Washington State University  
MAJOR CURRICULAR CHANGE FORM - - COURSE  
(Submit original signed form and ten copies to the Registrar’s Office, zip 1035.)

<table>
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<tr>
<th>.Future Effective Date: 09/19/2013</th>
<th>□ New course</th>
<th>□ Temporary course</th>
<th>□ Drop service course</th>
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<tr>
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<td>(effective date cannot be retroactive)</td>
<td>□ There is a course fee associated with this course (see instructions)</td>
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□ Variable credit
□ Increase credit (former credit ___)
□ Number (former number ___)
□ Crosslisting (between WSU departments)  
(Must have both departmental signatures)
□ Conjoint listing (400/500)
□ Request to meet Writing in the Major [M] requirement (Must have All-University Writing Committee Approval)
□ Request to meet GER in _______ (Must have GenEd Committee Approval)
□ Professional course (Pharmacy & Vet Med only)  
☐ Graduate credit (professional programs only)
□ Other (please list request)

<table>
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<tr>
<th>MGTOP</th>
<th>556</th>
<th>Advanced Business Modeling</th>
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<td>course prefix</td>
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<th>Admission to the MBA, Master of Accounting, or Business PhD programs.</th>
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<td>per week</td>
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Description (20 words or less)  
Spreadsheet modeling and solution of business problems using mathematical programming, Monte Carlo simulation, queuing theory, and decision analysis.

Instructor: Chuck Munson  
Contact: Cheryl Oliver  
Campus Zip Code: 4710

Phone number: 335-3076  
Email: munson@wsu.edu  
Phone number: 335-2363  
Email: oliverc@wsu.edu

- Please attach rationale for your request, a current and complete syllabus, and explain how this impacts other units in Pullman and other branches (if applicable).
- Secure all required signatures and provide 10 copies to the Registrar’s Office.

Chair/date  
Dean/date  
General Education Com/date

Chair (if crosslisted/interdisciplinary) * 
Dean (if crosslisted/interdisciplinary) * 
Graduate Studies Com/date

All-University Writing Com/date  
Academic Affairs Com/date  
Senate/date

*If the proposed change impacts or involves collaboration with other units, use the additional signature lines provided for each impacted unit and college.
MgtOp 556—Advanced Business Modeling
Washington State University
Spring 2014
Course Syllabus

Instructor Information
Professor: Dr. Chuck Munson
Office: Todd Hall Room 471
Phone: 335-3076
E-Mail: munson@wsu.edu
Office Hours: TBD

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At the end of this course, students will be able to:
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Prior to each exam, a practice exam will be made available on the course web site. Note: These sample exams are meant to illustrate the types of questions that might appear on the real exams. In some cases the actual exam questions will be quite similar, but in other cases the questions will be completely different. Students are responsible for more information than is needed to successfully complete the practice exams.

Computer Requirements

Students must have access to a computer outside the classroom that has Excel 2007 or Excel 2010 installed with the “Analysis ToolPak” and “Solver” Add-Ins activated. (Presentations and notes will be based on Excel 2010.) Students will further be asked to download and install various files from the text website and the course website. Finally, students may wish to download a trial version of Classic LINDO 6.1 (www.lindo.com) to help them solve math programs. Even though Visual Basic involves some actual computer programming, completion of a course such as MIS 250 should be sufficient computing background to take this course. The textbook has generally very clear explanations about all of the programming that needs to be done.

For Persons with Disabilities

Reasonable accommodations are available for students with a documented disability. If you have a disability and may need accommodations to fully participate in this class, please visit the Access Center (Washington Building 217) to schedule an appointment with an Access Advisor. All accommodations MUST be approved through the Access Center.

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Excel Proficiencies to List on Resume after Completing the Course

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- Visual Basic programming to create decision support systems
- Pivot tables
- Macro programming
- Advanced sensitivity analysis
- Linear programming and optimization
- Monte Carlo simulation

Suggested Additional Materials for the Serious Operations Researcher

A subscription to the journal Interfaces.

Final Thoughts

"If you think education is expensive—try ignorance."
--Mark Twain

"When I hear, I forget. When I see, I remember. When I do, I understand."
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"The only place where success comes before work is in a dictionary."
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--Professor Jack Bookman

“I’ve failed over and over and over again in my life...And that is why I succeed.”  
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Course Outline

1. **Basic Excel Skills (Week 1)**  
   **Description**  
   A short review of Excel basics will be provided.

   Optional Tutorial  
   Excel Tutorial (on the course website)

2. **Spreadsheet Engineering (Week 2)**  
   **Description**  
   While spreadsheet use is almost universal in business today, *well-built* spreadsheets are hard to find. Much spreadsheet development is haphazard at best. This material will help students develop a systematic approach to their own spreadsheet development.

   **Descriptions**  
   To create *truly* user-friendly applications, spreadsheet designers should incorporate interfaces such as professional-looking input boxes. Students will receive a fairly significant level of background on Excel’s Visual Basic Editor, which can elevate their spreadsheet skills to a whole new level.

   **Readings**  
   Albright, Chapters 1-12, 14, and 15

4. **The Craft of Modeling (Week 7)**  
   **Description**  
   This includes a brief introduction to modeling and the role of modeling with spreadsheets in today’s business world. While modeling uses scientific tools, its essence is arguably just as much “art” as “science.” Significant time will be spent discussing the modeling process and certain modeling techniques. Visual modeling tools will be introduced.
Readings
Albright, Chapter 19

Articles (all available in Cougar Copies)

5. Waiting Lines and Queuing Theory (Week 8)
Description
Everybody hates to wait in lines. Managers need tools to help them determine the best trade-offs between waiting time (line length) and resource costs (e.g., the cost of additional checkout clerks). Queuing theory provides a framework for studying queues (or lines) and provides formulas for items such as the average waiting time in a line. A simple Excel spreadsheet will be provided to assist in queuing analysis.

6. Monte Carlo Simulation (Weeks 9-10)
Description
Simulation is a technique that measures and describes various characteristics of the bottom-line performance measure of a model when one or more values for the independent variables are uncertain. We will use the packaged software @RISK to analyze problems using simulation.

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Description
Mathematical programming represents arguably the most powerful set of tools taught in business schools. Math programs can solve a wide range of problems of significant complexity. In short, mathematical programming problems seek to maximize or minimize an objective subject to constraints on the solution space. Students will learn how to formulate programs to solve a variety of problems using Excel. We will focus on linear and integer programming, but we will also discuss nonlinear programming and math programming with multiple objectives (including goal programming).
Readings
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Readings
9. VBA Applications of Simulation (Week 14)
Description
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Description
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MgtOp 556—Advanced Business Modeling
Washington State University
Spring 2014
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Letter grade equivalencies and Distribution:

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<td>87% - 89.9%</td>
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<td>B-</td>
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