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<b>COURSE: OPERATIONS MANAGEMENT</b>			
ACADEMIC YEAR: 2019/2020			
TYPE OF EDUCATIONAL ACTIVITY: Characteristic			
TEACHER: FABIO FRUGGIERO			
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phone: +39 0971 205196		mobile (optional): //	
Language: Italian/English			
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ECTS: 9	n. of hours: 81 (48 class) + 33 (practice)	Campus: Potenza School: School of Engineering Program: MME	Semester: II

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#### EDUCATIONAL GOALS AND EXPECTED LEARNING OUTCOMES

##### LEARNING OUTCOMES

On completion of the module a typical student should be able to:

##### Knowledge and Understanding:

- Understand the main concepts and terminology of operations strategies related to goods and services
- Understand the principles and rules of planning and management of operations

##### Intellectual skills:

- Analyze and Synthesize strategies for product design and process selection- services
- Analyze and Synthesize methods to manage and optimize the production planning and scheduling of goods and services
- Analyze the element of an Enterprise Resource Planning System
- Analyze the strategies of forecasting, aggregate sales and operations Planning, Inventory Control, Material Requirement Planning, Operations Scheduling
- Analyze and Synthesize the principles of JIT and Lean Production
- Analyze and Synthesize strategies for supply chain design and planning
- Analyze and Manage the Project Management principles

##### Practical Skills:

- Create modules for performance management, forecasting, cost management, aggregate planning, Inventory control
- Realize a MRP system
- Specify Enterprise Resource Planning functionalities
- Realize a Business Plan

##### Transferable Skills:

- Apply ERP
  - Manage Projects
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#### PRE-REQUIREMENTS

A good knowledge of the Industrial Systems Engineering topics is strictly required

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#### SYLLABUS

Sintetizzare in lingua inglese i contenuti riportati nella scheda in lingua in italiana.

Introduction to the Operations strategies and Management Change. Operations Strategies and competitiveness. The use of Industrial resources and the definition of industrial processes.

Product and Service Design, the use of the Bill of Materials (the standard flow and backflushing): The physical and information flow, process selection – services. The introduction to the operations management: the role of Time. Forecasting (criteria and methods) - measures of forecasting errors (AVG, MSE, MAD); Inventory Control: the Wilson model and the management of uncertainty - a practical point of view. The Planning BoM and Super Bill of Material. The aggregate planning and strategies (Chase- Mixed- Level). The Master Production Scheduling and Rough Cut

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Capacity Planning. The Material Requirement Planning and the MRPII system: understanding the impact of variability on the capacity of production systems. Operations scheduling: the Job Shop Scheduling Problem - Models (analytic and heuristics)- Dispatching rules and metaheuristic approaches (Neural Networks, Genetic Algorithms, Tabu Search, Ants System, Bees Algorithms). The principles of JIT and Lean Production: definition of Kanban and the amount of Stocks in JIT systems. Synchronous Manufacturing and the Theory of Constraints. From Logistics to Supply Chain: Strategies and Design. The Order penetration points, the lumpy demand and the Bullwhip effect. The role of Operation Strategy for innovative products. Strategies for Product Management: The Work Breakdown Structure- The Organizational Breakdown structure. The Gantt chart and disjunctive graph representation: PERT and CPM. The Definition and monitoring and control of a product. The Business Plan.

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#### TEACHING METHODS

The course arranges 32 hours of practical exercises to be performed in the classroom and in groups (no more than 5 per group) on real test instances. There are a total of 8 exercises; 48 hours of frontal teaching. There will be ONE or MORE VISITS to REAL SYSTEM; EXERCISES and PROJECT proposal; external manager talking.

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#### EVALUATION METHODS

The evaluation method is about: EXERCISE elaboration; Innovation PROJECT and ORAL discussion. The weight of the practical exercises and project test on the overall evaluation is 0.3. The weight of the oral discussion is 0.7. The EXERCISEs (weight 0.3) are about: *a)* performance measurement in operations management; *b)* forecasting methods; *c)* Planning and Production BoM; *d)* Full and Direct cost ; *e)* Aggregate Planning analysis; *f)* MRPI and MRP II; *g)* logistics and supply chain problems; *h)* Project Management . The INNOVATION PROJECT (weight 0.7) concerns technical and financial analysis in an innovative, based on personal idea, proposal.

The ORAL discussion starts from the quality of exercise; it discusses about the innovation idea and the project elaboration; It requires about optimal strategies for operations management.

The final score of the is the weighted results between tests and oral performance. If the written exam is insufficient it is not denied access to the oral exam.

Integration and learning rights are guaranteed.

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#### TEXTBOOKS AND ON-LINE EDUCATIONAL MATERIAL

*Handmade notes and duplicated lectures notes with recommended bibliography for thorough analysis:*

- Schmenner: Produzione: scelte strategiche e gestione operativa. Ed. Il sole/24 ore (MI), 1991.
  - Urgeletti Tinarelli G., "La gestione delle scorte", Etaslibri, Milano, 1992
  - Levy G., "MRPII logica di implementazione", Franco Angeli, 1994.
  - A.Brandolese, A. Pozzetti, A. Sianesi.: Gestione della produzione Industriale - Hoepli (MI), 1995.
  - Schonberger, Knod: Gestione della Produzione. Mc Graw-Hill, 1999.
  - Shapiro R.D., Dalla Logistica al Supply Chain Management: teorie ed esperienze, ISEDI, 2000.
  - Hall: Zero Inventories. Dow Jones-Irwin, 2001.
  - Vollmann, Berry, Whybark : Manufacturing Planning and Control Systems. Mc-Graw-Hill, 2003.
  - Chase et al.: Operations Management nella produzione e nei servizi. McGraw-Hill 2004.
  - Fogarty, Blackstone et al., : Production & Inventory Control. South-Western Publishing group, 2004.
  - Hopp, Sperman: Factory Physics – Foundations of Manufacturing Management. Irwin 2006.
  - Levi, Kaminsky et al.: Designing & Managing the Supply Chain. McFraw-Hill, 2007.
  - Tersine, Production/Operations Management: Concepts, Structure & Analysis. North-Holland, 2008.
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#### INTERACTION WITH STUDENTS

Students are invited to use online material. At starting it is required a registration (Name and Surname and email are needed) to a common service. It has been planning tutoring till two hours after the teaching calendar. Students can contact the teacher directly by email and phone/cell number. It is generally guaranteed tutoring long over the daily time.

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EXAMINATION SESSIONS (FORECAST)<sup>1</sup>

06/02/2020; 20/02/2020; 26/03/2020;30/04/2020; 18/06/2020; 09/07/2020; 30/07/2020; 17/09/2020; 22/10/2020;  
26/11/2020; 17/12/2020

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SEMINARS BY EXTERNAL EXPERTS YES  NO

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BOOKS RECOMMENDED FOR READINGS:

- Goldratt E.M., Cox J., The GOAL, Gower Publishing, 1984
  - Sun Tzu, L'arte della guerra, Feltrinelli 2003.
  - Spencer Johnson, Who moved my Cheese?, Vermilion London, 2006
  - Ken Blanchard sans Spencer Johnson, The one minute manager, HarperCollins, 2006.
  - Reason J., The Human contribution, ASHGATE, 2008.
  - Kim W. C., Mauborgne R., Strategia Oceano Blu, Rizzoli, 2009.
  - Macchiavelli N., Il principe, sole24 ore, 2014.
  - Kahneman D., Thinking, Fast and Slow, Penguin books, 2014.
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<sup>1</sup> Subject to possible changes: check the web site of the Teacher or the Department/School for updates.