BUSINESS & ECONOMIC STATISTICS I

Prof M. E. Kabay, PhD, CISSP-ISSMP
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Walk in if the office door is open. You are always welcome.

Website: http://www.mekabay.com – see *Courses* and *Methods* in particular

1 Course Description

A course emphasizing the development and presentation of statistical data for business and economic decision-making. Topics will include fundamentals of measurement and counting, practical guidelines for graphical representation, use of statistical functions and graphics in MS-EXCEL, measures of central tendency and of dispersion, sampling distributions, statistical inference procedures, confidence limits, one-way ANOVA, goodness of fit, tests of independence, parametric correlation, and simple linear regression. 3 credit-hours. Estimated workload 12 hours/week. *The DL course is entirely online, but students are encouraged to contact the instructor in his office (Dewey 209) at any time, to use Skype, and to use the phone without hesitation.*

2 Goals and Outcomes

The goal of the course is to provide a foundation for practical work and further study in applied business and economic statistics. By the end of the course, students should be able intelligently and usefully to discuss and apply these concepts at a management level:

- Research methods as used in management
- Descriptive and inferential statistics
- Application of probability theory to administrative decisions
- Hypothesis formation and testing
- Data requirements and the quality of data in statistical procedures
- The role of information technology in quantitative research and statistical analysis
- Ethical considerations and constraints of statistical analysis

By the end of the course, students will be able to

- Determine when quantitative approaches are necessary and appropriate
- Select appropriate methods for their purposes

Using MS-Excel, students will be able to

- Calculate and use descriptive statistics to report findings appropriately
- Apply several inferential statistical tests to practical data
- Analyze and use tools provided by information technology in research
- Use sampling and data collection techniques in conducting research projects
- Present research findings in written, graphic and tabular formats
- Interpret and evaluate quantitative research presented in textbooks, journals, magazine and newspaper articles, and on the Web.

3 Mechanics

3.1 Required Textbook

Kabay, M. E. (2016). *Statistics in Business, Finance, and Information Technology: A Layered Introduction with Excel.* PDF file with color images available free online from NUoodle and the course Website. This text is updated as required, so students should not print it unless they cannot stand reading text on screen. Consult it from the latest version online. Individual chapters are also available via NUoodle. Download as needed from NUoodle links.

3.2 Use of NUoodle platform

- Students are expected to consult NUoodle daily to monitor changes and corrections in the course.
- Weekly homework is downloaded from and uploaded to NUoodle.
- Weekly quizzes, mid-term exams, final exams are taken via NUoodle.

4 Methods of Assessment

4.1 Weekly homework: 60% of final grade

- Students must complete homework assignments throughout the course using the NUoodle system; these assignments are available each Monday or earlier. Students may complete assignments as soon as they wish.
- Graded assignments are evaluated using grading quizzes via NUoodle by the deadline for that week's work. Completed graded assignments must be uploaded via NUoodle by the same deadline.
- The deadline for submission of answers via NUoodle is documented for each assignment or exam.
- Answers to the problem sets will be opened for access 10 minutes after the deadline for completion of grading and uploading of the completed homework files is reached.
- Students are encouraged to rely on the professor's help via Skype or phone at any time.
- For students experiencing difficulties in solving the assigned problems, replacement homework problems are available throughout the course via NUoodle for replacement of lower grades. The replacement homework is typically more difficult and the grading quizzes use half the allotted time of the regular grading quizzes.

4.2 Weekly quizzes: 20% of final grade

- NUoodle for the course includes weekly online quizzes usually due **23:55 on the SUNDAY** of the week assigned for the particular topics. The online quizzes test students on the concepts and techniques studied in that week. The quizzes do *not* generally include calculations requiring Excel but are primarily based on multiple-choice questions for the conceptual components.
- Every quiz has a corresponding list of possible questions provided as a review document.
- Typically each quiz has 15 randomly selected questions from an extensive question bank; students are allowed up to 30 minutes for the quiz or, in special cases where the material is more extensive, more than 15 questions with an average of 2 minutes per question (e.g., 20 question in 40 minutes).
- All quizzes are open book. Any textbook may be used for reference.
- For students experiencing difficulties in their weekly quizzes, additional quizzes are available throughout the course via NUoodle for half-credit contributions to the weekly-quiz grade.

4.3 Open-book mid-term exam: 10% of final grade

The online mid-term exam is open-book, using multiple-choice questions in a NUoodle quiz focusing on the theoretical background, terminology and interpretation of applied statistics and research methods in business, management, computer science and information assurance from the first part of the course as defined in the syllabus. No calculations are required in the mid-term exam.

4.4 Open-book final exam: 10% of final grade

The final exam also an open-book online exam with multiple-choice questions focusing on the theoretical background, terminology and interpretation of applied statistics and research methods in business and management for the entire course. Calculations using Excel functions are required in the final exam. The final exam will open at the end of the course and remain open for several days, as shown in the syllabus.

4.5 Timeliness

This course does not make allowance for late delivery of required results. If students miss a deadline, they can use replacement options and extra-credit submissions for accumulating replacement points for their zeroes.

4.6 Optional (Extra Points)

4.6.1 Replacement homework and exams after mid-term and at end of course: replacement of lower score for each element

For students who have experienced difficulties in their weekly homework, quizzes or mid-term exam, there are opportunities to improve their specific grades by replacing a lower exam grade by a higher. Grades cannot be lowered by taking a make-up exam. Make-up grading and exams are designed with *one* minute per question; thus if there are 50 questions, the students have 50 minutes to complete as many as they can.

The corresponding replacement activities are generally made available via NUoodle two weeks or more after closure of a particular week so that students can ask the instructor for help if necessary. The instructor does not recommend trying to skip normal assignments in the expectation of replacing zeros by replacement grades – the replacement work is consistently more challenging than the original assignments.

4.6.2 Participation in NUoodle discussions – points added to quiz total

Students may participate in online discussions in the NUoodle classroom devoted to this course. The instructor assigns up to one point of extra credit to be added to the overall quiz score for each valuable contribution to the discussions. Good postings include pointers to and analysis of news articles and analytical discussions of topics appropriate to the class. The discussion group can serve to keep students interested and stimulated.

4.6.3 Extra written assignments – up to 10 points maximum added to total 100-point score for course for up to 5,000 words total across all submissions

In Weeks 1 through 10, students may submit extra assignments such as analyses of real-world data or discussions of interesting articles involving statistics and errors in statistical methods; good ones will be posted for other students to read. No extra-credit assignments are accepted in Weeks 11 and following because students need to focus on increasingly difficult material and should also be completing any replacement work they deem necessary.

- These contribute points to the final-grade score and can compensate for less-than-perfect grades on required assignments, quizzes and exams.
- No more than one extra-credit essay assignment per week is permitted but there is no limit to the word-count.
- The point-score is calculated using a ratio of up to 1 extra final-grade point per 500 words (not counting tables and figures) on essays. Students may write less than 500 words in a submission, receiving partial credit (e.g., 100 words could net up to 0.2 points on the final score) – which could, for instance, make the difference between an A- and an A grade).
- The maximum number of extra homework points achievable in this way is 10 in all per semester.

4.6.4 Corrections and suggestions for improvement

Corrections and suggestions for course improvement are to be posted in the appropriate facility for *Continuous Process Improvement* online. Accepted corrections and constructive suggestions earn 0.1% extra on the total score for the final grade of each contributing student.

5 Academic Integrity

5.1 Cheating

- Students are graded on an individual basis and must therefore complete their own work. Students may NOT submit another student's work as if it were their own.
- Students are reminded of the University's Policy against cheating and plagiarism (Chapter 2, Section V of the *Student Rules*): < http://www.norwich.edu/about/policy/StudentRulesRegs.pdf >.

5.2 Plagiarism

- Plagiarism consists of using someone else's text or ideas without using quotation marks to indicate exact duplication of the original and/or failing to indicate the source of reference materials and quotations.
- If in doubt as to what constitutes plagiarism, ask the instructor for a review of your work before submitting an assignment.

5.3 Prosecution

- All instances of cheating and of plagiarism must be reported to the *Academic Integrity Committee* by the instructor or by students who have observed the dishonesty.

- Penalties include expulsion from the University.
- **Ignorance of the University's Rules is not a valid defense against accusations of academic dishonesty.**

5.4 Intellectual Property Restrictions

All of the teaching materials for this course are copyright by Prof Kabay. None of the homework, review questions, exams from this course or any other materials copyrighted by Prof Kabay may be reposted or redistributed by any means whatever without the express written permission of the Professor. In particular, uploading Prof Kabay's materials to sites supporting cheating and fraud such as CourseHero is expressly forbidden. Violation of these restrictions may result not only in charges before the Norwich University Academic Integrity Committee but also in civil lawsuits for copyright infringement.

6 Coordination with AAC

- The instructor routinely and willingly provides reasonable accommodations for students with documented disabilities on an individualized and flexible basis.
- For any student with a documented disability, the University's *Academic Achievement Center* (AAC) determines appropriate accommodations through consultation with each student.
- To receive accommodations in this or any other class, affected students need to make an appointment with the AAC, located on the 4th Floor of the Kreitzberg Library (phone ext. 2130).
- AAC will work with students to determine eligibility for services and, if appropriate, will provide an Educational Profile for each student to bring to their instructors.
- After making arrangements with the AAC, students should arrange a meeting with the instructor to discuss accommodations in this course.
- In keeping with the University's policy of providing equal access for students with disabilities, any student with a disability who needs academic accommodations is welcome to meet with the instructor privately. All conversations will be kept confidential (for example, the instructor's office door may be closed at the student's request).
- The instructor will review the Profile with the student and discuss accommodations in relation to this course.

7 Additional Notes

- There is no *grading on a curve*. There are no predetermined numbers of final letter grades. Students do not compete with each other for grades; if everyone gets A, wonderful! If everyone fails, tough. Students are not competing with their peers – they are encouraged to be helpful to each other.
- Students are encouraged to study together but may not copy each other's work or collaborate during quizzes or exams. Students are individually responsible for all assigned essays and online discussion material, unless otherwise noted.

8 Kabay Office Hours & Contact Information:

- Students are welcome to call the course designer at **(802) 479-7937** at *any time* (that number rings in his office or his cell phone but cannot disturb him); leave a voice-mail message with a return number if necessary.
- SMS text messages to 802-595-1103 are acceptable.
- Students may also use Instant Messaging at any time using Skype (ID is **mekabay).**
- Students should put the string QM213 at the start of all written (email, SMS, Skype) messages for easier identification.

9 About Your Course Designer: M. E. Kabay, PhD, CISSP-ISSMP

(You don't have to read this stuff.)

M. E. Kabay began teaching his high school classmates how to use the slide rule in 1963 and began programming IBM 1401 computers in assembly language in 1965. In 1976, he completed his PhD from Dartmouth College in applied statistics and invertebrate zoology and then taught statistics, programming and biology as a university professor in Canada and overseas.

He began teaching applied statistics at Dartmouth College in 1975 in a course for Biology graduate students and served as adjunct faculty in the University of Ottawa *Institute for Government Informatics Professionals*, the John Abbot College *Programmers' Course* and their *Technical Support Program*, and the McGill University *Management Institute* before joining Norwich University.

In 1979, he joined a compiler team for a new 4GL and RDBMS in the U.S. and then joined Hewlett-Packard Canada in 1980 as an operating systems and database performance specialist, winning the *Systems Engineer of the Year* Award in 1982 and teaching MPE operating system, IMAGE/3000 database and VPLUS/3000 GUI-design courses as well as serving as support engineer to HP's hospital and university customers and managing HP's bilingual call center *(Phone-In Consulting Service)* for Québec and the Maritime provinces.

He served as Director of Education for the National Computer Security Association (NCSA, later ICSA and then TruSecure) from 1991 to 1999 and then worked with Adario/AtomicTangerine where he supported the *International Institute for Information Integrity*® (I-4®). He collaborated in the committees defining the *Common Body of Knowledge* for the *Certified Information Systems Security Professional* (CISSP) designation in the mid-1990s and earned his CISSP in 1997.

Since 1986 (and as of early 2016), he has published over 2,000 articles in operations management and security, written a college textbook on enterprise security (McGraw-Hill, 1996), and served as Technical Editor of the 4th (2002), 5th (2009) and 6th (2014) editions of the *Computer Security Handbook* (Wiley). He wrote two security-management columns a week distributed by *Network World* < http://www.mekabay.com/nwss/ >from February 2000 to September 2011 and one per week for *InfoSec Perception* < http://www.mekabay.com/perception/ > from October 2011 to the end of 2013. His Website has a total of over 2,000 PDF files and over 250 PowerPoint files freely available to anyone.

He has been an invited lecturer at the United States War College, the Pentagon, NATO HQ in Brussels, and at NATO Counterintelligence training in Germany. He was inducted into the Information Systems Security Association (ISSA) *Hall of Fame* in December 2004 and earned his *Information Systems Security Management Professional* (ISSMP) designation in November 2005.

From 2002 to 2009, he was the creator and Director of the *Master's Program in Information Assurance* (MSIA) in the College of Graduate and Continuing Studies (CGCS) at Norwich University, Northfield, Vermont where he was also the Chief Technical Officer of the CGCS from 2007 to 2009. Returning to the School of Business & Management in 2009, he was promoted to Professor of Computer Information Systems in May 2011 and was appointed Associate Director of the Norwich University Center for Advanced Computing and Digital Forensics in July 2011.

He is looking forward to retiring on 30 June 2020 so he can write novels, give concerts as a bass-baritone soloist, read stories and poems at public libraries, and teach applied-statistics courses for fun(!).