

**CNST 6350**  
**Sections 16721 and 16722**  
**Decision Making and Risk Management**  
**Fall 2017**

Rev. 7/31/2017

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Office Hours: By appointment

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### **I. Course Description**

This course will enable students to become power users of Excel and will show them how to build models of unstructured problems so they can make better decisions and gain insight into the impact various factors have on those decisions. The vehicle used for developing such models is the familiar spreadsheet. Students will learn the creative process of constructing and using spreadsheet models of problems, specifically how to design, build and test spreadsheets and workbooks, and how to improve the efficiency and effectiveness with which they are used. Topics are explored by learning how to solve a wide variety of problems in the construction industry, often using tools and techniques from the field of management science that are built-in to Excel. Students with the knowledge acquired in this course will provide their employers with a competitive advantage and will themselves enjoy a competitive advantage over their peers who lack these skills.

### **II. Course Objectives**

By successfully completing this course, students will be able to analyze unstructured situations, develop models of those situations, explore alternative solutions through formalized approaches, and do sensitivity analysis to gain insight into why the chosen solution makes sense. They will be better able to evaluate and prioritize alternatives, allocate resources, assess risks, and justify and defend decisions.

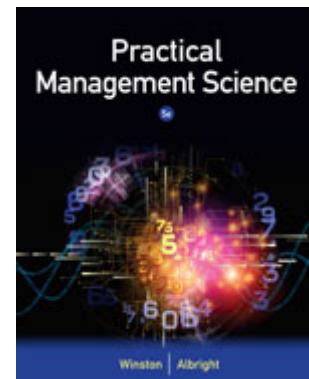
### **III. Course textbook and requirements**

***Practical Management Science 5th edition***, Winston & Albright (2016),

Cengage Learning,

ISBN 978-1—305-25090-1.      [www.Cengage.com](http://www.Cengage.com)

- It is important that the book be the Fifth edition.
- I recommend buying a NEW copy of the book from a reliable source. NEW books come with a password that can be used to get to a Web site where you can download all the examples in the text, data for problems, and the Palisade DecisionTools Suite. We will be using these resources. If you buy a used book, the key for access to the software may already have been used and you may not be able to download the REQUIRED software for the course or the license will be of limited duration and not be valid throughout the course. In that case you will still be required to buy a license from Palisade Corporation for the software at an additional cost. Furthermore, new books from sources like Amazon are likely to cost no more than used books sold at local text book stores.



- As soon as you get the text, go to the web site for the book and follow the instructions for downloading the files and software we will use in the course.
- You may find international editions that are less expensive, but you will be on your own here if you go this route. There may be slight differences between the international edition and the required text cited above. I will not have the time to close the loop on differences the purchasers of the international edition encounter. In addition, the international edition may not come with a link to the data and software we will use in the course.
- Regarding PCs: You will need a computer with Windows 7 or newer. Because of issues with the Excel add-ins we will use, Mac users must be able to run Windows either as the native OS or via Boot Camp, etc.
- Regarding software: You will need Microsoft Excel 2013 for Windows. This software may be purchased from the University or by purchasing Microsoft Office Pro Plus). You will also need Palisade's Decision Tools Suite that is included with the textbook (see third bullet point above).
- A new edition of the text is scheduled to be published in 2018. This is FYI since it may impact the used book market.

The text may be acquired from the publisher. A query about alternative formats and pricing yielded the following information:

Students have the hardback, eBook and rental options here:

<https://www.cengagebrain.com/shop/ProductDisplay?langId=-1&storeId=10151&catalogId=10057&productId=710173>

There is also a Loose Leaf option here:

<https://www.cengagebrain.com/shop/ProductDisplay?langId=-1&storeId=10151&catalogId=10057&productId=743349>

#### **IV. Course Design**

**The best way to learn and understand the principles of spreadsheet modeling is by working problems.**

I teach by example. As you play the video for each lesson, it is a good idea to have your PC open so you can work on the problems along with the video. Then, following the lesson, it is a good idea to work on the recommended practice problems. You should attempt to work the problems yourself before looking at the solutions. This will help you avoid the "I could have done that" syndrome.

The course is divided into three sections: Power use of Excel (including charting, regression and spreadsheet engineering), optimization (typically determining the best allocation of scarce resources) and uncertainty (using simulation to build models to address risk). Each section includes the following elements:

- Videos, where I demonstrate tools and techniques to solve various problems and illustrate particular modeling techniques. We will build on earlier techniques as we develop more advanced models.
- Recommended practice problems that you will work on your own and then check your work against the answers (available after the due date).
- Homework problems that will be similar to the problems worked in the videos and the practice problems. Homework will prepare you for the examinations. There will be three sets of problems, each set submitted via Blackboard.
- PowerPoint presentations addressing the context of building decision models.

There will be three exams, one for each section of the course. The exams will be administered via Blackboard.

**Doing practice problems and the homework are the keys to success in this course.** Without serious effort on the practice problems and the homework, you will not be able to apply what you are learning in this class and the exams will be very difficult.

Cooperation among students is encouraged within the following guidelines: Work ALL the homework problems individually getting as far as you can on your own. Individual effort on ALL problems is necessary for you to learn the skills being taught in class and to develop an effective problem solving strategy, which is essential to good exam performance and to successful professional practice later on. After working problems individually, you can discuss your answers with others in the class (in person or via email), but you need to submit individual assignments through Blackboard and, if you benefited from working with another student, this **MUST** be indicated at the top of your submission with a brief statement of the **name(s)** of the other student(s) involved and the **nature of your interaction**.

There are three homework sets, one for each segment of the course. Homework is due no later than 12 midnight on the Wednesday before the Sunday due date for the exam. Answers will be posted on Blackboard first thing the next morning. Homework answers will be useful in preparing for the examination to follow.

**Late homework submissions will not be accepted.** This is because answers are posted immediately after the due date.

Following is the scale for evaluating homework problems:

50% of point value of the problem: work not attempted or not attempted seriously

60% of point value of the problem: work seriously attempted and 60% correctly completed

80% of point value of the problem: work seriously attempted and 80% correctly completed

100% of point value of the problem: work completed 100% correctly.

Scores between the above percentages (e.g., 75%) will be used as appropriate.

Within **one week** following the posting of the answers, you are required to **self-assess** your performance on the homework assignment and report your score to the **instructor** using on scale above. The

Instructor will check assignments at random. Students found to be inflating their scores will be penalized.

There are many problems in each of the homework assignments. Since they require both thought and time to complete, it is highly recommended that you pace yourself and not leave the homework until just before it is due.

## V. Accommodations for Students with Disabilities

Our institutional objective is to help all students achieve their highest potential. If you need to receive accommodation on exams or with assignments, please make arrangements with me prior to the exam or assignment. You can also contact the Justin Dart Center for Students with Disabilities (713-743-5400) in order to obtain assistance. Services provided by the Center for Students with Disabilities include assistance with course accommodations, adaptive equipment, individualized exam administration, taped textbooks, wheelchair repair, library needs, handicapped parking, as well as many other needs.

## VI. UH CAPS Statement

Counseling and Psychological Services (CAPS) can help students who are having difficulties managing stress, adjusting to the demands of a professional program, or feeling sad and hopeless. You can reach CAPS (UH main campus [www.uh.edu/caps](http://www.uh.edu/caps), or UH Sugar Land campus <http://www.uh.edu/dsaes/uhsugarland/>) by calling 713-743-5454 during and after business hours for routine appointments or if you or someone you know is in crisis. No appointment is necessary for the "Let's Talk" program, a drop-in consultation service at convenient locations and hours around campus.

UH main campus [http://www.uh.edu/caps/outreach/lets\\_talk.html](http://www.uh.edu/caps/outreach/lets_talk.html)

UH Sugar Land campus <http://www.uh.edu/dsaes/uhsugarland/>

## VII. Grading

The three homework assignments and the three exams are weighted as follows to determine each student's final numerical grade:

|   |     |
|---|-----|
| Homework (3 sets @ 8% each)                           | 24% |
| Exams (3 exams @ 25% each)                            | 75% |
| Total   | 99% |
| Add 1% credit for on-time performance on all elements |     |

The following scale will determine your final grade:

| Score       | Grade | Score       | Grade |
|-------------|-------|-------------|-------|
| >= 90       | A     | 73 – 76.999 | C+    |
| 87 – 89.999 | A-    | 70 – 72.999 | C     |
| 83 – 86.999 | B+    | 67 – 69.999 | C-    |

|             |    |             |   |
|-------------|----|-------------|---|
| 80 – 82.999 | B  | 60 – 66.999 | D |
| 77 – 79.999 | B- | <60         | F |

Once averages are calculated, there will be no further rounding. In other words, an average of 82.999 will result in a grade of B. There will be no end-of-semester revisiting of the grades on any element of the course.

Grades are considered final one week after they are posted to the Grade Book in Blackboard. Please review your grades promptly and address any questions or concerns to you instructor. These will be addressed promptly to achieve a fair and equitable solution.

### **VIII. Academic Integrity**

All students are expected to be familiar with the University of Houston Academic Honesty policy. In particular, the following two principles apply to this class:

All homework assignments and exams should reflect only your own effort (except as noted above for homework assignments where work with other students is documented). Discussion of graded submissions others from a prior semester is a violation of the Academic Honesty Policy.

Providing or receiving solutions to homework problems, exam questions, and/or exam answers from students in a current or previous section of this course or from any other source is strictly prohibited and will be penalized IAW University policies.

### **IX. Course evaluation and feedback**

Towards the end of the semester you will be asked to fill out an instructor and course evaluation form. The College of Technology has a policy that requires all of its instructors to be evaluated by their students. The results of these evaluations are important since they provide feedback to instructors on what aspects of the course students preferred and how the instructor's performance can be improved. In addition, I encourage students to provide feedback throughout the semester on any aspect of the course that you feel could be improved in any way.

### **X. Exam Protocol**

Exams for this course will be conducted online during a weekend time window. In this case each student will be required to affirm that they did not give or receive any unauthorized aid during the exam, or discuss the contents of the exam with any students who have not taken the exam (including students in future semesters), and furthermore that they adhered to the time limits given for the exam. Violations of this honesty pledge are considered academic misconduct and will subject the student to disciplinary action.

### **XI. Course Structure**

The course is organized into fourteen modules, one to be completed in (roughly) each week of the term. Detailed information about specific topics, lectures, practice and homework assignments, and other content may be found in the Blackboard site for the course.

| <b>Sequence</b>  | <b>Topic</b>                               | <b>PMS Chapters</b> |
|------------------|--|---------------------|
| 1                | <b>Introduction &amp; Basic Excel</b>      | 1,2                 |
| 2                | <b>Intermediate Excel</b>                  | 1,2                 |
| 3                | <b>Advanced Excel</b>                      | <b>1,2</b>          |
| 4                | <b>Regression &amp; Forecasting</b>        | 14                  |
| <b>WED 9/20</b>  | <b>Homework 1 due</b>                      |                     |
| <b>SUN 9/24</b>  | <b>Exam 1 due</b>                          |                     |
| 5                | <b>Intro to Optimization</b>               | 3                   |
| 6                | <b>Linear models</b>                       | 3,4                 |
| 7                | <b>Bin &amp; Integer models</b>            | 6                   |
| 8                | <b>Non-Linear models</b>                   | <b>7</b>            |
| 9                | <b>General models</b>                      | <b>8</b>            |
| <b>WED 10/18</b> | <b>Homework 2 due</b>                      |                     |
| <b>SUN 10/22</b> | <b>Exam 2 due</b>                          |                     |
| 10               | <b>Variability &amp; Risk</b>              | 9                   |
| 11               | <b>Simulation</b>                          | 10,11               |
| 12               | <b>Using @Risk</b>                         | 10,11               |
| 13               | <b>Simulation applications</b>             | 10,11               |
| 14               | <b>Model structures &amp; optimization</b> | 10,11               |
| <b>WED 11/29</b> | <b>Homework 3 due</b>                      |                     |
| <b>SUN 12/3</b>  | <b>Exam 3 due</b>                          |                     |