



University of Puerto Rico. Mayagüez Campus  
College of Engineering.  
Industrial Engineering Department



## Course Syllabus

### General Information

Course Number: InIn 5595

Course Title: **Design and Management of Service Processes**

Credit-Hours: Three

### Course Description

Industrial Engineering techniques and models to design and manage the operations of service organization or service processes in manufacturing enterprises. Includes the development, evaluation and implementation of alternative solutions to the service organization operational problems. Presentation of applications in the following areas: marketing, quality assurance and management, work measurements and design, operations research, production planning and control, engineering economy, human resources, management information systems, and facilities layout.

### Prerequisites

InIn 4039-Production Planning and Control I

InIn 4009-Work Measurement

Or consent of the Director of the Department

### Textbook and References

- Metters, R., King-Metters, K., and Pallman, M., 2005, "Successful Service Operation Management", 2<sup>nd</sup> Edition, Thomson South Western. (ISBN: 0324224370)
- Ramaswamy, R., 1996, "Design and Management of Service Processes", Addison Wesley. (ISBN: 0201633833)
- Valerie Zeithaml, Mary Jo Bitner, and Dwayne D. Gremler, 2005, "Services Marketing", 4<sup>th</sup> Edition, McGraw Hill. (ISBN: 0072961945)
- Winston, W.L., 2003, "Operation Research Applications and Algorithm", 4<sup>th</sup> Edition, Duxbury Press. (ISBN: 0534380581)
- Elsayed, E.A. and Boucher, T.O., 1993, "Analysis and Control of Production Systems", 2<sup>nd</sup> Edition, Prentice Hall. (ISBN: 0130787590)
- Konz, S., 1999, "Work Design: Industrial Ergonomics", 5<sup>th</sup> Edition, Publishing Horizon. (ISBN: 1890871079)
- Montgomery, D. C., 2004, "Introduction to Statistical Quality Control", 5<sup>th</sup> Edition, John Wiley and Sons. (ISBN: 0471656313)
- Tompkins, J., White, J., Bozer, Y., Frazelle, E., and Tanchoco, JMA, 2003, "Facilities Planning", 3<sup>rd</sup> Edition, John Wiley and Sons. (ISBN: 0471413895)
- Bounds, G., Syle, Y., Mel, A., and Ranney, G., 1994, "Beyond Total Quality Management", McGraw Hill. (ISBN: 0070066787)
- Cohen, L., 1995, "Quality Function Deployment", Addison Wiley. (ISBN: 0201633302)
- Donald G. Newnan, Ted G. Eschenbach, and Jerome P. Lavelle, 2004, "Engineering Economic Analysis", 9<sup>th</sup> Edition, Oxford University Press. (ISBN: 0195168070)
- Turban, McLean, Wedherbe, and, Leidner, 2005, "Information Technology for Management", 5<sup>th</sup> Edition, John Wiley. (ISBN: 0471705225)
- Smalley, H. E., 1982, "Hospital Management Engineering", NJ, Prentice-Hall, Inc. (ISBN: 0133947750)

### Purpose

This is a course primarily designed for majors in Industrial Engineering; however, it is appropriate for anyone with interest in operations management in areas such as business, economics, computer science or applied mathematics. The purpose of the course is to prepare the student for the design, planning and control of services enterprises or service processes in manufacturing enterprises. It is a technical elective course for BSIE program.

## Course Syllabus

### Course Goals

At the completion of the course, the student will be able to:

- ☐ Understand the strategic importance of the service industry operations optimization.
- ☐ Recognize applications of industrial engineering techniques in services enterprises.
- ☐ Define and explain opportunities to improve the operations of services enterprises.
- ☐ Recognize pertinent data in the formulation, analysis, design, and evaluation of service enterprise problems.
- ☐ Use the techniques of industrial engineering to optimize the service industry operations.

### Requirements

All students are expected to:

Complete all lessons.

Do all assigned readings and related homework.

Come to class all the time and on time.

Pass all tests to receive credit for the course.

Smoking is not permitted in any area other than those areas designated for smoking.

Complete the application project.

### Department and Campus Policies

**Class attendance:** Class attendance is compulsory. The University of Puerto Rico, Mayagüez Campus, reserves the right to deal at any time with individual cases of non-attendance. Professors are expected to record the absences of their students. Frequent absences affect the final grade, and may even result in total loss of credits. Arranging to make up work missed because of legitimate class absence is the responsibility of the student. (Bulletin of Information Undergraduate Studies)

**Absence from examinations:** Students are required to attend all examinations. If a student is absent from an examination for a justifiable reason acceptable to the professor, he or she will be given a special examination. Otherwise, he or she will receive a grade of zero or "F" in the examination missed. (Bulletin of Information Undergraduate Studies)

**Final examinations:** Final written examinations must be given in all courses unless, in the judgment of the Dean, the nature of the subject makes it impracticable. Final examinations scheduled by arrangements must be given during the examination period prescribed in the Academic Calendar, including Saturdays. (see Bulletin of Information Undergraduate Studies).

**Partial withdrawals:** A student may withdraw from individual courses at any time during the term, but before the deadline established in the University Academic Calendar. (see Bulletin of Information Undergraduate Studies).

**Complete withdrawals:** A student may completely withdraw from the University of Puerto Rico, Mayagüez Campus, at any time up to the last day of classes. (see Bulletin of Information Undergraduate Studies).

**Disabilities:** After been identified with the professor and the institution, the students with disabilities will receive reasonable accommodations in their courses and evaluations. For more information, please contact *Student Services with Disabilities* at the Student Dean's Office at (Q-019), 787-265-3862 ó 787-832-4040 x-3250 ó 3258.

**Ethics:** Any academic fraud is subject to the disciplinary sanctions described in article 14 and 16 of the revised General Student Bylaws of the University of Puerto Rico contained in Certification 018-1997-98 of the Board of Trustees. The professor will follow the norms established in articles 1-5 of the Bylaws.

### Campus Resources

General Library and University Computer Center is available to obtain professor=s reference materials. The University=s Counseling Office has a tutorial program for students who need extra help.

# Course Syllabus

## General Topics

Lecture	Topic	Reading
1-2	Introduction to Services	<b>T, Ch1</b> T1, Ch1
3-4	Service Marketing	T2, Ch 1-2
5-7	Focus on the Customer	T2, Ch 3-5
8-9	Listening to Customer Requirements	T2, Ch 6-7
10-12	Aligning Strategy, Service, Design and Standards	T2, Ch 8-10
13-16	Delivering and Performing	T2, Ch 12-15
17-18	Formulating Strategy	<b>T, Ch 2-4</b>
19-26	Design and Development of Services -Job analysis and job evaluation for services -Design of services areas using work design principles -Service blue printing -Work measuring -QFD -Employees roles in services	T1, Ch 1-7 <b>T, Ch 5-7</b> R5, R9
26-35	Operation Management -Creating and controlling the services operations -Yield management -Inventory management in services -Understanding demand patterns -Strategies for matching capacity and demand -Determination of space requirements for services -Design and evolution of layout alternative -The physical evidence of service -Strategic linkage of operations through employee involvement	T1, Ch 8 <b>T, Ch 9-12</b> R1, R2, R5 T2, Ch 18
36-40	Performance Evaluation, Benchmarking and Improvement in Services -What is service quality -Service quality design -Service quality program -Customer defined services standards -Technique for measuring customers value -Assessing customer satisfaction -Improving service performance and the continuous improvement philosophy -Capturing customer perception in the real time (MIS)	T1, Ch 9-11 <b>T, Ch 15</b> R10 R6, R7
41-42	Economic Evaluation -Value Engineering -Pricing of Services -Evaluation of technology needs	R8 T2, Ch 17

Legend:

**T :** Metters, 2003 (text)

T1: Ramaswamy, 1996

T2: Zeithaml and Bitner, 1999

R1: Winston, 1994

R2: Elsayed and Boucher, 1994

R4: Montgomery, 2000

R5: Tompkins, White, Frazelle and Tanchoco, 1996

R6: Bounds, Yorks, Mel and Ranney, 1994

R7: Cohen, 1995

R8: Newman and Bruce, 2000

R9: Gómez, Balkin and Cordy, 1995

R10: Turban, McLean and Wedherbe, 1996

**Coordinator: Dr. Omell Pagán Parés**

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