

# IE 4333/6333: Production Control I

Hugh Medal

Syllabus

## COURSE INFORMATION

### Instructor

Hugh Medal  
Assistant Professor, Department of Industrial Engineering  
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### Teaching Assistant

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### Office Hours

My office hours are the following:

- Monday: 11:12:30pm (Edwards)
- Tuesday: 11-12pm (Medal)
- Wednesday: 11:12:30pm (Edwards)
- Thursday: 11-12pm, (Medal)
- Friday: by appointment

For Dr. Medal's office hours you are welcome to drop in. However, if you wish to reduce/eliminate waiting time, you may wish to schedule an appointment via <https://hughmedal.youcanbook.me/>.

### Course materials

*Required textbook*

- Production and Operations Analysis, Seventh edition, Steven Nahmias and Tava Lennon Olsen, Waveland Press, 2015, ISBN 978-1-4786-2306-9.
- The Goal, Third Revised Edition, Eliyahu M. Goldratt and Jeff Cox, North River Press, 2004, ISBN 0-88427-178-1

### Prerequisites

Grade of C or better in IE 4613

## Course Description

IE 4333/6333. Production Control Systems I. (3) (Prerequisite: Grade of C or better in IE 4613). Three hours lecture. Principles, analysis, and design of production and inventory planning and control. Demand forecasting, aggregated planning, inventory management, production scheduling, and control systems.

## Course Website and Communication

I will use the course website (found via [mycourses.msstate.edu](http://mycourses.msstate.edu)) to post assignments, grades, etc. Students will submit their homework to this website. Students should make sure that they receive announcements from the course website (it should automatically go to your MSU email address). Students are also responsible to check their msstate.edu email account.

## LEARNING OBJECTIVES

At the end of the course students should be able to:

1. Use the moving average and simple exponential smoothing techniques to make a forecast.
2. Choose an appropriate forecasting method for a given dataset.
3. For a given forecast, calculate the forecast error; use the forecast error to choose between multiple forecasting techniques.
4. Use the double exponential smoothing technique to make a forecast.
5. Recommend an aggregate plan (# hired and # fired in each period) that results in zero inventory held in each period.
6. Recommend an aggregate plan (# hired and # fired in each period) that has a constant workforce (level strategy; same number of workers in each period) and meets the total demand.
7. Compute the total cost for a given aggregate plan.
8. Compute an aggregate forecast for a given set of products.
9. List advantages and disadvantages of using various aggregate planning strategies (chase, level). Recommend a strategy given information about a particular company and context.
10. Compute the economic order quantity for a given item using information about demand, cost, etc. Also compute the time between orders and reorder point.
11. Compute the economic order quantity given an all-unit pricing structure.
12. Use the newsvendor model to compute the optimal order quantity for a given item.
13. Determine the reorder point for an item in order to minimize the expected total cost per year.
14. Determine the order size and reorder point if the store wishes to maintain a Type 1 service level.

## IMPORTANT DATES

- August 22, Last day to drop a course without a grade (5th class day) 5:00 p.m.
- September 5, Labor Day Holiday
- January 19, Last day to register or add a course (6th class day)
- August 23, Last day to request undergraduate academic forgiveness via myState 5:00 p.m

- September 26, First progress grades reporting deadline
- October 13–14, Fall Break – No Classes Scheduled (Dates Subject to Change)
- October 21, Second progress grade reporting deadline (end of week 10)
- November 11, Last day to withdraw from University (ten days of classes remaining); Progress grade reporting closes
- November 23–25, Thanksgiving holiday – no classes scheduled
- November 30, Classes end
- December 1–2, Reading Days (No mandatory class assignments, requirements, meetings)
- December 3, Make-up days (if needed)
- December 7, Final exam from 12–3pm
- December 10, Make-up days (if needed)
- December 12, Final Grades Due 12:00 noon

## COURSE ASSESSMENTS

Student learning will be assessed using the following methods: quizzes (11–14), problem sets (6–7), and a final exam.

### Quizzes

All quizzes are closed book and closed notes. You are allowed to bring a formula sheet and a calculator only. Make-up quizzes will only be allowed for university-excused absences (see below). There will be a quiz almost every week. I expect to give between 11–14 of these quizzes of which the best 10 will contribute to your average. Some of the quizzes will include an extra problem for graduate students.

On some of the quizzes you may use a computer with a spreadsheet program (e.g., Microsoft Excel). Here are the rules for use of computers:

- Before you start the quiz you must turn off any connection to the outside (e.g., WiFi). You are not allowed to communicate with anyone during the quiz.
- You must have Excel open and maximized on your screen at all times. If we see any other programs open (for whatever reason, even if by accident) you will be penalized.
- Your quiz will be graded as if you did it by hand. Thus, you must show all of your work.

### Problem Sets

Take-home assignments will be given about every other week. I expect to give between 6–7 assignments. 5 of your best assignments will contribute to your average. Assignments can be done in groups of at most two. They should be typed and submitted online via the course website. Late assignments will not be accepted. You are responsible for ensuring that you successfully upload the files in the correct format (.doc, .docx, or .pdf).

### Final Exam

The same format and rules as for quizzes. The final will be given during the final exam period.

## Grade Distribution

Assignments	– 40 points (8 points each)
Quizzes	– 40 points (4 points each)
Final	– 20 points

## Grading Scale

The following scale represents the minimum percentages needed for you to be guaranteed each letter grade.

A	90.0%
B	80.0%
C	70.0%
D	60.0%

However, I also use gray areas to determine grades. The gray areas are as follows:

A	89.0-89.9%
B	78.0-80.9%
C	67.0-70.9%
D	55.0-60.9%

If you in a gray area, your grade may be bumped up based on the following criteria: How many gray points did you earn? Did your grade increase over the course of the semester? Gray points can be earned from various activities through the semester such as the syllabus and knowledge quizzes at the beginning of the semester and answering discussion board questions.

## Grading Policies

### Late Problem Sets

If you cannot complete a problem set for a University-excused reason (see <http://www.policies.msstate.edu/policypdfs/1209.pdf>), you will be allowed to promptly submit it as soon as you are able. However, you must have your excuse validated by the Student Affairs office (<http://www.saffairs.msstate.edu/>).

### Missing the Quizzes and the Final Exam

If you cannot attend a quiz or the final exam for a University-excused reason (see <http://www.policies.msstate.edu/policypdfs/1209.pdf>), you will be allowed to reschedule as soon as you are able. However, you must have your excuse validated by the Student Affairs office (<http://www.saffairs.msstate.edu/>).

### Grade Appeals

Grades will be posted on the course web site and updated periodically. It is your responsibility to verify that your grades have been correctly entered. You have *one week* after an assignment or a test is returned to discuss changes in your grade. Note that grade changes may result in an increase or a decrease in your grade.

## GUIDELINES

### Academic Honesty

We will comply with the MSU Honor Code (<http://www.honorcode.msstate.edu/pdf/honor-code.pdf>), which requires me to report cases of academic dishonesty (page 8). Examples of academic dishonesty in this class include by are not limited to the following:

- Using unauthorized materials/resources on a quiz/test

- Communicating with people outside the class during a quiz or test
- Communicating or copying work on a quiz/test
- A conversation about an quiz/test between a student who has taken the exam and a student who has not yet taken it
- Copying homework from another student

## Students Needing Extra Accommodation

If there are any issues that may affect your learning, please let me know. I would like to make accommodations in any way I can, in collaboration with Student Support Services (<http://www.sss.msstate.edu/disabilities/>). In addition, you may wish to consult with Student Support Services yourself to understand how you can receive help.

## Title IX

MSU is committed to complying with Title IX, a federal law that prohibits discrimination, including violence and harassment, based on sex. This means that MSU's educational programs and activities must be free from sex discrimination, sexual harassment, and other forms of sexual misconduct. If you or someone you know has experienced sex discrimination, sexual violence and/or harassment by any member of the University community, you are encouraged to report the conduct to MSU's Director of Title IX/EEO Programs at 325-8124 or by e-mail to [titleix@msstate.edu](mailto:titleix@msstate.edu). Additional resources are available at <http://www.msstate.edu/web/security/title9-12.pdf>, or at <http://students.msstate.edu/sexualmisconduct/> <<http://students.msstate.edu/sexualmisconduct/>>.

## INFORMATION FOR DISTANCE EDUCATION STUDENTS

### *Taking Quizzes and the Final Exam*

- **Proctoring requirements.** Distance students are required to take the final exam via a proctor (see instructions below). Distance students should take quizzes using either a proctor or they should self proctor (see instructions below).
- **Instructions for registering your proctor.** At least one week in advance of each quiz/exam, the student must have up-to-date proctor information. Students can submit information about their proctor by accessing the proctor form (<http://www.bcoonline.msstate.edu/wp-content/uploads/2013/02/Proctor-Form1.pdf>) and following the directions therein. If only one proctor is used for the entire semester, then only one proctor form must be submitted. However, a new proctor form must be submitted for each change in proctor *at least one week in advance of the quiz/exam*. In choosing your proctor, you should find someone who is not related to you and is trustworthy. Examples include your supervisor or someone in Human Resources. If you have a question about whether someone would be an acceptable proctor, you may ask me.
- **Procedure for using a proctor.** Prior to the quiz/exam, I will email a copy of the quiz/exam to your proctor. You will then take the quiz/exam under their supervision. After you complete the quiz/exam, your proctor will scan your work and email it to me. Please be responsible for ensuring that your proctor submits your work to me on time.
- **Instructions for self proctoring.** For this option you will take the quiz on the course website. After starting the quiz, you will have 45 minutes to upload a file containing your answers and a video showing you take the quiz. Please write out your answers by hand and submit a PDF image of your answers (a scanner is preferable but a scan using a mobile device is ok). During the quiz, you should record a video of yourself working. This video should show your hands and your eyes during the entire quiz. At the start of the video you should show the room you are taking the quiz in as well as some indication

of the current date and time (I recommend showing the home screen on a mobile device). At the end of the quiz you should again show the current date and time. If the use of a computer program (e.g., Microsoft Excel) is allowed for the quiz, then you must the program open and maximized on your screen at all times. Immediately after completing your quiz you should email a Google Drive link of the video to the TA. If you have any trouble submitting your PDF online, please just email it to the TA.

- **When to take exams.** Distance students are typically expected to take quizzes/exams before the end of three days after the exam has given in class. For example, if a quiz/exam is given on a Thursday, I would give distance students until Sunday at 11:59 pm to take the exam, whether they use a proctor or they self-proctor.

*Other*

- For office hours, distance students may communicate with me via phone. However, students have found a video chat (e.g., Skype) to be more useful.
- Distance students are expected to keep up-to-date with watching video lectures. A link to the video lectures will be provided on the course website.
- Students can visit [www.bcoeonline.msstate.edu](http://www.bcoeonline.msstate.edu) to report technical difficulties or to access classroom videos. There is a link for each on the bottom right side of the page.