New Jersey Institute of Technology
Department of Engineering Technology
MNET 416 Production Scheduling

Course Number	MNET 416
Course Description	Production Scheduling
Course Structure	(3-0-3) (lecture hr/wk - lab hr/wk – course credits)
Course Coordinator/ Instructor	Dr. S. Lieber/ Daniel Orlos
Course Description	A study of manual and computerized methods for setting schedules. Gantt charts, CPM, PERT, PERT/COST, and Line of Balance are some of the topics treated. Problems of line balancing and machine loading are discussed.
Prerequisite(s)	MNET 315
Corequisite(s)	None
Required Materials	Operations Management Edition: 14th Edition William J Stevenson ISBN 9781260238891
Computer Usage	Microsoft Office Products

Course Outcomes (CO)

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

1. Describe elements of a good forecast.
2. Apply different forecasting methods to case studies.
3. Describe different methods of planning and scheduling.
4. Create a plan and schedule in different cases.
5. Describe Production and Operation Analysis.
6. Apply linear programming for Production and Operation Analysis.
7. Describe requirements for effective Inventory Management.
8. Describe Supply Chain Management.
9. Describe project scheduling and time costing methods.
10. Apply knowledge to generate schedule, Gantt charts, and perform analysis.
11. Describe Lean tools, operations, and Transitioning to Lean System. .
12. Prepare Engineering documents/reports.

Class Topics

Strategy and Competition, Forecasting, Methods of Forecasting, Forecasting based on time series data, Monitoring forecast error, Strategic Capacity Planing, Aggregate Planning, Master Scheduling, Simplex Method, Sensitivity Report Analysis, Sensitivity report analysis, Application of Linear programming to production and operation analysis, Inventory Management, ABC Approach, Operations Strategy, Supply Chain Management, Work Design and Measurement,

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MRP and ERP, Lot Sizing with Capacity Constraints, Project Scheduling, CPM Methods, PERT, Time Costing Methods, Scheduling, Scheduling Operations, Gantt Charts, Sequencing, Johnson's Rule, JIT and Lean Operations, Lean Tools, Transitioning to a Lean System .

STUDENT OUTCOMES

The Course Learning Outcomes support the achievement of the following MET Student Outcomes and TAC of ABET Criterion 9 requirements:

Student Outcome 1 - an ability to apply knowledge, techniques, skills and modern tools of mathematics, science, engineering, and technology to solve broadly-defined engineering problems appropriate to the discipline;
Related CO – 1-12

Student Outcome 3 - an ability to apply written, oral, and graphical communication in broadly-defined technical and non-technical environments; and an ability to identify and use appropriate technical literature;
Related CO – 12

GRADING POLICY
Note: Grading Policy may be modified by Instructor for each Section in the Course)

Three Quizes	40%
Homework	20%
Project	10%
Final Exam	30%

Note: There are three quizzes during the semester. There will be no makeup quizzes.

ACADEMIC INTEGRITY

NJIT has a zero-tolerance policy regarding cheating of any kind. Student behavior that is disruptive to the learning environment will not be tolerated. Incidents will be reported to the Dean of Students. Honor Code violations may result in failure in the course, disciplinary probation, and/or expulsion from NJIT. Refer to http://www.njit.edu/academics/honorcode.php.

STUDENT BEHAVIOR

- No eating or drinking is allowed at the lectures, recitations, workshops, and laboratories.
- Cellular phones must be turned off during the class hours – if you are expecting an emergency call, leave it on vibrate.

- No headphones can be worn in class, unless allowed by the professor.
- Unless the professor allows the use during lecture, laptops should be closed during lecture.
- During laboratory, if you are finished earlier, you must show the professor your work before you leave class
- Class time should be participative. You should try to be part of a discussion

Modification to Course The Course Outline may be modified at the discretion of the instructor or in the event of extenuating circumstances. Students will be consulted if any changes occur.

Prepared by Daniel Orlos
Course Coordinated by Dr. S. Lieber

Class Hours

Friday 6:00 PM to 8:50 PM CKB 212

Office Hours

By Appointment:
Email dpo2@njit.edu

Homework & Project - Important

1. Homework sets are due one week after they are assigned. . Late penalty is minus 25% each week. Assignments more than one week late will not be accepted.
2. Homework must be submitted in the format provided by the professor.
3. Projects are due on the dates indicated. No late projects will be accepted.
4. Projects should be submitted in the format provided by the professor.

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Grading Legend

GRADE	NUMERIC RANGE
A	90 to 100
B+	85 to 89
B	80 to 84
C+	75 to 79
C	70 to 74
D	60 to 69
F	0 to 59

NJIT Online Information

The instructor will discuss these requirements on the first day of the course and/or post on their Learning Management System (LMS). Please become familiar

- Webex: http://ist.njit.edu/webex
- Online Proctoring: https://ist.njit.edu/online-course-exam-proctoring

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COURSE OUTLINE

Week	Week	Topics	Chapter	Homework
1	1/20	Course Introduction. ● Strategy and Competition, ● Competing in the global market, ● Forecasting. ● The elements of a good forecast. ● Methods of Forecasting.	1 2 3	- Problems 1,2 and 6 page 65-66 - Answer the questions of the case : "Your garden gloves" – page 69
2	1/27	● Forecasting based on time series data. ● Seasonal series methods. ● Monitoring forecast error.	3	- Problem 2, 4 and 8 p126 – p129. - M&L Manufacturing case Answer Question 1 and 2**. (Question 2 - Bonus Question-Optional)** - Answer Questions 1 to 10 page 171
3	2/3	● Strategic Capacity Planning. ● Aggregate Planning. ● Master Scheduling.	5 11	- Problems 1 and 6 Page 217-218 . - Problems 1 and 5 Page 496-497
4	2/10	● **QUIZ No. 1** ● The Simplex Method. ● Sensitivity report analysis ● Application of Linear Programming to Production and Operation Analysis.	19	- Problem 2 page 849 - Son Ltd Case **(Bonus Question) page 853**
5	2/17	● Inventory Management. ● Requirements For Effective Inventory Management	*12*	- Problem 1b & 1c – Page 849 in Excel using Solver
6	2/24	● How Much To Order. ● ABC Approach. ● Operations Strategy	12	- Problems 1,3,15 – page 546-548 - UPD Manufacturing Case , page 553
7	3/3	● **QUIZ No. 2**		

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Week	Week	Topics	Chapter	Homework
		● Supply Chain Management. ● The Transportation Problem.	15	- Problems 1 ,2 and 3 , page 688
8	3/10	● Work Design And Measurement. ● MRP And ERP ● Lot Sizing With Capacity Constraints.	7 13	- Problems 3 and 10 , page 332-333 - Problems 1 and 14 , page 600-604
NO CLASS 3/17 SPRING BREAK				
9	3/24	● Project Scheduling. ● CPM Methods	17	- Problems 1 and 5 , page 774 to 776
10	3/31	● PERT ● Time Costing Methods	17	- Time Please Case, page 781 - Problem 13, page 779 Due Date : 11/8
NO CLASS 4/7 GOOD FRIDAY UNIVERSITY CLOSED				
11	4/14	● Microsoft Project Introduction.		HAND OUT – Project (Due Dec. 14)
12	4/21	● **QUIZ No. 3** ● Scheduling ● Scheduling Operations. ● Loading. Gantt Charts. ● Sequencing	16	- Problems 1 ,2 and 7 , page 725-726
13	4/28	● Sequencing Jobs Through Two work Centers. ● Johnson's Rule.	16	- Problems 12 and 13 , page 727-728
14	5/2 (Tues)	● JIT And Lean Operations ● Building Blocks ● Lean Tools ● Transitioning To a Lean System.	14	
		Final Exam		