

**Instructor's Resource Guide
to Accompany**

Operations Management

Strategy and Analysis

KRAJEWSKI / RITZMAN



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to Accompany**

Operations Management Strategy and Analysis

LEE J. KRAJEWSKI and LARRY P. RITZMAN

Ohio State University



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PREFACE

This manual is the first of two prepared for instructors using Operations Management: Strategy and Analysis. The other manual provides an extensive set of lecture notes and transparency masters. The lecture notes provide a very structured presentation of textbook materials, such as mandated in large lecture settings. The transparency masters have the usual assortment of key figures and tables from the textbook. They also are supplemented by some 250 slides which complement the lecture notes.

This manual begins with suggestions on several possible course outlines, depending on whether you are on a quarter or semester system, teaching at the undergraduate or graduate level, and prefer a functional or quantitative emphasis. These outlines come from actual experiences using preliminary versions of the text. One of our goals was to write a textbook which had maximum flexibility in chapters used, sequencing, and student level (undergraduate or MBA).

The next section contains short answers to the problems at the end of the chapters. The first part is for odd-numbered problems, with the second being for even-numbered problems. These short answers are given in compact form so that they can be distributed to the student or put on library reserve at the instructor's discretion.

The final section gives the following materials for each chapter and appendix as a unit:

- *Teaching Note. We provide a short teaching note on the key features of the unit, what might be emphasized, and time requirements. Any sequencing constraints are also mentioned. A much more detailed treatment of the unit content is provided by the lecture notes in the second manual.
- *Answers to Study Questions. Answers are provided to each study question at the back of the unit. There are typically 4 or 5 sentences to each answer, which is enough to fully answer the questions without introducing new material.
- *Solutions to Problems. Complete solutions are worked out in detail for each problem, in contrast to the short answers given earlier.
- *Test Bank. Approximately 10 to 12 True-False questions are provided, along with a like number of Multiple-Choice questions. The questions are carefully constructed not to be "tricky," so that basic knowledge is tested rather than the ability to handle unusual test formats. For example, we avoid possible answers such as "none of the above" or "all of the above." We also avoid listing several statements and asking which is false. In contrast to most other manuals, approximately half of our Multiple-Choice questions cover techniques (rather than concepts). The format of these questions allows techniques to be fairly tested without having to resort to hand grading. Such questions derive from our experiences using drafts of the text.
- *Short Cases and Solutions. Several short cases are included to supplement selected chapters. They are best seen as extensive take-home problems, rather than comprehensive cases of the Harvard Business School variety. They are appropriate if you want a quick learning experience focusing on a particular concept or technique. If more comprehensive cases are needed, you can find them in the broad range of casebooks now available in the field. Examples of such cases are suggested by Plans E and F in the next section on course outlines.

We want to express our appreciation for all who helped prepare this manual. We have been blessed with an outstanding group of doctoral students who helped with the undergraduate courses in operations management. They had a hand in writing short cases and preparing test questions. Special thanks go to Robert Bregman, Soumen Ghosh, Jay Kim, Manoj Malhotra, Carol Rader, Randall Russell, Nada Sanders, Deven Sharma, Sue Siferd, and Craig Wood. We also are very grateful to Cheryl Estep for typing the manuscript and to Addison-Wesley Publishing Company for the unfailing support throughout the project.

CONTENTS

PREFACE

COURSE OUTLINES	1
SHORT ANSWERS TO PROBLEMS	21
Odd-Numbered Problems	
Even-Numbered Problems	

CHAPTERS AND APPENDICES

Chapter 1.	Introduction	62
Chapter 2.	Product Planning and Competitive Priorities	72
Chapter 3.	Forecasting	83
Chapter 4.	Process Design	96
Chapter 5.	Technological Choices	111
Chapter 6.	Work Measurement	119
Chapter 7.	Capacity and Maintenance	130
Chapter 8.	Location	141
Chapter 9.	Layout	158
Chapter 10.	Materials Management	182
Chapter 11.	Production and Staffing Plans	191
Chapter 12.	Independent-Demand Inventory Systems	207
Chapter 13.	Master Production Scheduling	230
Chapter 14.	Materials Requirements Planning	244
Chapter 15.	High-Volume Production Systems	278
Chapter 16.	Work-Force and Operations Scheduling	298
Chapter 17.	Project Scheduling and Control	322
Chapter 18.	Quality Management	352
Chapter 19.	Quality Control	360
Chapter 20.	Operations as a Competitive Weapon	377
Appendix A.	Financial Analysis	382
Appendix B.	Queuing and Simulation Analysis	391
Appendix C.	Linear Programming	404

COURSE OUTLINES

Introductory courses in operations management are taught in hundreds of ways. Some instructors are on a quarter system and others are on a semester system. Mini-semesters of 15 sessions are sometimes used. Some instructors prefer a functional orientation and others want a more quantitative orientation. Some teach megasections in large lecture halls and others can plan on more class interaction in small classrooms. Some prefer to introduce infrastructure decisions first, saving the longer-term design choices for the end. Finally, some teach at the undergraduate level, while others teach masters students. The implication is clear: No one approach is best for everyone. A textbook must be used in a variety of settings and our goal was to make it as flexible as possible.

Here we suggest six possible plans, hoping that they help you design a syllabus that best meets your needs. The field of operations management is wide-ranging and it is unlikely that you can cover everything even with a semester system. Decisions must be made on what to cover and what to omit.

Time Estimates

We estimate that 55 hours of classroom time are needed to cover all material in the textbook, using a lecture format. The time estimates shown below for each chapter and appendix allow you to mix into your lecture illustrations of real company examples, work out problems, and do in-class exercises. The time estimates should be increased if you additionally allow significant class discussions, case analyses, or computer demonstrations. The full-coverage estimate is for completely covering all material with the lecture style. The partial-coverage estimate is the minimum time that can be devoted to cover just the key points of the chapter, again by lecturing. More information on these estimates and sequencing constraints is found in the teaching notes provided later in this manual.

COURSE OUTLINES

CHAPTER OR APPENDIX	FULL COVERAGE (MINUTES)	PARTIAL COVERAGE (MINUTES)	OMITTED PAGES FOR PARTIAL COVERAGE
1	90	90	None
2	120	90	No class discussion of two cases.
3	180	90	89-95 and 100-106
4	120	45	134-160
5	90	45	170-185
6	120	90	226-230 and 238-240
7	105	90	270-278
8	120	90	309-313
9	120	90	341-346 and 355-359
10	110	90	385-388 and possibly 379-385
11	90	70	Reduced in-class exercises
12	135	100	460-462, 473-476, and 477-478
13	120	90	505-509
14	180	135	553-554 and 564-570
15	100	60	584-591 and no skit
16	270	135	616-627
17	270	135	658-676
18	75	30	698-706 and no film
19	180	90	732-735 and 736-739
20	90	30	762-772
A	60	45	A9-A11 and possibly A2-A5
B	180	135	B14-B21 and B32-B33
C	<u>360</u>	<u>225</u>	C18-C22 and C25-C28
TOTAL	3285	2090	

Plan Summaries

The essence of the six plans is shown in the table on the following page. A session is a 90-minute block of time. Plans A, C, and E are for the quarter system. They call for 17 or 18 sessions, leaving 2 or 3 for exams, holidays, guest panels, tours, or expansion on some important topics. Plans B, D, and F are for the semester system. They provide for 27 sessions, leaving 2 or 3 sessions of slack. The quarter and semester systems with 90-minute sessions bracket the amount of time almost all of us have to teach an introductory course in operations management. One exception is the mini-semester course that has only 15 sessions. Here you must eliminate 3 or 4 sessions from one of the plans for a quarter system.

COURSE OUTLINES

SESSION	PLAN A		PLAN B		PLAN C		PLAN D		PLAN E		PLAN F	
	CHAPTER	TIME (MIN)	CHAPTER	TIME (MIN)	CHAPTER	TIME (MIN)	CHAPTER	TIME (MIN)	CHAPTER	TIME (MIN)	CHAPTER	TIME (MIN)
1	1	90	1	90	1	90	1	90	2(p)	90	2	90
2	2(p)	90	2	90	2(p)	90	2(p)	90	9(p)	90	9(p)	90
3	17(p)	90	2,3	30,60	3(p)	90	3	90	1	90	1	90
4	17(p), 4(p)	45,45	3	90	7(p)	90	3	90	10,12	90	4(p)	90
5	5	90	3,4(p)	30,60	B(p)	90	4(p),5(p)	45,45	10,12	90	5	90
6	6(p)	90	5	90	B(p),8(p)	45,45	6(p)	90	10,12	90	6	90
7	7(p)	90	6	90	8(p),C(p)	45,45	7(p)	90	13,14	90	6	90
8	8(p)	90	6,7	30,60	C(p)	90	B(p)	90	13,14	90	6	90
9	9(p)	90	7,A(p)	45,45	C(p)	90	B(p),8(p)	45,45	15(p)	90	7,8	90
10	10(p)	90	8	90	10(p)	90	8(p),C	45,45	6(p)	90	7,8	90
11	11(p),12(p)	70,20	8,9	30,60	11(p),12(p)	70,20	C	90	16(p)	90	11	90
12	12(p)	90	9,10	60,30	12(p)	90	C	90	17	90	11	90
13	13(p)	90	10	90	14(p)	90	C	90	7(p),8(p)	90	10,12	90
14	14	90	11	90	14(p),17(p)	45,45	C,9(p)	45,45	18	90	10,12	90
15	14	90	12	90	17(p)	90	9(p),10(p)	45,45	19(p)	90	10,12	90
16	18(p),19(p)	30,60	12,13	35,55	19(p)	90	10(p),11	45,45	5	90	10,12	90
17	15(p),20(p)	60,30	13,14	65,25	15(p),20(p)	60,30	11,12	45,45	7(p)	90	13,14	90
18	-	-	14	90	-	-	12	90	20	90	13,14	90
19	-	-	14,15	65,25	-	-	13(p)	90	-	-	15(p)	90
20	-	-	15,16(p)	75,15	-	-	14	90	-	-	16(p),17	90
21	-	-	16(p)	90	-	-	14	90	-	-	16(p),17	90
22	-	-	16(p)	90	-	-	16(p)	90	-	-	16(p),17	90
23	-	-	17(p)	90	-	-	16(p),17(p)	45,45	-	-	18	90
24	-	-	17(p),18(p)	35,55	-	-	17(p)	90	-	-	18	90
25	-	-	19	90	-	-	19	90	-	-	19	90
26	-	-	19	90	-	-	19	90	-	-	20	90
27	-	-	20	90	-	-	15(p),20(p)	60,30	-	-	20	90
TOTAL		1530		2430		1530		2430		1620		2430

Plan A (Undergraduate/Functional/Quarter)

This plan is how we currently use the textbook for our undergraduate "megasection" course with a quarter system. The materials in the Lecture Notes and Transparencies manual correspond to this plan. It takes a functional orientation, since time does not permit coverage of all basic decision areas and quantitative techniques are taught in another required course. We find an abundance of techniques to cover, particularly after Chapter 5, without introducing new financial or operations research tools. Since Chapter 3 is also omitted, some resequencing may be desirable in the first part of the course which otherwise is heavily concept-oriented. Our solution was to move up Chapter 17 after Chapter 2. Another option is to move up Chapters 18 and 19, since quality control is technique-oriented.

Grades are based on four exams, with the final one being comprehensive. Help sessions and exams come after sessions 5, 10, 15, and 17. Grading is computerized with all tests being multiple choice. Students get a handout of the correct answers at the departmental office immediately after the exam, with grades posted within five days of the exam. Homework problems are assigned, but neither collected or graded. Solutions to the homework problems, past exams, and lecture notes are sold to the students as a supplemental package to go with the textbook.

The session-by-session assignments are given below. Short newspaper articles are sometimes assigned, since we found that students really appreciate them as lecture supplements. They allow you to illustrate course concepts with real business examples. Abstracts of such articles are now liberally scattered throughout the boxes in the textbook, so the need for article supplements now is less pressing.

<u>SESSION</u>	<u>TITLE</u>	<u>ASSIGNMENT</u>
1.	Introduction	1. Read Chapter 1.
2.	Product Planning and Competitive Priorities	1. Read Chapter 2. The two cases described in the chapter (Longhorn Products and Suds Brewery) will give us a framework used throughout the course. 2. Articles (a) "Break-Dancing in the Dark," <u>Forbes</u> , August 12, 1985. (b) "Losing Sales, Radio Company Finds Success in New Product," <u>The Wall Street Journal</u> , February 27, 1984. 3. Problems 1, 2, 4, and 5 in Chapter 2.
3.	Project Scheduling and Control	1. Read Chapter 17, pp. 639-658 and pp. 676-679. 2. Articles (a) "Atomic Speed: Utility Cuts Red Tape, Builds Nuclear Plant Almost on Schedule," <u>The Wall Street Journal</u> , February 22, 1984.

COURSE OUTLINES

- (b) "Planning a July 4 Party for Five Million? Ms. Hemming Is, and It's Not an Easy Task," The Wall Street Journal, June 19, 1986.
3. Problems 1, 2, 5 and 9 in Chapter 17.
4. Project Scheduling and Control (Continued) AND Process Design
1. Read Chapter 4, pp. 119-134.
2. Articles
- (a) "Boiled-Egg Peelers Aim for Perfection, and That's No Yolk," The Wall Street Journal, July 9, 1985.
- (b) Grocery Squeeze: Aggressive a Century, Kroger is Retrenching To Stem Fall in Profits," The Wall Street Journal, May 31, 1984.
3. Problem 3 in Chapter 4.
5. Technological Choices
1. Read Chapter 5, pp. 186-204.
2. Articles
- (a) "Bar Codes are Black-and-White Stripes and Soon They Will Be Read All Over," The Wall Street Journal, January 8, 1985.
- (b) "The One-Robot Shop," The Wall Street Journal, September 16, 1985.
3. Problems: None in Chapter 5.
6. Work Measurement
1. Read Chapter 6. Omit material on work sampling procedures (pp. 226-230).
2. Article
- (a) "Up to Speed: United Parcel Service Gets Deliveries Done By Driving Its Workers," The Wall Street Journal, April 22, 1986.
3. Problems 4, 5, 9 and 10 in Chapter 6.
7. Capacity
1. Read Chapter 7, pp. 248-270.
2. Articles
- (a) "U.S. Lodging Industry is Staggered by Room Glut and Building Boom," The Wall Street Journal, November 26, 1984.
- (b) "Honda Plant Reaches Capacity," The Columbus Dispatch, June 2, 1986.
3. Problems 1a, 2, 3 (a and b) and 4.
8. Location
1. Read Chapter 8, pp. 285-309.
2. Articles
- (a) "Population Density Remains Primary Factor for Retailers," The Wall Street Journal, November 6, 1984.
- (b) "Mazda Ponders if U.S. Workers Can Hustle," The Wall Street Journal, May 1, 1984.
3. Problems 1, 2, 5, 6, and 8.

COURSE OUTLINES

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|--|---|
| 9. Layout | <ol style="list-style-type: none">1. Read Chapter 9, pp. 321-341 and pp. 346-355.2. Articles<ol style="list-style-type: none">(a) "Large Retailers Are Changing Strategy and Image by Remodeling Stores, Upgrading Product Lines," <u>The Wall Street Journal</u>, July 10, 1984.(b) "Some Hamburger Loyalists Think Even Plastic Plants are Too Fancy," <u>The Wall Street Journal</u>, March 22, 1985.(c) "GM to Make New Car in '87, Settles Strike," <u>The Wall Street Journal</u>, January, 28, 1985.3. Problems 1, 3, 5, 7 and 8 in Chapter 9. |
| 10. Materials Management | <ol style="list-style-type: none">1. Read Chapter 10, pp. 369-385 and pp. 388-402.2. Articles<ol style="list-style-type: none">(a) "Tightening Inventories," <u>Fortune</u>, May 27, 1985.(b) "Squeezing Suppliers," <u>The Wall Street Journal</u>, July 31, 1984.3. Problems 1, 2, 3, and 5. |
| 11. Production and Staffing Plans AND Independent-Demand Inventory Systems | <ol style="list-style-type: none">1. Read Chapter 11.2. Articles<ol style="list-style-type: none">(a) "Firestone Profits from Operations Fell in 1st Period," <u>The Wall Street Journal</u>, February 22, 1984.(b) "Intel to Dismiss 900 Employees, Close Two Plants," <u>The Wall Street Journal</u>, February 19, 1985.3. Problems 1, 2, and 3a in Chapter 11. |
| 12. Independent-Demand Inventory Systems (Continued) | <ol style="list-style-type: none">1. Read Chapter 12, pp. 447-460, pp. 463-473, and pp. 478-480.2. Articles: None.3. Problems 1, 2, 4, 5, 6, 7, 9(a & b), and 10 in Chapter 12. |
| 13. Master Production Scheduling | <ol style="list-style-type: none">1. Read Chapter 13, pp. 489-505 and pp. 509-517.2. Articles: None.3. Problems 1, 2, 3, 5, 7, and 8. |
| 14. Materials Requirements Planning | <ol style="list-style-type: none">1. Read Chapter 14, pp. 525-540.2. Articles: None.3. Problems 2 and 3. |
| 15. Materials Requirements Planning (Continued) | <ol style="list-style-type: none">1. Read Chapter 14, pp. 540-553.2. Articles: None.3. Problems 4, 5, 6, 7, 8, and 9. |

COURSE OUTLINES

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| 16. Quality Management
AND
Quality Control | 1.
2.

3.
4.
5. | Read Chapter 18, pp. 689-698 and pp. 707-716.
Article
"Cause of Quality Control Problems Might be Managers - Not Workers," <u>The Wall Street Journal</u> , April 10, 1985.
Problem 1(a) in Chapter 18.
Read Chapter 19, pp. 721-732.
Problems 1, 2, 3 and 7 in Chapter 19. |
| 17. Just-In-Time Systems
AND
Conclusion | 1.
2.
3.
4. | Read Chapter 15, pp. 572-584.
Problem 2 in Chapter 15.
Read Chapter 20, pp. 757-761 and pp. 773-781.
Article
(a) "Getting Smart: How U.S. Companies Devise Ways to Meet Challenge From Japan," <u>The Wall Street Journal</u> , September 16, 1986. |

Plan B (Undergraduate/Functional/Semester)

Plan B extends the functional orientation at the undergraduate level to a semester system. It is much less pressed for time than Plan A. All 20 chapters are covered, with only four (4, 16, 17 and 18) receiving partial coverage. More attention can be given to these chapters by giving only partial coverage to more of the earlier chapters. Session-by-session assignments are shown below. The supplementary articles are not shown in Plans B through F, since they can be found in Plan A.

SESSION	TITLE	ASSIGNMENT
1.	Introduction	1. Read Chapter 1.
2.	Product Planning and Competitive Priorities	1. Read Chapter 2. 2. Problems 1, 2, 4, and 5.
3.	Product Planning and Competitive Priorities (Cont.) AND Forecasting	1. Answer Study Question 10 in Chapter 2 and be prepared to discuss the differences between Longhorn and Suds. 2. Read Chapter 3, pp. 71-89. 3. Problems 1, 2, and 3 in Chapter 3.
4.	Forecasting (Continued)	1. Read Chapter 3, pp. 89-102. 2. Problems 4, 5, and 7.
5.	Forecasting (Continued) AND Process Design	1. Read Chapter 3, pp. 102-114. 2. Problems 9 and 10. 3. Read Chapter 4, pp. 119-134. 4. Problem 3 in Chapter 4.
6.	Technological Choices	1. Read Chapter 5. 2. Problems: None.

COURSE OUTLINES

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| 7. | Work Measurement | 1. Read Chapter 6, pp. 209-230.
2. Problems 2, 3, 4, 5, 6, and 8. |
| 8. | Work Measurement
(Continued)
AND
Capacity &
Maintenance | 1. Finish Chapter 6, pp. 230-243.
2. Problems 9 and 10 in Chapter 6.
3. Read Chapter 7, pp. 248-270.
4. Problems 1a, 2, 3 (a and b), and 4. |
| 9. | Capacity &
Maintenance (Cont.)
AND
Financial Analysis | 1. Read Appendix A.
2. Read Chapter 7, pp. 270-279.
3. Problems 1b, 3c, 6 and 7 in Chapter 7.
4. Problems 1 and 8 in Appendix A. |
| 10. | Location | 1. Read Chapter 8, pp. 285-309.
2. Problems 1, 5, 6, 8, and 9. |
| 11. | Location (Cont.)
AND
Layout | 1. Finish Chapter 8, pp. 309-314.
2. Problems 10 and 11 in Chapter 8.
3. Read Chapter 9, pp. 321-344.
4. Problems 1, 3, and 5 in Chapter 9. |
| 12. | Layout (Cont.)
AND
Materials
Management | 1. Finish Chapter 9, pp. 344-361.
2. Problems 7 and 8 in Chapter 9.
3. Read Chapter 10, pp. 369-379. |
| 13. | Materials
Management (Cont.) | 1. Finish Chapter 10, pp. 379-404.
2. Problems 1, 2, 3, and 5 in Chapter 10. |
| 14. | Production and
Staffing Plans | 1. Read Chapter 11.
2. Problems 1, 2, 3a, and 6. |
| 15. | Independent-Demand
Inventory Systems | 1. Read Chapter 12, pp. 447-471.
2. Problems 1, 2, 4, 5, 6, 8, and 9. |
| 16. | Independent-Demand
Inventory Systems
(Continued)
AND
Master Production
Scheduling | 1. Finish Chapter 12, pp. 471-482.
2. Problems 12, 13, and 14 in Chapter 12.
3. Read Chapter 13, pp. 490-505.
4. Problems 1, 2, 3, and 6 in Chapter 13. |
| 17. | Master Production
Scheduling (Cont.)
AND
Materials
Requirements
Planning | 1. Read Chapter 13, pp. 505-518.
2. Problems 7, 8, and 9 in Chapter 13.
3. Read Chapter 14, pp. 525-535.
4. Problems 1 and 2 in Chapter 14. |
| 18. | Materials
Requirements
Planning (Cont.) | 1. Read Chapter 14, pp. 535-548.
2. Problems 4, 5, 6, 7, 8, and 10. |

COURSE OUTLINES

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| 19. Materials Requirements
AND
High-Volume
Production Systems | 1. Finish Chapter 14, pp. 548-554 and read Chapter 14 Supplement, pp. 564-570.
2. Read Chapter 15, pp. 571-584.
3. Problems 1 and 2 in Chapter 15. |
| 20. High-Volume
Production Systems
AND
Work-Force
Scheduling | 1. Finish Chapter 15, pp. 584-592.
2. Problems 3, 6, and 8 in Chapter 15.
3. Read Chapter 16, pp. 599-608.
4. Problems 9 and 10 in Chapter 16. |
| 21. Operations
Scheduling | 1. Read Chapter 16, pp. 608-616.
2. Problems 1, 2, and 5. |
| 22. Operations
Scheduling (Cont.) | 1. Finish Chapter 16, pp. 621-628.
2. Problems 7 and 8. |
| 23. Project
Scheduling and
Control | 1. Read Chapter 17, pp. 639-658.
2. Problems 1, 2, 5, and 9. |
| 24. Project
Scheduling and
Control (Cont.)
AND
Quality Management | 1. Read Chapter 17, pp. 676-679.
2. Read Chapter 18, pp. 689-698 and pp. 707-717.
3. Problems 1 and 2 in Chapter 18. |
| 25. Quality Control | 1. Read Chapter 19, pp. 721-735.
2. Problems 1, 2, 3, and 7. |
| 26. Quality Control
(Continued) | 1. Finish Chapter 19, pp. 735-749.
2. Problems 4, 5, 6, 8, and 11. |
| 27. Conclusion | 1. Read Chapter 20.
2. Be prepared to discuss the study questions at the end of Chapter 20. |

Plan C (Undergraduate/Quantitative/Quarter)

This third plan is the first of two for instructors seeking a quantitative emphasis. In comparison to Plan A, partial coverage is given to forecasting (Chapter 3), queuing and simulation (Appendix B), and linear programming (Appendix C). In order to make room for these topics, Chapters 4, 5, 6, 9, and 13 must be dropped from the outline.

COURSE OUTLINES

Most sessions for Plan C can be reconstructed from the session-by-session assignments for Plans A and B. The exceptions are sessions 3 through 9; they are specified below.

<u>SESSION</u>	<u>TITLE</u>	<u>ASSIGNMENT</u>
3	Forecasting	1. Read Chapter 3, pp. 71-89, pp. 96-100, and pp. 107-114. 2. Problems 1, 2, 5, and 8.
4	Capacity	1. Read Chapter 7, pp. 248-270. 2. Problems 1a, 2, 3 (a and b), and 4.
5	Queuing and Simulation Analysis	1. Read Appendix B, pp. B1-B15. 2. Problems 1, 2, and 3 in Appendix B.
6	Queuing and Simulation Analysis (Continued) AND Location	1. Read Appendix B, pp. B23-B34. 2. Problems 8 and 9 in Appendix B. 3. Read Chapter 8, pp. 285-300. 4. Problems 1 and 2 in Chapter 8.
7	Location (Cont.) AND Linear Programming	1. Read Chapter 8, pp. 300-311. 2. Problems 5, 6, and 8 in Chapter 8. 3. Read Appendix C, pp. C1-C10. 4. Problem 1 in Appendix C.
8	Linear Programming (Continued)	1. Read Appendix C, pp. C10-C18. 2. Problems 2 and 3 in Appendix C.
9	Linear Programming (Continued)	1. Read Appendix C, pp. C23-C38. 2. Problems 6, 7, and 9 in Appendix C.

Plan D (Undergraduate/Quantitative/Semester)

This plan is the second one with a quantitative emphasis. Since it is for a semester system, partial coverage can be reintroduced for Chapters 4, 5, 6, 9, 13 and 16. There is also enough time for full coverage of forecasting (Chapter 3) and linear programming (Appendix C).

All sessions for plan D can be reconstructed from Plans A through C, except for session 5 and sessions 10 through 14. They are specified below.

<u>SESSION</u>	<u>TITLE</u>	<u>ASSIGNMENT</u>
5	Process Design AND Technological Choices	1. Read Chapter 4, pp. 119-134. 2. Problem 3 in Chapter 4. 3. Read Chapter 5, pp. 186-204.
10	Location (Cont) AND Linear Programming	1. Read Chapter 8, pp. 300-311. 2. Problems 5, 6, and 8 in Chapter 8. 3. Read Appendix C, pp. C1-C10. 4. Problem 1 in Appendix C.
11	Linear Programming (Continued)	1. Read Appendix C, pp. C10-C18. 2. Problems 2 and 3 in Appendix C.

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|----|--|--|
| 12 | Linear Programming
(Continued) | 1. Read Appendix C, pp. C18-C22.
2. Problems 4 and 5 in Appendix C. |
| 13 | Linear Programming
(Continued) | 1. Read Appendix C, pp. C23-C35.
2. Problems 8, 9, and 10 in Appendix C. |
| 14 | Linear Programming
(Continued)
AND
Layout | 1. Read Appendix C, pp. C35-C38.
2. Problems 6 and 7 in Appendix C.
3. Read Chapter 9, pp. 321-341.
4. Problems 1, 2, and 3 in Chapter 9. |

Plan E (MBA/Functional/Quarter)

Some courses at the MBA level are foundation building, preparing students with the basics in operations management prior to going on to a full-fledged case course. Plans A through D can be used for such courses, modified to free time for more class discussions. A second type of situation is when the core course in operations management must cover the fundamentals and have extensive case analysis. Plans E and F are intended for this second situation. Plan E was developed and used by Professor David A. Collier. Although constrained by the quarter system, the intent is to cover a broad range of topics instead of a few. Specific course objectives for the student are:

- (1) To introduce standard terminology, basic models, and new concepts to describe manufacturing and service delivery systems. A broad range of operations management issues are emphasized in lieu of great depth in a few areas.
- (2) To become adept at structuring and analyzing practical problems, identifying information needs and sources, defining manufacturing or service delivery system objectives and strategic direction, identifying and using key quantitative and qualitative decision variables, arriving at a decision, and selling one's recommendations to the boss, client, or peers.
- (3) To illustrate by a few examples of case-specific micro-computer models the power, speed, and insights gained via sensitivity analysis.
- (4) To be given the opportunity in class to improve communication skills, and therefore, enhance one's ability to communicate in a management meeting and the student's first job after school.

A case-specific disk for this plan is put on reserve in the micro-computer labs. Using the computer is optional, although students find that it frees them from mundane computations so they can focus on the key issues of the case. Grading is based on classroom participation (33.3%), a mid-quarter exam (33.3%) and a final exam (33.3%).

The majority of the classes center around a business case. Students are encouraged not to be an observer, but a manager who listens and participates in a management meeting (i.e., the class discussion). They must mentally get