BANA 4095: Decision Models
Fall 2017

Instructor: Dr. Charles R. Sox  Teaching Assistant: TBA
Office: 525 Lindner Hall  Office Hours: TBA
Email: charles.sox@uc.edu  Phone: (513)556-1531

Lectures: Wednesdays, 6:00-8:50pm, 221 Lindner Hall
Prerequisite: BANA 2082 Business Analytics II
Credit Hours: Three (3)

Course Description:
This course further develops fundamental knowledge and skills for applying analytical tools to business decision making. Topics include optimization models and simulation models, including the use of software to develop these models.

Student Learning Outcomes:
Upon successful completion of this course, students should be able to
1. Construct optimization models of various business problems and apply these models using computer software.
2. Identify the principles of Monte Carlo simulation, model validation and verification and use software to perform simulation and risk analyses for operational applications.

Course Communication:
Course materials, homework submissions, announcements, and other communications will be handled exclusively through the course page in the Blackboard course management system. Changes to the syllabus, due dates, course requirements or grading requirements will be made as far in advance as possible. The posted syllabus on Blackboard will be updated when there are changes. University policy requires that the email set up in Blackboard is the primary means of communication. It is advisable that you use your UC email for this purpose and that you check it often. If you choose to change your email in Blackboard to a non-UC email it is your responsibility to ensure you check it frequently. See UC’s email policy.
http://www.law.uc.edu/sites/default/files/student_e-mail_policy.pdf


When reading the textbook in preparation for class it is essential that you take an active approach. This means that you should open the example spreadsheet files available online from the publisher and work through them as you read. The best prepared student is the one who comes to class with questions about how the concepts and methods can be
applied. Finally, you should expect to return to the book after class and while reviewing, in order to refine and consolidate your knowledge.

Software and Computer Usage:
Computer usage will be an extremely important part of this course. Students are responsible to bring their own laptop computer to every class session, including exams. Students are also responsible for their own access to the necessary software for this course both during and outside of class. Students should have a licensed version of Microsoft Excel loaded on their laptop. Students should also have a copy of the Analytic Solver Add-in loaded with the Excel software. Installation instructions will be provided on the Blackboard site. This Excel add-in package only works with Windows (PC) versions of Excel. Students using an Apple notebook computer may have a Windows version of Excel installed on their computer using a package such as VM Fusion or Parallels or they may use the cloud based version of Analytic Solver Platform on the Solver.com/student website.

Academic Integrity:
By admission to or attendance at U.C., a student accepts the responsibility to comply with the SCOC (Student Code of Conduct) and the rules and policies of the University of Cincinnati. Every student is bound by the academic misconduct provisions of the SCOC which are enforced to assure academic integrity. Academic misconduct includes: aiding and abetting academic misconduct, cheating, fabricating information, plagiarizing, and violating ethical or professional standards. Any violation of these regulations will be dealt with on an individual basis according to the severity of the misconduct. Additional information can be found at: http://www.uc.edu/conduct/Code_of_Conduct.html. Instructors are required to report any incident of academic misconduct to the college review process which could result in severe consequences, including potential dismissal from the college based on the college’s “Two Strike Policy.”

Disabilities:
Students with a disability who need academic accommodations or other specialized services while attending the University of Cincinnati will receive reasonable accommodations to meet their individual needs as well as advocacy assistance on disability-related issues. Students requiring special accommodation must register with the Disability Services Office. http://www.uc.edu/aess/disability.html. You should also schedule an appointment with the instructor during the first two weeks of the semester to discuss your requested accommodations.

Campus Closures:
In the event of inclement weather and the university is closed, the closure will not affect course assignments, and activities will remain as scheduled in the course syllabus unless otherwise noted on Blackboard by the instructor.
Grading:

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assignments</td>
<td>25%</td>
</tr>
<tr>
<td>Midterm Exam (Oct. 11)</td>
<td>35%</td>
</tr>
<tr>
<td>Final Exam (Dec. 6)</td>
<td>40%</td>
</tr>
</tbody>
</table>

A  ≥ 90.0
B  80.0 – 89.99
C  70.0 – 79.99
D  60.0 – 69.99
F  < 60.0

Homework assignments are important to learning how to apply the concepts in this course. Some assignments will be completed individually and others with your assigned team. The Midterm Exam will cover material from the first half of the semester, and the Final Exam will be comprehensive. Course grades are typically assigned based on a 10-point scale; however, the instructor reserves the right to curve the final grades.

Individual Assignments:

You must attempt each exercise on your own before discussing it with anyone else. All work submitted for grading must be your own, that is, you must create and type all of the work yourself (no copying any portion of someone else’s work even if you assisted them with it). You may discuss your general approach and results with other classmates, but the organization, analysis, and presentation of the work must be your own. Each student is responsible for learning all the material on the assignment. Always provide a clear verbal explanation and interpretation of your analysis and recommended solution. Put all of your work in a single spreadsheet file and submit it in Blackboard prior to the assignment deadline.

Team Assignments:

Team assignments should be collaborative work among all the students on the team. Every team member is expected to contribute substantially to every team assignment. Each team member should spend time working individually on the team assignment before meeting and working with the group. The instructor may occasionally conduct team member assessments for a specific team or for all teams. The feedback from these assessments may be used to adjust individual grades on some or all of the team assignments. There should be no discussion about specific approaches or solutions for team assignments between the teams. Team assignments are based on cases that provide descriptions of practical situations where modeling and analysis can play an important role. The cases provide you with opportunities to practice translating decision problems into analytical models and to consider the implications of your analysis for a particular situation. For many of the cases you will also be expected to present your ideas to an audience interested in the implications of your analysis. Note that every member of your team should be prepared to present the case.

Make-up Policy:

Any assignment that is submitted late will be penalized. A missed exam will automatically receive zero credit unless the student provides a documented excuse for missing the exam within 24 hours. If the instructor accepts the excuse as valid, then the exam will be made up or dropped, at the instructor’s discretion. If a student has a valid excuse prior to the scheduled exam date, then the student should contact the instructor at least one week prior to the exam to coordinate a time for a makeup exam.
Attendance:
Students are expected to attend all classes unless they have an officially excused absence.

Expectations:
1. Be in class on time if not early. Be alert and attentive in class. Ask questions.
2. Complete the reading assignments. Unless you are informed otherwise, you are responsible for the material in the reading assignments even if it is not discussed in class.
3. Do the homework assignments and learn from them. You should especially learn from your mistakes. You should discuss any mistakes that you don’t understand with the instructor or teaching assistant.
4. Exhibit professionalism and discipline in your work. Homework assignments should be neat, legible, and clearly organized. Answer all questions fully and in detail.

Tentative Schedule:
Any changes to this schedule will be communicated through Blackboard.

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topic</th>
<th>Reading</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Aug. 23</td>
<td>Introduction and Spreadsheet Design</td>
<td>App A</td>
</tr>
<tr>
<td>2</td>
<td>Aug. 30</td>
<td>Problem Solving and Decision Making</td>
<td>Chap 1</td>
</tr>
<tr>
<td>3</td>
<td>Sep. 6</td>
<td>General and Linear Optimization</td>
<td>Chap 2</td>
</tr>
<tr>
<td>4</td>
<td>Sep. 13</td>
<td>Linear Optimization, cont.</td>
<td>Chap 3-4</td>
</tr>
<tr>
<td>5</td>
<td>Sep. 20</td>
<td>Linear Optimization, cont.</td>
<td>Chap 6</td>
</tr>
<tr>
<td>6</td>
<td>Sep. 27</td>
<td>Integer Optimization</td>
<td>Chap 7</td>
</tr>
<tr>
<td>7</td>
<td>Oct. 4</td>
<td>Nonlinear Optimization</td>
<td>Chap 8</td>
</tr>
<tr>
<td>8</td>
<td>Oct. 11</td>
<td>MIDTERM EXAM</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Oct. 18</td>
<td>Simulation – Probability Review</td>
<td>Handout</td>
</tr>
<tr>
<td>10</td>
<td>Oct. 25</td>
<td>Monte Carlo Simulation</td>
<td>Chap 12</td>
</tr>
<tr>
<td>11</td>
<td>Nov. 1</td>
<td>Monte Carlo Simulation, cont.</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Nov. 8</td>
<td>Discrete Event System Simulation (DESS)</td>
<td>Handout</td>
</tr>
<tr>
<td>13</td>
<td>Nov. 15</td>
<td>DESS, cont.</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Nov. 22</td>
<td>Thanksgiving Holiday (no class)</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Nov. 29</td>
<td>DESS, cont. and Final Exam Review</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Dec. 6</td>
<td>FINAL EXAM</td>
<td></td>
</tr>
</tbody>
</table>
This course aligns with PACE, the Lindner College of Business platform for developing the total business professional.

**Professionalism** – Students will acquire and refine the soft-skills necessary to effectively lead and perform in business and social situations.

**Academics** – Students will gain a breadth and depth of knowledge of business functions and general education, developing and applying strong analytical and problem-solving skills.

**Character** – Students will build a solid base of the mental and cultural competencies necessary to contribute to their organizations, professions, and the global community.

**Engagement** – Students will understand the importance of commitment to and active participation in experiences valued to their professional fields and for personal growth and development.