IE 326 – Planning for Production and Service Enterprises – Fall 2016

Instructor: Dr. Chase Murray
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Office: 309 Bell Hall
Office Hours: Posted on UBlearns

Teaching Assistant (TA): See Canvas for contact information, office hours, and office location.

• Credit Hours: 3 (Lecture)
• Course Website: UBlearns will be used for all course grades, for e-mail, material distribution, etc.
• Class Meetings: M/W/F 2:00 – 2:50pm, NSC 216
ISBN-10: 1478623063

2016 Catalog Description: Examines principles central to the planning of a production process. These include topics germane to the planning, scheduling, and control of production.

Student Learning Outcomes:
Upon successfully completing this course, the student should have an appreciation for, and fundamental understanding of, the following concepts.

1) Strategy & Competition. [Chapter 1]
   a. What are the strategic initiatives of “business process reengineering”, “just-in-time”, “time-based competition”, “competing on quality”, and “servicization”?
   b. What are the process and product life cycles?
   c. What are learning and experience curves? How are they used? How do they differ?
   d. How to make “make or buy” decisions?
   e. How can dynamic capacity expansion policies be determined?
2) Forecasting. [Chapter 2]
   a. What is the purpose of a forecast? How are forecasts used (and abused)?
   b. What are some common forecasting methods? What are the relative advantages/disadvantages of these methods? How can forecasts obtained via different methods be combined?
3) Sales and Operations Planning. [Chapter 3]
   a. What is the S&OP process?
   b. What are KPIs?
   c. What is aggregate planning? What are the “chase”, “level”, and “mixed” strategies?
   d. How can aggregate planning problems be solved via mathematical programming?
   e. How can plans be disaggregated?
4) Inventory Control Subject to Known Demand. [Chapter 4]
   a. What are the types of inventories?
   b. What types of relevant costs exist?
c. Is "zero inventory" possible? Is it desirable?
d. What are the trade-offs between inventory and setup/shortage costs?
e. What are the impacts of large inventories?
f. What is the EOQ model?
g. How should quantity discounts be leveraged?

5) Inventory Control Subject to Uncertain Demand. [Chapter 5]
   a. What is the newsvendor problem?
   b. How large should a lot size be? When should product be re-ordered?
   c. How can service levels be incorporated? What types of service exist?

6) Supply Chain Management. [Chapter 6]
   a. What is a supply chain?
   b. What is the role of information in supply chain systems?
   c. How can mathematical programming be used to optimize delivery routes?
   d. What is “risk pooling”?

7) Push and Pull Production Control Systems. [Chapter 8]
   a. What are MRP and JIT? What are their advantages/disadvantages?
   b. How can lot-sizing be performed?

8) Operations Scheduling. [Chapter 9]
   a. What is a job shop?
   b. How can jobs be optimally sequenced on a single machine? What are some common objectives?
   c. How can jobs be scheduled on multiple machines?
   d. How should assembly lines be balanced?

9) Project Scheduling. [Chapter 10]
   a. What is the “critical path”?
   b. How can critical path problems be solved via linear programming?

Supplementary (Optional) Texts:
- Any other books on “production planning” “production management”, “operations management”, etc.

Course Requirements/Evaluation:
Students will be evaluated based on the following:
- (23 1/3%) Midterm #1 – Chapters 1, 2, and 3.
  - Midterm #1 is expected to be held in early October.
- (23 1/3%) Midterm #2 – Chapters 4, 5, and 6.
  - Midterm #2 is expected to be held in early-November.
- (23 1/3%) Midterm #3 – Chapters 8, 9, and 10.
  - Midterm #3 is expected to be held in early-December.
- (30%) Final Exam – Cumulative
  - The Final Exam will be held Monday, December 12, at 3:30pm in NSC 216
The exact dates for the midterm exams will be announced approximately two (2) weeks prior to the applicable exam.

**Final course grades** will be determined based on the following scale:

<table>
<thead>
<tr>
<th>Student’s Final Average</th>
<th>Grade</th>
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<tbody>
<tr>
<td>≥ 94.0 %</td>
<td>A</td>
</tr>
<tr>
<td>≥ 90.0 %</td>
<td>A-</td>
</tr>
<tr>
<td>≥ 87.0 %</td>
<td>B+</td>
</tr>
<tr>
<td>≥ 83.0 %</td>
<td>B</td>
</tr>
<tr>
<td>≥ 80.0 %</td>
<td>B-</td>
</tr>
<tr>
<td>≥ 77.0 %</td>
<td>C+</td>
</tr>
<tr>
<td>≥ 73.0 %</td>
<td>C</td>
</tr>
<tr>
<td>≥ 70.0 %</td>
<td>C-</td>
</tr>
<tr>
<td>≥ 67.0 %</td>
<td>D+</td>
</tr>
<tr>
<td>≥ 60.0 %</td>
<td>D</td>
</tr>
<tr>
<td>&lt; 60.0 %</td>
<td>F</td>
</tr>
</tbody>
</table>

Do not expect your grade to be “rounded up.”

**Exams:** All exams will be closed-book and closed-notes, unless specified otherwise by the instructor.

**Exam Makeup Policy:** Exams must be taken on the dates scheduled. Unless there is a medical emergency, make-up exams will not be given. Proof will be required. Students with a valid excuse must notify the instructor prior to the date/time of the originally scheduled exam.

Make-up exams will take place at 7:00am on a date chosen by the instructor. An exam missed without a valid documented medical emergency excuse will result in a grade of zero (0) for that exam.

**Homework:** While homework will not be an explicit component of your overall course grade, it is critical to your success to study the recommended practice problems. Solutions to many of these problems will be provided to you so that you may self-assess your understanding of the course material.

**Quizzes:** There will be no quizzes (unannounced or otherwise) in this course.

**Professionalism:** UB SEAS aims to enhance the education of the students in various aspects of professionalism, and to elevate the standards of behavior that are expected from students. The goals are two-fold: (1) to improve the working and learning environment within SEAS, and (2) to best equip students for employment after graduation.

- Students are expected to use professional style in all communications, including email, with course faculty and teaching assistants. This includes the use of salutations and closings (including clear identification of the author) and correct grammar.
- Students are expected to arrive prior to the start of class, and to remain for the duration of the class.
- Students are expected to refrain from the use of cell phones or other electronic devices unless they are clearly linked to class purposes (e.g., note-taking). Cell phones must remain off or muted.

**Attendance:** While attendance is highly recommended, it will not be an explicit factor in the course
grade.

**Grade Disputes:** If you disagree with the manner in which an exam was graded, you may request a re-evaluation of your exam within two (2) weeks of the exam date. A re-evaluation request should consist of two (2) components:

- Page 1: A photocopy of your exam.
- Page 2: A detailed explanation, not exceeding one-half page in length, describing why you believe your answer was correct.

The instructor will consider each case at the end of the term, but only if it appears that it may change your final grade. Obvious arithmetic errors will be corrected immediately.

**Accessibility Resources:** If you require classroom or testing accommodations due to a disability, please contact Accessibility Resources (AR), located in 25 Capen Hall. AR can be reached by phone at (716) 645-2608 or by email at stu-accessibility@buffalo.edu. Please inform the instructor as soon as possible about your needs so that he can coordinate your accommodations. Please also visit http://www.buffalo.edu/accessibility.

**Academic Honesty and Integrity:**

The University at Buffalo has a responsibility to promote academic honesty and integrity and to develop procedures to deal effectively with instances of academic dishonesty. Students are responsible for the honest completion and representation of their work, for appropriate citation of sources, and for respect for others’ academic endeavors. By placing their name on academic work, students certify the originality of all work not otherwise identified by appropriate acknowledgments. Please take the time to visit http://academicintegrity.buffalo.edu.

If you fail to meet the UB policy and the instructor’s policy for academic honesty and integrity, you will receive an ‘F’ in the course, and may be subject to suspension or expulsion from the university. Violations include, but are not limited to:

- **Cheating on an examination, homework assignment, quiz, etc.** – This includes such things as copying from another’s paper, using unauthorized notes, calculators, etc., or giving or receiving unauthorized aid, such as trading examinations, whispering answers, passing notes, or using electronic devices to transmit or receive information.

- **Plagiarism** – This is using someone else's work without giving credit. It is, for example, using ideas, phrases, papers, laboratory reports, computer programs, data - copied directly or paraphrased - that you did not arrive at on your own. Sources include published works such as book, movies, web sites, and unpublished works such as other students' papers or material from a research service. In brief, representing someone else's work as your own is academically dishonest. The risk of plagiarism can be avoided in written work by clearly indicating, either in footnotes or in the paper itself, the source of any major or unique idea or wording that you did not arrive at on your own. Sources must be given regardless of whether the material is quoted directly or paraphrased.

*Copying any part of another student's assignment and putting your name on it is plagiarism.*
• **Unauthorized collaboration** – This is working with or receiving help from others on graded assignments without the specific approval of the instructor. *If in doubt, seek permission from the instructor before working with others.* Students are encouraged to learn from one another: Form study groups and discuss assignments, but each assignment must be individual work unless specifically stated and turned in as a group assignment.

• You are encouraged to talk to one another about your assignments, however, all assignments must be done by the student(s) whose name is (are) on it!

• **Multiple submission** – This means using the same work to fulfill the academic requirements in more than one course. *Prior permission of the instructors is essential.*

**Frequently Asked Questions:**

1. “How do I get an A in this class?”
2. “I really studied hard for this exam, but I got a bad score. How do I do better on the next exam?”

My response to the first two questions is the same:

a) **Read** Study the chapter before coming to class.
   - The lectures will make much more sense if you already know what's coming.
   - If you didn't understand the material when you studied it, and if you still aren't clear after you've heard it in class, now you’re in a position to ask directed questions to address your particular concerns.

b) Immediately after each section covered in class, work on the applicable suggested study problems for that section.
   - Try to solve each problem without looking at the answers.
   - If something doesn't make sense, ask questions in the next class (before we start on the next topic) or come to office hours.

c) At the conclusion of the chapter, work on the review problems for that chapter.
   - Again, try not to peek at the solutions.

d) Form a study group to work on these problems together.

e) Before the exam, review the practice problems again.

*You should plan to spend 9 hours per week outside of class on this course (and on each of your other courses).*

3. “Can I do a bonus assignment to improve my grade?”
   No, there are no “bonus” assignments.

4. “Is the course textbook really required?”
   Yes.

5. “Can I use an older edition of the textbook?”
   No. The 7th edition is the most up-to-date and you will be expected to understand the material as presented in this edition.
6. “Do you curve the exam scores or the overall course grade?”
   You should assume that there will be no curve.

7. “Your office hours conflict with my schedule. How can I meet with you to ask questions?”
   Send me an email, with “IE 326” in the title. In the email itself, provide several candidate
days/times that you’re available.

8. “Can you post the class lecture notes on UBlearns?”
   The lecture notes (in .pdf form) will be posted prior to class. If you missed class, please find a
classmate to describe what was discussed in class.

9. “Will there be a review session before each exam?”
   Yes. The review session is generally during the class immediately preceding the exam. Prior to
that class, a discussion forum will be created in UBlearns. Students should post their questions
there. During the review session I’ll address the posted questions in order.

10. “What are the exams like?”
    Each exam will consist of multiple choice, true/false, and short response types of questions.
The questions will be very similar to those posed in the recommended problems that accompany
each chapter. I dislike “tricky” questions, but you’ll need to read each question carefully to
make sure you understand exactly what is being asked. Please keep in mind that it is difficult to know ahead of time exactly how “lengthy” a particular exam will be. However, each test is designed with the following in mind: Students who
understand the material should be able to complete the exam in 40 minutes (in the case of
midterm exams); students who are not properly prepared will probably not complete the exam
before time expires.

Syllabus prepared by C. Murray
Revision History:
   8/9/16 – Draft version of syllabus posted online.