

PONTIFICIA UNIVERSIDAD CATÓLICA DE CHILE
SCHOOL OF ENGINEERING
DEPARTMENT OF INDUSTRIAL AND SYSTEM ENGINEERING
ABET COURSE SYLLABI

ICS3213 OPERATIONS MANAGEMENT

Credits and contact hours: 10 UC Credits /10 hours (2:40 hours lectures; 1:20 hours assistantship and 6 individual work hours per week)

Instructor 's name: Alejandro F. Mac Cawley, Patrickson Christian

Course coordinator's name Alejandro F. Mac Cawley

Textbook: “Operations and Supply Chain Management”, JACOBS, R and CHASE, R. 13th edition, McGraw-Hill/Irwin. 2010.

Course Catalog Description: As industrial engineers they will be faced with the task of managing production and service processes. The ability to perform efficient and effective operations management can become an important competitive advantage for the company, as shown by the many cases of organizations "world class" existing in the world (even in Chile). As managers they must be able to analyze and structure the problems they are confronted, using tools and methodologies that they will learn during this course. Finally they must be able to propose, communicate and implement realistic and "innovative" solutions to improve the competitive position of the company.

Prerequisite Courses: ICS2123 Stochastic Models

Co-requisite Courses: None

Status in the Curriculum: Required

Course Learning Outcomes:

1. Identify the different components of a production system and diagnose the current situation of an organization, from the point of view of their operations.
2. Structure mathematical models of each of the processes involved and also globally for the entire system, properly defining the parameters and relevant costs, while being able to critically assess its applicability.
3. Identify and quantify the "trade - off" to which production systems are facing.
4. Propose realistic solutions that impact increased competitiveness of a production system.
5. Determine and integrate the different components of a

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**Relation of Course to
ABET Criteria:**

- production system and supply chain.
- a. Knowledge of mathematics, science and engineering
 - b. Design and conduct experiments: analyze and interpret data
 - c. Design a system, component, or process
 - d. Multidisciplinary teams
 - e. Identify, formulate, and solve engineering problems
 - f. Professional and ethical responsibility
 - g. Effective communication
 - h. Broad education necessary for global, economic, environmental and societal context
 - i. Recognition of the need for, and an ability to engage in life-long learning

Topics covered:

0. Course Introduction and Operations Management Problems.
1. Analysis and design of products and processes.
 - The production as a source of competitive advantage.
 - The operations viewed as a network of processes. Diagrams and process analysis. Time and motion studies. Choice and process design. Basic definitions.
 - Product Design.
 - Services as part of operations.
2. Decision making in operations
 - Demand Forecast.
 - Inventory Models: Deterministic and stochastic.
 - Medium-term planning.
 - Dependent Demand Planning (MRP).
 - The focus of planning - programming and control and the use of optimization models.
 - Schedule short term.
 - Project Planning.
 - Location and design of facilities, Layout.
 - Transport and Distribution Centers.
3. Effects of variability in operations and how to address
 - The dynamics of the plant and the effects of uncertainty: the use of stochastic models.
 - Simulation and analysis tool.
 - Production systems "Pull" (JIT, CONWIP and others).
4. Integrated management systems of production and quality
 - ERP systems and their relation to the operations.
 - Production "Lean"
 - Quality management and statistical quality methods.
 - TQM Total Quality, Continuous Improvement and "Six Sigma".
 - Design of products and processes.
5. Managing Supply Chain and world-class operations

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