MIS 301
Summer Term 1—2012
Schedule Number—20195
COURSE INFORMATION

Course Overview

- **Description from the Official Course Catalog:**
  MIS 301. Statistical Analysis for Business (3). Prerequisites: Mathematics 120; Economics 201 or Statistics 119. Approved upper division business major, business minor, or another major approved by the College of Business Administration. Proof of completion of prerequisites required: Copy of transcript. Statistical methods applied to business decision making. (Formerly numbered Information and Decision Systems 301.)

- **Description of the Purpose and Course Content**
  The topics focus on decision-making under uncertainty. More specifically, the course topics include statistical analysis and its role in management, the concepts of total quality management, graphing and graphing techniques, basic characteristics of data (discrete vs. continuous data), levels of measurement (nominal, ordinal, interval, ratio), measures of central tendency, measures of variability, probability theory, various probability distributions (i.e., the normal, binomial, Poisson, and hypergeometric distributions), the shapes of distributions (i.e., moments about the mean, skewness, and kurtosis), Tchebycheff's theorem (including the 2-sigma and 3-sigma rule), standard scores (i.e., z-scores), the central limit theorem, sampling, hypothesis testing, statistical inference, contingency tables, chi-square analysis, z-tests and t-tests with applications for one-sample, two-sample, and paired-differences situations, confidence intervals, analysis of variance, design of experiments, correlation, regression, multiple regression, nonparametric statistics, and process capability analysis, as time permits.

- **Student Learning Outcomes**
  SLO 1: Formulate hypotheses for decision making and research.
  SLO 2: Select appropriate statistical tools for examining and analyzing data.
  SLO 3: Collect and use appropriate data from samples to make inferences about populations.
  SLO 4: Check, validate, and subsequently analyze data using appropriate statistical techniques.
  SLO 5: Apply probability theory in decision making situations.
  SLO 6: Follow ethical practices in the interpretation of data, statistical analyses, and graphics.
  SLO 7: Present statistical results using graphics, text, and the spoken word.

- **Real Life Relevance**
  While the course emphasizes the role of statistics and analytics in business practices, it also focuses on the Plan, Do, Check, Act (PDCA) cycle as a cornerstone to data analytics. The PDCA is relevant to any organization, large or small, national or international, profit or not-for-profit. The course discusses and embraces the PDCA and the seven Categories of the Baldrige process for analyzing organizational practices. Among other concerns, this course emphasizes the following: Ethical issues; public responsibility and citizenship; the impact that an organization has on the external environment and society; the importance of employing ethical business practices; the importance of providing for a valid, reliable, stable, and secure information system; and the practice of Fairness, Accountability, Credibility, Transparency, and a Systematic approach (the FACTS) as students, business professionals, and members of our global society. The statistical aspect of the course emphasizes analytical tools and analyses that serve to integrate the PDCA process, including the development, collection, processing, and use of relevant data (e.g., organizational data, comparative data, benchmark data, and best-practices data). The statistical tools are used to develop and examine trends for organizations, perform comparative analyses, and ultimately improve decision-making. The course
also discusses “lying with statistics,” with an emphasis on recognizing the use of such inappropriate practices by others and in following sound ethical practices when presenting data to others. Numerous examples and court cases will be explored and discussed regarding the applications of statistics in the business world.

- **Relation to Other Courses**
  Ultimately, students will learn how to apply statistical methods to accounting, finance, information systems, management, and marketing.

### Enrollment Information

- **Prerequisites**

  Plus one of the following two courses:

  STAT 119. Elementary Statistics for Business (3 units). Prerequisite: Satisfaction of the Entry-Level Mathematics requirement. Course description: Measures of central tendency and variability, frequency distributions; probability, Bayes theorem, probability distributions (including binomial, hypergeometric, and normal), sampling distributions, confidence intervals, significance testing, regression and correlation.


- **Adding/Dropping Procedures**
  Adding the Course. Depending on enrollment, class size, classroom space, fire codes, and instructor judgment, students may obtain an add code from the instructor. Students will need the schedule number given in the online class schedule and the Add Code given by the instructor. Students then log into the SDSU Web Portal by the schedule adjustment deadline and follow the instructions. An Add Code can be used only once, and it cannot be given to another student. Using an Add Code without the proper authorization from the instructor will result in disciplinary action. Adding the course will only be allowed by permission from the instructor. The priority used to select students to be added is based on the number of units completed and/or transferred into San Diego State University and used by the university to count toward graduation requirements.

  Dropping the Course. To drop a course, students must log on to the registration system in the SDSU Web Portal by the schedule adjustment deadline and follow the instructions given. This is a very important date, and students need to be aware of that date.

### Course Materials

- **Required Materials**
  - *HP-17BII+* financial calculator

  Students are expected to bring both volumes of *Statistical Methods* to class on a regular basis, especially for the first part of the course. Volume 2 will be needed for the second and/or the third examination. However, only Appendix C (the critical tables) and Appendix F (the flowcharts) can be used during those exams. Students cannot borrow a classmate’s copy of Volume 2 during those exams, and students cannot make copies of those two Appendices for the purpose of using them during exams. Further, there will be rules about what can be written in Volume 2 for those exams, as discussed at an appropriate time in the course.
Students are required to have the HP-17BII+ calculator, bring it to every class session, use it during the lectures and discussions, and bring it to examinations. They will be allowed to use this and only this calculator during all tests and/or performance evaluations. If a student forgets to bring the calculator to class on the day of a quiz or test, the student will not be allowed to share someone else’s calculator, including the instructor’s calculator.

- **Recommended Materials**
  Students should have access to Microsoft PowerPoint software as well as Microsoft Excel. They are encouraged to use the most current versions of these software programs. If a student does not have or cannot afford such software, he or she can use the computer lab to download and utilize the software on campus.

- **Other Resources**
  Materials will be made available to students through Blackboard. Such material will include: 1) a more detailed version of the course syllabus; 2) copies of all PowerPoints used in class, including both pptx versions and pdf versions; c) a number of Excel statistical macros created by the instructor; d) practice problems with answers; e) information and guidelines about each examination, posted at an appropriate time; f) any required assignments; and g) other materials as deemed appropriate for the course.

## Course Structure and Conduct

### Style of the Course

- The course will primarily follow the traditional lecture approach, with the encouragement of class participation in discussions whenever appropriate.
- The sequence of topics to be covered will be announced in class. Students will be informed in advance regarding which topics will be covered each class session.
- Students will also know in advance when the examinations will occur and what topics need to be studied in preparation for the examinations.
- It is essential that students set aside adequate time each week for this class. Past experience indicates that working the practice problems alone will not be adequate preparation for success; students must read the materials as well.
- Technology utilized in the course includes the use of the programmable scientific calculator, the use of Excel and PowerPoints, access to Blackboard, etc.

## Course Assessment and Grading

- Approximate Due Dates for any Major Assignments or Exams will be listed in the syllabus. Those dates must remain flexible but will vary no more than one week from the date stated in the syllabus. Students will know the dates of the examinations at least one week before administration, and usually much earlier.
- Quality points are determined by a quantitative conversion of test letter grades to points. The instructor will determine letter grade cutoffs for each of the tests separately and independently. Once letter grades have been determined, the raw scores are discarded and are no longer used as part of the grading process. Instead, the letter grades on each of the tests are converted to quality points. This approach is fair to the students and is used for two reasons: a) Examinations rarely have the same number of questions; and b) this approach gives all students an equal chance to excel on subsequent exams without being penalized due to test length. The quality points are as follows: A+ = 15, A = 14, A− = 13, B+ = 12, B = 11, B− = 10, C+ = 9, C = 8, C− = 7, D+ = 6, D = 5, D− = 4, F+ = 3, F = 2, and F− = 1.
- Students are expected to attend classes on a regular basis for the full length of the class period. Quality points may be added to or deducted from student grades at the discretion of the professor, based on attendance factors. Attendance will be taken on numerous occasions.
- Make-up of exams will be in accordance to university policies, primarily based on fully justified reasons and the severity of the student’s situation on the date of the examination. Acceptable excuses might include illness or accident with documentation from a medical authority, a documented family emergency, or a death in the family.
- The grade of Incomplete will only be granted in accordance with University policy. Students should become familiar with University policy regarding such matters. Generally speaking, an Incomplete is only justified when a small "portion of required course work has not been completed and evaluated in the prescribed time period due to
unforeseen, but fully justified reasons, and that there is still a possibility of earning credit.” Fully justified reasons refer to compelling events beyond the student’s control (e.g., significant documented illness, death in the family, accidents, etc.). A small portion of required course work implies just that—only a very small part of the course has not yet been completed, and this small part is specifically related to the time period of the underlying conditions for the absence. Unless one of these conditions prevails, students are not to request consideration for an Incomplete. Before an Incomplete will be granted, a contract must be signed by both the instructor and the student, specifically stating the compelling circumstances for granting the Incomplete, the necessary work to be completed for removal of the Incomplete, and the date by which the work is to be completed. Documents justifying the granting of an Incomplete are to be attached to the contract. The University Senate Policy allows one calendar year to remove an Incomplete grade.

Other Course Policies

- **Grading Policy**
  The exams will be weighted based on the number of examinations given and a corresponding weighting factor. If two exams are given, the student’s best test score will be weighted by a factor of 1.2 and his/her worst score will be weighted by a factor of 1.0. With the two examination scenario, the two quality points will be summed, and the sum will be divided by 2 to determine the final course grade. However, to receive this generous weighting factor, students must conform to the “conditions for receiving the weighting factor.” This weighting system only applies if the student’s grade on the final examination has not fallen more than six unweighted quality points below the points on his/her first exam. If his/her final exam grade does drop by more than six quality points, each exam will then be equally weighted instead. This approach is necessary to prevent students from “blowing off” the final examination, feeling they have scored adequately on the first examination and can afford to slack off on the final exam.

  Please note that if a student does not take the final exam, that student will automatically receive an F for the course. All students must complete both exams in order to pass the course.