Instructor: Daniel (Dan) Tracy, PhD  
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E-mail: Dan.Tracy@usd.edu  
Class Website: D2L Website

Catalog Course Description - This course is the practical utilization of mathematics as an aid to the solution of business problems. Prerequisites: BADM 220: Business Statistics and MATH 121: Calculus or BADM 520: Foundations of Math/Stats or equivalent.

Course Section Description - Introduction to problems, processes, and decision-making tools/models used by business firms with an emphasis on process identification/understanding, problem modeling, and decision analysis. Mathematical techniques and computer-based analysis will be used to solve a variety of business problems using Microsoft Excel and its add-ons. Topics covered include: decision theory, mathematical programming, inventory modeling, simulation, and queuing theory.

Beacom School of Business Mission Statement
The Beacom School of Business' mission is excellence in undergraduate and graduate education that develops successful future business leaders. We deliver high value to our students, employers, and community through distinctive teaching and learning supported by significant intellectual and professional contributions and meaningful service.

MBA Program Assessment
At the Beacom School of Business, we are proud to offer the MBA program as a full-time program on campus in Vermillion as well as on a part-time basis in Sioux Falls at the University Center as well as online. The content of the classes and the faculty who teach the classes are the same regardless of delivery mode. The graduate faculty members who teach in the program have established the following goals or learning outcomes for program graduates. The following MBA program goals are assessed in BADM 720 via course-embedded exam questions.

GOAL 1: Our graduates will demonstrate knowledge of the basic business functions.  
SUCCESS CRITERIA: 75% of the students will get a 70% or better on the designated questions used in the course exams.

GOAL 2: Our graduates will employ analytical skills to perform systematic business analysis, identify problems, and suggest solutions.  
SUCCESS CRITERIA: 75% of the students will get a 70% or better on the designated question used in the course homework.

The material presented in this course is part of the common body of knowledge for this discipline. Mastering the information presented in this course lays the foundation for your future success as a knowledgeable, well-rounded business professional. The course is designed to encourage you to commit this valuable information to your long-term memory. In addition to demonstrating mastery of this information throughout the course, you will also be required to demonstrate your retention of this critical common body of knowledge when you take the MBA Exit Exam which is administered as part of the BADM 780 Strategic Management course.

Course Specific Objectives:
Students successfully completing Quantitative Analysis will be able to:
- describe core concepts, language, tools, and limitations of management science used in business decision-making.
- formulate, solve, and interpret practical management science models in a spreadsheet environment, while allowing for the uncertainty of the business environment.
- describe the integrated role of management science in all business functions in aiding sound decision-making.
Online Course Objective - A primary objective of online education is to permit students to complete all requirements of a course or degree program using the power of the Internet to make the course location independent. Students are able to access all materials necessary to complete the course requirements using an Internet connected computer. No campus-specific activities are required or necessary to complete this course.

Objective/Assessment Matrix

<table>
<thead>
<tr>
<th>Course Objective</th>
<th>Assessment Utilized</th>
<th>Related Assessment Goals/Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Describe core concepts, language, tools, and limitations of management science used in business decision-making.</td>
<td>1. Demonstrated through homework submissions. 2. Demonstrated through conceptual/terminology oriented exam questions.</td>
<td>G1O1 – Graduates will demonstrate knowledge of core business concepts. G2O1 – Graduates will employ analytical skills to perform systematic business analysis, identify problems, and suggest solutions.</td>
</tr>
<tr>
<td>Formulate, solve, and interpret practical management science models in a spreadsheet environment, while allowing for the uncertainty of the business environment.</td>
<td>1. Demonstrated through homework submissions. 2. Demonstrated through application exam questions.</td>
<td>G2O1 – Graduates will employ analytical skills to perform systematic business analysis, identify problems, and suggest solutions.</td>
</tr>
<tr>
<td>Describe the integrated role of management science in all business functions in aiding sound decision-making.</td>
<td>1. Demonstrated through homework submissions. 2. Demonstrated through exam questions.</td>
<td>G2O1 – Graduates will employ analytical skills to perform systematic business analysis, identify problems, and suggest solutions. G5O2 – Graduates will use critical thinking skills to make strategic decisions in a global environment.</td>
</tr>
</tbody>
</table>

Course Assessments:

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework</td>
<td>100</td>
</tr>
<tr>
<td>Exam 1</td>
<td>200</td>
</tr>
<tr>
<td>Exam 2</td>
<td>200</td>
</tr>
<tr>
<td>Total points</td>
<td>500</td>
</tr>
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Grades will be based on the percentage of points earned on the following scale:

- >90% = A
- 80-89.9% = B
- 70-79.9% = C
- 60-69.9% = D
- < 60% = F

Exams

Exams will be completed as a proctored exam and will be a combination of applied concepts and problems in a multiple choice format. Makeup exams will be given only on an emergency basis. The exams are not comprehensive, but some material does rely on your understanding of prior material. No notes or other information is allowed during the multiple choice portion of the exams. You may use a standard scientific calculator during exams. Cell phones may not be used during exams for any reason.

To take proctored exams, you will go to your proctor’s office or one of the SDBOR testing centers (Vermillion, Sioux Falls, Brookings, Pierre, and Rapid City). You will not be permitted to any materials other than a standard scientific calculator for these examinations. Exams must be taken in the presence of an approved proctor. All students not taking exams at a SDBOR testing center must submit a proctor form. Proctor Form It would be best to use the same proctor for both exams. Fill out this form and send it to Continuing Education at the address provided. Students are required to submit their proctor form by January 22nd, 2018. If the proctor form is not returned by that time, the student may not be able to take the required exams. Students can submit one proctor form for all classes using the same proctor. New forms must be submitted each semester. In order to set up your exams, please refer to the policies outlined in the CDE Online Orientation Guide. You must notify the instructor prior to an examination if you cannot take the exam during the scheduled time. Since there are only two exams and the test weeks

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have been provided, you should make arrangements to take the exam during the week it is scheduled. Absent emergencies or similar circumstances the failure to give prior notice of your absence will result in a zero for that exam. You will be allowed two hours to complete each exam. Feedback and grades for exams will be provided through D2L within one week of the end of the exam week.

**Homework**

Homework problems will be assigned regularly. Homework problems will be submitted through the digital dropbox in D2L. Homework is due by the beginning of the week after it is assigned. Late homework scores will be reduced by 20% per day that it is submitted past the due date. Homework submitted more than three days late will not receive any credit. The homework will be graded on accuracy, modeling technique, and presentation. The total homework score will be scaled to 100 points at the end of the semester (indicated above). Homework represents 20% of your final point total.

**Discussion Boards**

Discussion board participation will not be graded. There will be discussion boards each week (except exam weeks) so that you may pose questions to your classmates or me in an effort to more fully understand the material or to address questions or difficulties. If you have a question regarding a lecture or problem, post it to the discussion board. If you have an answer to someone’s question, please provide that as well. I will check the discussion board several times each week to monitor postings and provide occasional assistance. There are lots of opportunities to learn from your classmates, and I would like this discussion board to be a forum for learning from each other. Therefore, while I will monitor the discussion, I would like each of you to take an active part in posting.

**Online Discussion Guidelines** - During online discussions you are expected to comply with good “netiquette” standards as follows:

1. Check the discussion frequently and respond appropriately. Keep paragraphs and messages to the point.
2. Focus on one subject per message and use pertinent subject titles.
3. Capitalize words only to highlight a point or for titles. Capitalizing otherwise is generally viewed as SHOUTING!
4. Be professional and careful with your online interaction.
5. When posting a long message, it is generally considered courteous to warn readers at the beginning of the message that it is a lengthy post.
6. It is not appropriate to forward someone else’s messages without his or her permission.
7. It is fine to use humor, but use it carefully. The absence of face-to-face cues can cause humor to be misinterpreted as criticism or flaming (angry, antagonistic criticism). Feel free to use emoticons such as 😊 or ;) to let others know you are being humorous.
8. Resist the temptation to flame others. Remember these discussions are “public” and meant for constructive exchanges that treat others as you would like to be treated.
9. If something angers you, do not respond immediately. Wait and carefully formulate your response so that it is respectful.
10. Never say anything you would not want to see on the front page of the local newspaper.

The above “netiquette” guidelines were adapted from Arlene H. Rinaldi’s article, “The Net Use Guidelines and Netiquette,” Florida Atlantic University, 1994, available from Netcom, and from Carol Geu, Instructor, USD. General netiquette guidelines can be found in the CE Online Orientation found at [CDE Online Orientation Guide](https://www.cdeonline.org/). For more information on netiquette please review the following site, [http://albion.com/netiquette/corerules.html](http://albion.com/netiquette/corerules.html).

**Instructional Methods/Activities** - This course is presented in D2L, an effective pedagogical tool utilized by many educational institutions worldwide and provided to you by USD. Students access the course web site using the URL: [D2L Website](https://d2l.usd.edu/). If you have not used D2L before, there is a tutorial available on USD’s Center for Teaching and Learning (CTL) website at [D2L Login Tutorial](https://d2llogin.templars.com/). Once you have successfully logged into D2L, you will see a list of course links including one titled “Quantitative Analysis.” Simply click on that link and you will be transferred to the home page for the course. Students will have
access to many tools to assist in learning the material during the course including taped lectures, lecture notes, homework problems and answers, class discussion, and virtual office hours.

**Instructor Availability** - During the “work week” – Monday through Friday – I will log onto the D2L course once a day to respond to e-mail and answer questions. I will make every effort to respond to your e-mails within 24 hours during the week.

**Time Expectations** - Some online students may find it easy to procrastinate with their studies because this is not a face-to-face course. To avoid this please be sure to log into the course at least two or three times per week. It is expected that each student would spend a minimum of 8-10 hours per week on this course. You need to participate in the discussion boards and office hours each week in addition to keeping up with the reading, lectures, and problems/assignments.

**Important Drop Dates** - The last day to drop this course with a full refund and without the course being recorded on your transcript is Wednesday, January 17th. The last day to drop this course and receive a grade of "WD" on your transcript is Monday, April 2nd.

**Learner Support** - The University’s technical, academic, student, tutorial and research and writing resources support systems are outlined at [CDE Online Orientation Guide](#).

**Course Text and Materials**
The BADM720 homepage on D2L contains the following important links:

- **USD Getting Started** – includes general information such as my bio, a course welcome letter, and the syllabus.
- **News** – a checklist for the week’s requirements will be posted regularly as a reminder of your duties for the week.
- **Content** – The link includes a course outline (week by week outline), video lectures, lecture notes, and problem/assignment files.
- **Communications** – Many communication tools can be found here including the discussion board, D2L email, chat rooms, the course calendar, and grades.

**Software** – Two Excel add-ins are needed for the course: Solver (Microsoft) and SolverTable (shareware). I will give you instructions for downloading/installing these add-ins. You must install the software on the computer that you will use for homework problems as soon as possible as we will begin to use it within the first few weeks of class. Ensure that your installation is correct and that the software is usable by the second week of class. If you have problems installing the software, please contact me. Please note that the software is designed for a PC. MAC’s can be used, but only if you are running dual operating systems including a Windows-based PC operating system.

**Incomplete Grades** - While every case will be considered on an individual basis, no grades of incomplete will ordinarily be given in this course.

**Course Policies**

**Course Management** - This course utilizes D2L for course management. Students access the course site through the internet at [D2L Website](#) and your login name and password. Only students registered for this course are permitted to access the course materials. Once logged into D2L, you will see a list of course links for USD courses in which you are enrolled, including one for this course. Should you have any problems accessing this course at any time, please contact me immediately via e-mail or my office phone number.

**Attendance Policy** - The Beacom School of Business attendance policy will be enforced as follows:
1. Attendance (participation) is expected each week. Failure to participate in a meaningful way during the course of any week constitutes a “virtual absence” unless otherwise approved by the instructor.
2. There is no penalty for the first virtual absence.
3. Any student with more than two virtual absences may be dropped from the course. Students will be notified in writing before being dropped.

**Class Format** - The purpose of the problems and models are to familiarize you with problem solving techniques using Microsoft Excel and the associated software. We will spend some time through the lectures dealing with problem examples/solutions and assigned readings. It is imperative that you work through the examples and problems as we proceed through the material as each class will build upon the knowledge and skills developed in the prior class. The presentation of problems and concepts in the provided materials is “cookbook” oriented, but covers a lot of ground quickly. Most students enroll in this class either having little experience in the more complex uses of Microsoft Excel and/or the concepts of mathematical modeling. Some of you will have to work a little harder at the beginning to overcome any areas of limited exposure.

**Student Conduct/Academic Integrity** - Students enrolled at the Beacom School of Business are expected to maintain the highest standards of integrity and ethical principles and to adhere to the Student Code of Ethics developed and approved by Beacom School of Business students. This Code provides a frame of reference for the behavior of Beacom School of Business students in their personal, academic, and professional activities. No credit can be given for a dishonest assignment. A student found to have engaged in any form of academic dishonesty may, at the discretion of the instructor, be:

- Given a zero for that assignment.
- Allowed to rewrite and resubmit the assignment for credit.
- Assigned a reduced grade for the course.
- Dropped from the course.
- Failed in the course

**Disability Services** - Any student who feels he/she may need academic accommodations or access accommodations based on the impact of any disability should contact and register with the Office of Disability Services during the first week of class. Please contact both your instructor and the Director of the Office of Disability Services (677-6389), Ms. Ernetta L. Fox, Director, to make these arrangements.

**Privacy of Student Records** - The Family Educational Rights and Privacy Act of 1974 (FERPA) provides that each student’s educational records remain private. No individual or group outside the educational institution shall have access to nor will the institution (including professors) disclose students’ educational records without written consent of the students. Because the professor cannot ensure that the student is the only one with access to the student’s email account, grades will not be provided via email. The student may access final grades for this course using the D2L course link.

**Freedom in Learning** - Under Board of Regents and University policy student academic performance may be evaluated solely on an academic basis, not on opinions or conduct in matters unrelated to academic standards. Students should be free to take reasoned exception to the data or views offered in any course of study and to reserve judgment about matters of opinion, but they are responsible for learning the content of any course of study for which they are enrolled. Students who believe that an academic evaluation reflects prejudiced or capricious consideration of student opinion or conduct unrelated to academic standards should contact the Dean of the Beacom School of Business to initiate a review of the evaluation.

**Diversity/Inclusive Excellence** - The University of South Dakota strives to foster a globally inclusive learning environment where opportunities are provided for diversity to be recognized and respected. The Beacom School of Business is committed to USD’s Inclusive Excellence initiatives. We are committed to cultivating an environment of Inclusive Excellence at all levels of the school. We are committed to graduating globally and culturally aware business students who are equipped with the tools to embrace and practice inclusiveness.

GOOD LUCK AND HAVE FUN!!
<table>
<thead>
<tr>
<th>Week beginning</th>
<th>Topic(s)</th>
</tr>
</thead>
</table>
| 1/8            | Introduction/Syllabus  
|                | Excel Software Downloads  
|                | Introduction to Quantitative Analysis  
|                | Decision Theory  
|                | Decision Trees  |
| 1/15           | Spreadsheet Modeling  
|                | Analytical Hierarchy Process Model  
|                | Mathematical Programming  
|                | Linear Programming  
|                | LP Model Example  |
| 1/22           | Product Mix Models  
|                | Sensitivity Analysis  
|                | Production Planning Models  |
| 1/29           | Portfolio Models  
|                | Blending Models  |
| 2/5            | Data Envelopment Analysis (DEA)  |
| 2/12           | Integer LP  
|                | Cutting Stock Models  
|                | Marketing Models  |
| 2/19           | Goal Programming  
|                | Scheduling Models  
|                | Binary Variables  
|                | Capital Budgeting Models  |
| 2/26           | Exam 1  |
| 3/5            | Spring Break – No Class  |
| 3/12           | Fixed Charge Constraints  
|                | Fixed Charge Models  |
| 3/19           | Network Problems  
|                | Assignment Models  
|                | Transportation Models  |
| 3/26           | Location Model  |
| 4/2            | Project Management Model  
|                | Shortest Path Model  |
| 4/9            | Forecasting Models  |
| 4/16           | Inventory Models  
|                | Simulation  
|                | Simulating Input Data  |
| 4/23           | Inventory Simulation  
|                | Stochastic Optimization  |
| 4/30           | Exam 2  |