

IE 56600 – EPE: Production Management Control - Summer 2024

CRN: 31660, 3 credits

Course Administration:

Meeting times and Location:

IE 56600 – Production Management Control (3 cr.): Asynchronous Online Learning

Website: We will use Brightspace to facilitate the course. Contact the [ITaP Help Desk](#) for Brightspace questions.

Instructional Staff:

Name	Office	Email	Phone	Office Hours
Dr. Ben Fong	GRIS 394	nbfong@purdue.edu	765-494- 6515	See below/ By Appointment

Teaching Assistant:

Name	Email	Office Hours
TBD		Email/By Appointment
TBD		Email/By Appointment

Weekly Homework and Exam due dates and times:

HW#1 Due: 6/17/23 3:00 am EST Exam#1 Due: 6/28-7/01/23 (4 days slot)
HW#2 Due: 6/24/23 3:00 am EST Exam#2 Due: 7/12-7/15/23 (4 days slot)
HW#3 Due: 7/05/23 3:00 am EST Exam#3 Due: 7/27-7/30/23 (4 days slot)
HW#4 Due: 7/09/22 3:00 am EST
HW#5 Due: 7/19/22 3:00 am EST
HW#6 Due: 7/26/22 3:00 am EST

Instructor Office Hour: (1.5 hr via Zoom Meeting, will be recorded and posted in Brightspace)

Schedule (Jun 10 – Jul 30, 2024)	Target Group
Thursday 8:30 pm EST/ 5:30 pm PST	(EST, CST, MST, PST)
Email/Request for Virtual Appointment	Outside North America (e.g. Asia, Europe)

Watch the recorded meetings if you want to learn more from the team discussion.

Piazza

Welcome to Piazza! We'll be conducting all class-related discussion here this term. The quicker you begin asking questions on Piazza (rather than via emails), the quicker you'll benefit from the collective knowledge of your classmates, teaching assistants, and instructor. We encourage you to ask questions when you're struggling to understand a concept—you can even do so anonymously. I am like most of you, new to Piazza. We will learn it together and utilize this digital platform this summer!

Catalog Description: Background and development of production management, plus current concepts and controls applicable to production management functions.

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Requisite Background:

- Course Catalog: Graduate Standing or IE 38300;
- Informally speaking: Comfort with statistics, optimization modeling, and basic concepts related to business processes.

Additional Instructor Perspective:

This course will develop a systematic and scientific view of the management of production systems, with particular emphasis on the Factory Physics approach. We will cover core ideas related to the analysis of production lines (including capacity analysis, influence of variability, push/pull flow control), as well as other related functions (strategy, change management, and quality systems).

Why should I take this course? Consider the following: How much in your life is not manufactured? It will probably take a while to generate a good list of examples, if any. Modern life relies extensively on manufactured goods even in a so-called “service economy.” Consumers demand ever-increasing variety, high quality, and immediate gratification (i.e., short lead-times). Manufacturing enterprises require effective production management in order to meet these goals. This course will provide context to the influence of history, strategy, technology, and analytical methods useful for effective production management. This course should prove useful to anyone interested in influencing the production environment within a manufacturing enterprise.

Learning Goals: (these are what I hope you’ll retain from the course at least 1 year from the end of the course; in no particular order/importance)

1. Basic Factory Dynamics and Little’s Law;
2. Learn the causes and flow of variability in production systems;
3. Understand the basic of Queueing and effects of blocking;
4. The influence of variability on the performance of production systems;
5. Batching Laws and Cycle Time;
6. Push vs. Push Production Systems and CONWIP;
7. Apply and interpret statistical process control;
8. Learn the basis of Six Sigma-DMAIC, Lean Manufacturing, DFSS;
9. Fundamentals of Time Series Forecasting and Production Planning
10. Human Element in Operations Management.

Resources

Website: We will use Brightspace to facilitate the course. Contact the [ITaP Help Desk](#) for Brightspace questions.

Video Lecture Access: Videos related to this course, like, Introduction, Lecture, and Exam Prep are found in the course IE56600 Brightspace Content.

Required Textbook: *(learner will be expected to purchase or download online version)*

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Factory Physics, Third Edition, by Wallace J. Hopp and Mark L. Spearman (2011). Waveland Press. ISBN: 978-1-57766-739-1.

We will cover a substantial portion of this book - the core "Factory Physics" approach, other related topics will be covered in IE 57900, Design and Control of Production and Manufacturing Systems (Fall Semester).

Optional Textbooks: (Some eBooks may be freely available through Purdue Libraries)

Factory Physics for Managers, by Edward S. Pound, Jeffrey H. Bell, and Mark L. Spearman (2014). McGraw Hill. ISBN: 978-0-07-182250-3.

Supply Chain Science, by Wallace J. Hopp (2008). Waveland Press, Inc. ISBN: 978-1-57766-738-4

Business Dynamics: Systems Thinking and Modeling for a Complex World, by John D. Sterman (2000), McGraw Hill. ISBN: 978-0-07-2389159

Course Administration:

Lectures: Since the class is videotaped, it is the learner's responsibility to watch the videos in a timely manner. Each lecture will have a specific plan, but may not cover in-depth all of the course content on which learners will be assessed. All lecture videos, lecture PowerPoints (pdf), and other class related videos will be found in Brightspace under IE56600 course.

Assigned Readings: This course requires a significant amount of reading from the course textbook. All required reading is outlined in the course schedule.

Homework (60%): Several homework assignments (i.e. 6 HWs) will be given that will include questions from the Factory Physics text, among other sources, to assess student progress with the quantitative and the qualitative aspects of the course. These assignments will be submitted through Brightspace/ Gradescope (will be determined after meeting with my TAs), and receive a numerical grade, based on correctness.

Exams (30%): Three non-cumulative exams will be given. The exams will be open book and open notes, and cover 1/3 of the course each. Learners will be given the equivalent of one class period (90 minutes) to complete the exam, which will be administered through Gradescope.

Exam Prep: Before each exam, I will provide a video to review the particular course content and topics for the exam (total of 3 videos). Yes, hints may be provided in the video.

Individual Evaluation (10%): Instructor will evaluate each student in the following areas:

- a. Amount of time you spent to review the Lecture Videos
- b. Homework and Exam on-time submission
- c. Piazza Discussion and response to the class
- d. Participation in Weekly Office Hour (at least participate once)
- e. Email exchange with instructor (quick reply, professionally)
- f. Course Evaluation Survey (Purdue official End of Term Survey)

Late Homework / Late Exam: Point Deduction

Please provide a valid reason (evidence) or a late submission request (24 hours before the due date). Else, each late homework or late exam submission could be 10 points deduction. Please email me ahead for communication purpose – like you are working in any U.S. major corporation.

Learner Assessment Assignments

Type	Credit Allocation (as % of 1,000 points total)
Exams (3 in total) – 30%	10% each (100 points/exam)
Homework (6 in total) – 60%	10% each (100 points/homework)
Individual Evaluation – 10% (Lecture Video, HW/Exam on-time submission, Piazza Discussion, Office Hour, Email exchange, Course Evaluation.)	10% (100 points)
Total	1,000 points (Max)

The following grade divisions are a basis, and may be changed at the instructor's discretion:

A+: 970-1000; A: 930-969; A-: 900-929; B+: 870-899; B: 830-869; B-: 800-829; C+: 770-799; C: 730-769; C-: 700-729; D+: 670-699; D: 630-669; D-: 600-629; F: 0-599.

Course Logistics and Assessment:

Course Calendar: A course calendar is included as a supplement to the syllabus, and posted in Brightspace. It provides the list of tentative topics corresponding to the lecture and due dates. Any and all aspects of the schedule are subject to change as needed. For example, it may be necessary to add and/or trim module coverage to meet the needs of the class. Any changes will be communicated to the class via Brightspace.

Academic Honesty: Academic integrity is one of the highest values that Purdue University holds. Individuals are encouraged to alert university officials to potential breaches of this value by either emailing or by calling 765-494-8778. While information may be submitted anonymously, the more information that is submitted provides the greatest opportunity for the university to investigate the concern. More recently, students initiated the Honor Pledge: "As a boilermaker pursuing academic excellence, I pledge to be honest and true in all that I do. Accountable together - we are Purdue." If you need a refresher on academic dishonesty, please refer to the [student guide for academic integrity](#). *If you are caught engaging in academic dishonesty you will receive a failing grade for the course and a report will be filed with the Office of the Dean of Students.*

Grade Appeals: If you wish to appeal the grade earned on any course assignment (i.e., request a re-grade), you must do so within one week of the assignment being returned. You must allow

at least 24 hours of self/group-reflection prior to submitting the request, and the request must provide sufficient evidence of an error in the issued grade. Any request for a re-grade comes with the caveat that a grade could be reduced if sufficient evidence exists that points were over-awarded. Grade appeals must be sent to the entire instructional team via email. All grade appeals are reviewed by Dr. Fong.

Broader Considerations:

Mental Health Information: Purdue University is committed to advancing the mental health and well-being of its students. If you or someone you know is feeling overwhelmed, depressed, and/or in need of support, services are available. For help, such individuals should contact Counseling and Psychological Services (CAPS) at (765)494-6995 and <http://www.purdue.edu/caps/> during and after hours, on weekends and holidays, or through its counselors physically located in the Purdue University Student Health Center (PUSH) during business hours.

If you find yourself beginning to feel some stress, anxiety, and/or feeling slightly overwhelmed, try WellTrack, <https://purdue.welltrack.com/>. Sign in and find information and tools at your fingertips, available to you at any time.

If you need support and information about options and resources, please see the Office of the Dean of Students, <http://www.purdue.edu/odos>, for drop-in hours (M-F, 8 am-5 pm).

Students with Disabilities: Purdue University strives to make learning experiences as accessible as possible. If you anticipate or experience physical or academic barriers based on disability, you are welcome to let us know so that we can discuss options. You are also encouraged to contact the Disability Resource Center at: drc@purdue.edu or by phone: 765-494-1247.

Nondiscrimination Statement: Purdue University is committed to maintaining a community which recognizes and values the inherent worth and dignity of every person; fosters tolerance, sensitivity, understanding, and mutual respect among its members; and encourages each individual to strive to reach his or her own potential. In pursuit of its goal of academic excellence, the University seeks to develop and nurture diversity. The University believes that diversity among its many members strengthens the institution, stimulates creativity, promotes the exchange of ideas, and enriches campus life. Purdue's nondiscrimination policy can be found at http://www.purdue.edu/purdue/ea_eou_statement.html.

Mental Health Statement:

- If you find yourself beginning to feel some stress, anxiety and/or feeling slightly overwhelmed, try [WellTrack](#). Sign in and find information and tools at your fingertips, available to you at any time.
- If you need support and information about options and resources, please see the [Office of the Dean of Students](#) for drop-in hours (M-F, 8 am- 5 pm).
- If you're struggling and need mental health services: Purdue University is committed to

advancing the mental health and well-being of its students. If you or someone you know is feeling overwhelmed, depressed, and/or in need of mental health support, services are available. For help, such individuals should contact [Counseling and Psychological Services \(CAPS\)](#) at 765-494-6995 during and after hours, on weekends and holidays, or by going to the CAPS office of the second floor of the Purdue University Student Health Center (PUSH) during business hours.

Emergency Preparedness: Purdue University is a very safe campus and there is a low probability that a serious incident will occur here at Purdue. However, just as we receive a “safety briefing” each time we get on an aircraft, we want to emphasize our emergency procedures for evacuation and shelter in place incidents. Our preparedness will be critical IF an unexpected event occurs.

Emergency preparedness is your personal responsibility. Purdue University is actively preparing for natural disasters or human-caused incidents with the ultimate goal of maintaining a safe and secure campus. Let’s review the following procedures:

- For any emergency call 911.
- There are nearly 300 Emergency Telephone Systems throughout campus that connect directly to the Purdue Police Department (PUPD). If you feel threatened or need help, push the button and you will be connected to the PUPD.
- If we hear a fire alarm we will immediately evacuate the building and *proceed the parking lot area away from the building (along the mall between STEW and UNIV)*
 - Do not use the elevator.
 - Go over evacuation route...see specific Building Emergency Plan.
- If we are notified of a Shelter in Place requirement for a tornado warning we will shelter in the lowest level of this building away from windows and doors. Our preferred location is the lowest level possible away from exterior doors and windows. *Our preferred location is the hallway outside of the classroom away from doors and windows, since we are on the lowest level of the building.*
 - Use your cellphone to stay informed.
- If we are notified of a Shelter in Place requirement for a hazardous material release we will shelter in our classroom shutting any open doors and windows.
- If we are notified of a Shelter in Place requirement for an active threat such as a shooting we will shelter in a room that is securable preferably without windows. Our preferred location is to remain in the classroom.
- We will do what we can to barricade the doors, turn out the lights, and spread out. If necessary, crouch down among the seats and to make the room appear unoccupied.

In the event of a major campus emergency, course requirements, deadlines and grading percentages are subject to changes to accommodate a revised academic calendar. Information about changes in this course will be posted on Brightspace.