Course Syllabus

Course Code	Course Title	ECTS Credits
MBAN-671	Business Processes and Systems	6
Prerequisites	**Department**	**Semester**
None	School of Business	Fall, Spring
Type of Course	**Field**	**Language of Instruction**
Required	Business	English
Level of Course	**Lecturer(s)**	**Year of Study**
2nd Cycle	Dr Neophytos Karamanos Professor Angelika Kokkinaki	1st or 2nd
Mode of Delivery	**Work Placement**	**Co-requisites**
Face to Face	N/A	None

Objectives of the Course:

The main objectives of the course are to:
- Discuss the strategic role of operations management in organizations
- Examine how to design operation systems to support the strategy of the organization and gain a competitive advantage in the marketplace
- Discuss the importance of designing and managing effectively the organization's supply network
- Examine the role and key decisions of the operations manager (forecasting demand, capacity management, inventory management, scheduling etc.)
- Discuss and apply principles of modelling upon specific problems
- Examine what-if scenarios in simulations and detect points of reduced efficiency
- Discuss KPIs, data collection and analysis in the context of a simulation model to derive optimal decision making
- Discuss the implications of managing effectively quality and performance in organizations
- Discuss the need for continuous improvement and the methodologies for effecting change (students should be able to understand the reasons necessitating change in operations and how to effect such change through both projects and continuous improvement)

Learning Outcomes:

After completion of the course students are expected to be able to:

1. **Assess the role of operations in an organization** (students should be able to discuss and explain the key role of operations in an organization and the various existing interactions with other organization departments)
2. **Formulate a suitable operations strategy to support the overall organization strategy** (using a specific methodology worked in class the students should be able to express the strategy pursued by an organization into specific operation performance objectives)
3. **Design an operations system to support a specific operation strategy** (students should be able to design the various elements of an operations system such as process design, supply network, location of facilities, layout, technology, lean philosophy etc.)
4. **Assess the key processes involved in operations planning and control** (students should be able to assess the various options available and select the most appropriate ones in order to support a given operation strategy; students should also be able to explain the rationale behind the key decisions of the operations manager)
5. **Analyse an operation, identify its strengths and weaknesses and propose an improvement project to overcome its main weaknesses** (students should be able to apply the main concepts of the course on real operation cases)
6. **Model a real-life system into a simulation model,** run simulation and examine what-if scenarios.
7. **Identify important KPIs in a simulation model,** collect data, analyse them and perform optimal decision making.

"Details on the contribution of the course's learning outcomes towards the learning goals / competencies and learning objectives of the programme are included in the curriculum map of each programme".

Course Contents:

1. **Introduction to Operations Management**: Introduces the field of operations management and the notion that an operation is fundamentally a transformation process which converts inputs into outputs. Various models are presented in order to discuss the characteristics and the strategic role of operations.
2. **Operations Objectives and Strategy**: Discusses the operation performance objectives and links them to the general business strategy of the organization. The potential conflicts between the various objectives are also assessed. A specific methodology for formulating a suitable operations strategy, aligned with the followed business strategy, is also presented and discussed.
3. **Process Design**: Involves a discussion of the various elements of a transformation process and their selection / configuration in order to support a specific operations strategy. Operations are categorized by process type and analyzed using process mapping techniques. The various operation layouts are also presented along with their advantages and disadvantages and their impact on operation efficiency.

4. **Supply Network Design and Location**: Introduces the concept of supply network and discusses various configurations and design options. Vertical integration and outsourcing are also assessed regarding their suitability in supporting the pursued strategy. The importance of operation location is also examined along with the different options and selection criteria.

5. **Capacity Management**: Involves a thorough discussion of the importance of proper capacity management and the negative consequences on the operation in case this is not achieved. Techniques for measuring an operation's capacity and forecasting the demand are also examined. In addition, the various capacity management strategies are discussed regarding their relative merits and their suitability in supporting specific performance objectives.

6. **Inventory Management & Lean Synchronization**: Discusses the importance of proper inventory management in an operation and examines key decisions such as the methods, timing and quantity of replenishment. The concept of lean philosophy is also introduced along with a thorough examination of the various JIT techniques involved.

7. **Simulation I:** Introduction to the concepts of modelling and simulation.

8. **Simulation II:** Validation and verification of modelling and simulation and redesign in case of errors. Run and analysis od what-if scenarios in simulation.

9. **Simulation III:** Modelling, simulation and decision making with regards to a real-life problem using the simulation package SIMUL8. KPI data collection, analysis and optimal decision-making.

10. **Quality Management**: Introduces the concept of quality in an operation and considers various definitions for it. Discusses its implications on customer satisfaction and examines various methods of measuring it. The fundamental elements of statistical process control, process variation and acceptance sampling are also discussed.

11. **Performance Measurement and Operations Improvement**: The need for continuously improving an operation is discussed along with ways to measure operation performance and prioritize candidate improvement projects. Both the breakthrough and continuous methods of improvement are examined along with their relative merits.

12. **Project Management**: The key concepts and techniques of project management are discussed covering the activities of understanding the project environment, project definition, project planning and project control. The challenges involved in successfully implementing projects are discussed along with a real-life feedback.

Learning Activities and Teaching Methods:

- Faculty lectures
- Real-time online meetings and discussions (involving the lecturer and the students)
- Directed and background reading
- Case study analysis
- Student-led discussions
- Simulation group project – modeling and simulation using SIMUL8 package

Assessment Methods:

- Final Exam
- Assignment (done in weekly parts)
- Simulation

Required Textbooks/Reading:

Title	Author(s)	Publisher	Year	ISBN
Operations and Process Management	Slack, N., Brandon-Jones, A.	Pearson	2018 (5th Edition)	978-1-292-17613

Recommended Textbooks / Reading:

Title	Author(s)	Publisher	Year	ISBN
Managing Quality	Dale, B., Van der Wiele, T, and Iwaarden, J.	John Wiley and Sons	2013 (6th Edition)	9781118762172
Simulation of Discrete Event Systems, Wiley,	Byoung Kyu Choi, Dong Hun Kang Muller, and M. Modelling	John Wiley & Sons	2014 (5th Edition)	ASIN: B00HZ3B2TS
SIMUL8 Manual	SIMUL8©	Online		

*(R) Required Course