

## Production System Operation & Practice

Course Name	Course type (credit/hours)	Required course(3/3)		Course code	B024
	Target students Division/major/grade	Industrial Engineering/Sophomore		Opening semester	2017 2ND SEMESTER
	Class time and classroom	Mon A(Pal110)Wed A(Pal110)		English Grade	A(100%English)
Reference to this course	Prerequisite courses	생산시스템설계 및 실습 (Production System Design & Practice)			
	Related basic courses	OR 및 실습 1 & 2 (Operations Research and Practice 1 & 2)			
	Recommended concurrent courses				
	Related advanced courses	공급망관리 및 실습 (Supply Chain Management and Practice); 대학원과목 고등생산계획 및 통제 (Graduate course on Advanced Production Planning and Control)			
Instructor	Name (title/division)	JEONGHAN KO(Associate Professor, Industrial Engineering)			
	Office Room Number	산학원611호	Office phone Number	2421	e-mail
	Office hours	화(Tue.) 3:00-4:00		Homepage address	
Teaching Assistant	Name (title/division)				
	Office Room Number		Office phone Number		e-mail

### 1. Introduction

This course introduces (1) theories on operation, analysis, and management of production systems, (2) relevant methodologies, and (3) their applications in practice. Topics include, but not limited to, productivity, forecasting, project planning, inventory management, aggregate planning, scheduling, and lean systems. Students can learn fundamental principles on operation modeling as well as practical methodologies that can be used in a manufacturing firm. Students will learn these materials through lectures, discussion, in-class practice and design projects.

- Sophomore-level introductory course on production systems and operations management.
- Recommended before taking other IE courses such as quality, supply chains, service, etc.
- Sequel of Production System Design & Practice offered in the 1st (Spring) semester

### 2. Course Objectives

#### - 교육목표

본 교과목의 목표는 (1) 생산시스템의 운영에 대한 전반적인 지식과 이해수준을 높이고, (2) 다양한 방법론을 습득하며, (3) 시스템을 설계 및 개선할 수 있는 능력을 배양하는데 있다. 특히 생산계획과 통제의 개념과 제반 알고리즘, 프로세스를 이해하고 설계에 응용할 수 있도록 한다. 그 결과로 학생들이 장차 생산관리 담당 전문가로 성장할 수 있도록 하는데도 목표를 두고 있다.

#### - 교과목 학습성과

1. 생산계획과 통제의 개념을 설명할 수 있다.
2. 생산관리체제 및 구성요소를 설명하고 분석, 설계할 수 있다.
3. 생산시스템 운영을 위한 절차를 이해하고 설명할 수 있다.
4. 생산시스템을 다양한 측면에서 평가할 수 있다.
5. 생산시스템 운영에서 나타날 수 있는 문제를 인지할 수 있다.
6. 생산시스템 운영의 개선을 위한 제안을 도출할 수 있다.
7. 생산시스템 운영을 위한 팀원으로 활동할 수 있다.

### 3. Class types and activities

The classes of this course consist of the combination of lectures, discussion, case studies, and in-class practice. Students are expected to participate all of these activities. Outside the class, the students should also actively study reading materials from the textbooks, solve homework assignment problems, and perform the design term-projects.

### 4. Teaching Method

- |   |   |
|---|---|
| <input checked="" type="checkbox"/> lecture                                     | <input checked="" type="checkbox"/> discussion and debate         |
| <input checked="" type="checkbox"/> team project(presentation and case studies) | <input checked="" type="checkbox"/> experiments(role-playing,etc) |
| <input checked="" type="checkbox"/> designing and production                    | <input type="checkbox"/> on-site learning(on-site training)       |
| <input type="checkbox"/> others   |   |

### 5. Support Systems in Use

- |  |   |   |
|--|---|---|
| <input checked="" type="checkbox"/> e-class / AjouBb     | <input type="checkbox"/> automatic recording system | <input type="checkbox"/> web-based assignment |
| <input type="checkbox"/> cyber lecture                   | <input type="checkbox"/> online content             |   |
| <input type="checkbox"/> class behavior analyzing system | <input type="checkbox"/> others                     |   |

### 6. Teaching Tools

- |   |  |  |
|---|--|--|
| <input checked="" type="checkbox"/> PBL(Problem Based Learning) | <input checked="" type="checkbox"/> CBL(Case Based Learning) | <input checked="" type="checkbox"/> TBL(Team Based Learning) |
| <input type="checkbox"/> UR(Undergraduate Research)             | <input type="checkbox"/> FL(Flipped Learning)                | <input type="checkbox"/> DSAL(Data Science Active Learning)  |
| <input type="checkbox"/> others                                 |  |  |

### 7. Knowledge and ability required for taking this course

1. 대학 수준의 기초 수학 및 과학
2. 데이터 분석을 위한 기초적인 통계처리
3. 프로젝트 수행을 위한 간단한 프로그래밍
4. 문서작성, 표계산, 발표 소프트웨어 사용

1. Basic mathematics and science at the college level
2. Basic statistics for data analysis
3. Programming for performing term projects
4. Use of word-processing, spreadsheet, and presentation software

## 8. Method of Evaluation

Evaluation Item	The Number of Times	Evaluation Proportion	Remarks
Attendance		10	If a student misses more than 4 classes, the student will fail in the course.
midterm exam		25	
final exam		25	Maybe cumulative
quiz			과제 혹은 시험과 점수 합산 (scores combined with the homework assignment or exams)
presentation			
discussion			
homework		10	
etc		30	프로젝트 (실제 생산시스템 및 운영 및 개선) – Design Term-project
study hours			

## 9. Textbook and supplementary material

Main/Sub	Title (Web-site)	Writer	Publisher	Publication year
Main	Operations and Supply chain Management, 14th Ed.	Jacobs and Chase		
Main	강의노트	고정한		
Ref.	Production and Operations Analysis	Nahmias, S.	McGraw-Hill/Irwin	
Ref.	Factory Physics	Hopp, W. J. & Spearman, M.	McGraw-Hill/Irwin	

## 10. Class system and Class shedule

수업은 다음의 주제들을 차례로 소개하는 형태로 진행될 것이며, 그 연관성도 다를 것이다. 각 주제에 대하여 이론, 방법론, 실제 사례들이 소개될 것이다.

- 생산운영관리의 체계 및 기능
- 총괄생산계획
- 주일정계획
- 수요예측
- 생산용량계획
- 자재소요계획
- 일정계획
- 프로젝트 관리
- 재고관리
- 린 시스템

The classes will cover the following topics and their relations, in terms of the theory, methodology and applications.

- Structure and functions in production operations and management
- Aggregate production planning
- Master production schedule
- Demand forecasting
- Production capacity planning
- Material requirement planning
- Scheduling
- Project management

< Class Schedule >

\* language : K-korean, E-English

Weeks	Topics	language	Instructor	Teaching Method	Evaluation Method	Matter to be prepared
1	과목소개 (Introduction)	E	JEONGHAN KO	Lecture, Discussion		
2	수요예측 (Forecasting)	E	JEONGHAN KO	Lecture, Discussion, Practice		
3	수요예측 (Forecasting) – case study: one class	E	JEONGHAN KO	Lecture, Discussion, Practice		
4	총괄생산계획 (Aggregate Production Planning)	E	JEONGHAN KO	Lecture, Discussion, Practice		
5	주일정계획 (Master Production Schedule) : one class	E	JEONGHAN KO	Lecture, Discussion, Practice		
6	설계 프로젝트 (Design Project): one class	E	JEONGHAN KO	Lecture, Discussion, Practice		
7	자재소요계획 (Material Requirement Planning); 내용 종합 및 정리	E	JEONGHAN KO	Lecture, Discussion, Practice, Design		
8	중간고사 (Mid-term Exam)	E	JEONGHAN KO	Written Exam		
9	ERP, 생산정보시스템 (ERP, Production Information System)	E	JEONGHAN KO	Lecture, Discussion, Practice		
10	프로젝트 관리 (Project Management)	E	JEONGHAN KO	Lecture, Discussion, Practice		
11	재고관리 (Inventory Management)	E	JEONGHAN KO	Lecture, Discussion, Practice		
12	재고관리 (Inventory Management)	E	JEONGHAN KO	Lecture, Discussion, Practice		
13	일정계획 (Scheduling)	E	JEONGHAN KO	Lecture, Discussion, Practice		
14	린 시스템; 설계 프로젝트 검토 (Lean System; Review of the Design Project)	E	JEONGHAN KO	Lecture, Discussion, Practice, Design		

## < Class Schedule >

\* language : K-korean, E-English

Weeks	Topics	language	Instructor	Teaching Method	Evaluation Method	Matter to be prepared
15	종합 (Class Review)	E	JEONGHAN KO	Lecture, Discussion		
16	보강 (Make-up class); 기말고사 (Final Exam)	E	JEONGHAN KO	Written Exam		

## 11. Other items of notification

### Grade

- No Pass/Fail or Incomplete grade will be allowed.
- No extra credits will be given by doing additional student projects and the letter grade cannot be raised by such a way.
- Re-grading request: if you believe that your homework or exam was graded with errors and request a re-grading, you must submit your original homework or exam with a written explanation for the request. Submit the request directly to the instructor. This re-grading should be requested within one week from the date you received your graded exam or homework. When your exam or homework is re-graded, all the problems in your exam or homework will be reexamined for accurate and fair grading.

### Attendance

- Attending every class, participating in classroom discussion and attending office hours are strongly encouraged.
- On-time attendance at all scheduled sessions is mandatory.
- Excuses for missing classes may include (1) personal illness involving emergency hospitalization or serious illness/accidents in your immediate family members, (2) event attendance officially required by the Ajou university administrators, and (3) public service such as military services. All the other cases are considered personal issues and choices, and cannot be used for obtaining attendance credits.
- Frequent absence from and being late for classes will result in penalty in your grade.
- Use of laptops and cell phones are prohibited except for viewing the class materials.

### Homework submission

- No late submission of homework is accepted.
- Homework is due at the designated time and location.
- Email submission of homework is generally not allowed.

### Term paper submission

- Late submission is allowed with penalty.

### Make-up exam

- No make-up exam or quiz is allowed.

### Academic integrity

- The violation of academic integrity and honesty is not tolerated at all. The violators will receive grade F regardless of any excuses.
- The discussion with other classmates is strongly encouraged for studying course materials and solving homework problems. The discussion, however, can only include exchanging ideas or explaining concepts and general procedures. The submitted homework should include each student's individual and original work; each student is responsible for expressing the answers in her/his own terms and numbers. Sharing calculated numbers is considered as cheating.
- Cell phones and laptop computers are not allowed during quizzes and exams.