer** **Date**

Barbara C. Hunter  07/11/25

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**Academic Unit Head** **Date**

  
Adam Walsh 10.28.25

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**Language & Format Review Specialist** **Date**

Yunzi Zhang  07/11/25

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**Academic Council Chair** **Date**

Lorraine C. Maui  07/11/25

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**Dean of Academic Programs & Services** **Date**

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**Course:** MG303 Business Statistics

### 1. Department

School of Business

### 2. Purpose

This course introduces students to the fundamentals of statistics, with a focus on real-world business applications. It begins with descriptive statistics—covering both qualitative and quantitative methods—before progressing to key concepts in inferential statistics. Topics include probability theory, probability distributions, sampling techniques, and hypothesis testing. Students will also explore simple and multiple regression for parameter estimation and predictive modeling to support decision-making. Throughout the course, tools such as Microsoft Excel, Power BI, XLSTAT and/or SPSS are used to organize data, create visualizations, and solve statistical problems. By combining theory with hands-on practice, the course builds a strong foundation for further study in business analytics and data science.

### 3. Description

#### A. Required/Recommended Textbook(s) and Related Materials

Required:

The most recent edition of the following Cengage textbooks included in Cengage Unlimited.

Camm, Jeffrey D, et al. *Modern Business Statistics with Microsoft Excel*. Current Edition, Cengage Learning, Inc., 2025. ISBN: 978-0-357-92988-9

---*Essentials of Statistics for Business & Economics*. Current Edition, Cengage Learning, Inc., 2024. ISBN: 978-0-357-71601-4

---*Data Visualization: Exploring and Explaining with Data*. Current Edition, Cengage Learning, Inc., 2025. ISBN: 978-0-357-92976-6

Recommended: None

#### B. Contact Hours

1. **Lecture:** 3 per week / 45 per semester
2. **Lab:** None
3. **Other:** None

#### C. Credits

1. **Number:** 3
2. **Type:** Regular Degree Credits

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### **D. Catalog Course Description**

This course introduces students to the art and science of statistics as a field of study, with an emphasis on business applications. It begins with concepts and methods in qualitative and quantitative descriptive statistics, then progresses to inferential statistics. Topics include probability theory, various types of probability functions and distributions, sampling methods, sampling distributions, and hypothesis testing. The course also covers simple and multiple regression for parameter estimation and predictive modeling. Statistical software applications—MS Excel, MS Power BI, XLSTAT and/or SPSS—are used for tabulation, graphical display, and equation solving. Prerequisites: MG270 or Instructor's approval and must complete 60 credit hours to maintain junior level. (Offered Spring).

### **E. Degree or Certificate Requirements Met by Course**

A "C" grade or better in this course satisfies a core course requirement in Northern Marianas College Bachelor of Science in Business Management.

### **F. Course Activities and Design**

This course will consist of: class lectures, discussions, reading assignments, online videos, problem solving, homework assignments, tests, quizzes, statistical reports, and presentations. LMS, Cengage MindTap and Microsoft Teams platforms, Zoom, and LLMs will be utilized in this course.

### **4. Course Prerequisite(s); Concurrent Course Enrollment**

Prerequisites: MG270 or Instructor's approval and must complete 60 credit hours to maintain junior level

Concurrent Course Enrollment: None

### **Required English/Mathematics Proficiency Level(s)**

English Placement Level: EN202

Mathematics Placement Level: MA161

### **5. Estimated Cost of Course; Instructional Resources Needed**

Cost to the Student: Tuition for a 3-credit hour course, Cengage Unlimited subscription, lab fees, and statistical software subscription.

Cost to the College: Instructor's salary

Instructional resources needed for this course include: computer classroom, internet access, Microsoft 365, Zoom, statistical software, video editing software, overhead projector, whiteboard, and dry-erase markers.

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### **6. Method of Evaluation**

Student learning will be evaluated based on class participation, quizzes, homework, tests, assignments, reflections, statistical reports, and presentations. NMC's grading and attendance policies will be followed.

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### 7. Course Outline

This is a topical outline and does not necessarily indicate the sequence in which the material will be presented.

- 1.0 Foundations of Business Statistics
  - 1.1 Purpose and scope of statistics in business
  - 1.2 Types of data: qualitative vs. quantitative
  - 1.3 Levels of measurement and data classification
  
- 2.0 Data Collection & Sampling
  - 2.1 Methods of data collection
  - 2.2 Sampling techniques and bias
  - 2.3 Planning and conducting surveys
  
- 3.0 Descriptive Statistics
  - 3.1 Measures of central tendency: mean, median, mode
  - 3.2 Measures of dispersion: range, variance, standard deviation
  - 3.3 Shape of distributions: skewness and kurtosis
  
- 4.0 Data Visualization
  - 4.1 Choosing appropriate chart types: bar, pie, line, scatter
  - 4.2 Using Excel for chart creation and editing
  
- 5.0 Probability Concepts
  - 5.1 Random experiment and sample spaces
  - 5.2 Basic probability rules and counting principles
  - 5.3 Conditional probability and independence
  
- 6.0 Probability Distributions
  - 6.1 Discrete distributions: binomial, Poisson
  - 6.2 Continuous distributions: normal, uniform
  - 6.3 Applications in business contexts
  
- 7.0 Sampling Distributions & the Central Limit Theorem
  - 7.1 Distribution of sample means
  - 7.2 Standard error and its implications
  - 7.3 Role in inferential statistics
  
- 8.0 Estimation & Confidence Intervals
  - 8.1 Point estimates and interval estimates
  - 8.2 Confidence levels and margins of error
  - 8.3 Determine sample size

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- 9.0 Hypothesis Testing
  - 9.1 Formulating null and alternative hypotheses
  - 9.2 Significance levels and p-values
  - 9.3 One-tailed vs. two-tailed tests
  
- 10.0 Comparing Populations
  - 10.1 Independent and paired sample tests
  - 10.2 t-tests and z-tests
  - 10.3 ANOVA
  - 10.4 Applications in business decision-making
  
- 11.0 Correlation & Regression Analysis
  - 11.1 Scatter plots and correlation coefficients
  - 11.2 Simple linear regression
  - 11.3 Interpreting regression output and residuals
  
- 12.0 Decision-Making with Statistics
  - 12.1 Case studies in marketing, finance, and operations
  - 12.2 Using statistical tools for strategic planning
  - 12.3 Ethical considerations in data analysis
  
- 13.0 Statistical Software & Tools
  - 13.1 Excel (intermediate to advanced)
  - 13.2 Introduction to Power BI, XLSTAT, SPSS
  - 13.3 Automating analysis and visualization
  - 13.4 Interpreting software output

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**8. Instructional Goals**

The course will introduce students to:

- 1.0 Statistics as a field of study in general and its applications in business;
- 2.0 Descriptive statistics in tabular and graphical formats for both categorical and numerical data;
- 3.0 The types of probability functions, probability distributions and their applications in business;
- 4.0 Inferential statistics;
- 5.0 The process of selecting a sample; estimating the sample mean, sample proportion, and the sampling distribution;
- 6.0 Estimating the interval when the standard error is known and when standard error is unknown and determining the sample size;
- 7.0 Hypothesis testing: how to set up the null hypothesis and the alternative hypothesis; the two types of errors associated with rejecting/not rejecting the null; and conducting hypothesis tests; and
- 8.0 The simple linear regression and the multiple regression models and their application in business.

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**9. Student Learning Outcomes**

Upon successful completion of this course, students will be able to:

- 1.0 Explain statistical terms, concepts, and procedures;
- 2.0 Use software tools to produce descriptive statistics for categorical and numerical variables of interest in business;
- 3.0 Apply different probability functions and distributions in formulating business solutions;
- 4.0 Use software tools to produce sample statistics and estimate population parameters;
- 5.0 Conduct a hypothesis test, compute appropriate sample statistics, and infer statistical results based on business data;
- 6.0 Calculate simple and multiple regression equations using statistical software; and
- 7.0 Apply the results of regression analysis to gain knowledge necessary to make better business decisions.

**10. Assessment Measures of Student Learning Outcomes**

Assessment of student learning may include, but not be limited to, the following:

- 1.0 Tests & Exams;
- 2.0 Quizzes;
- 3.0 Homework;
- 4.0 Assignment Prompts;
- 5.0 Statistical Reports;
- 6.0 Presentations; and
- 7.0 Reflections.