ICT Applications in Business Operations

COURSE OUTLINE

GENERAL

SCHOOL	SCHOOL OF BUSINESS		
ACADEMIC UNIT	BUSINESS ADMINISTRATION		
LEVEL OF STUDIES	POSTGRADUATE		
COURSE CODE		**SEMESTER**	**SPRING**
COURSE TITLE			

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHING HOURS**	**CREDITS**
	3	8
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	General background
PREREQUISITE COURSES:	None
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	No
COURSE WEBSITE (URL)	https://aegeanmoodle.aegean.gr/course/view.php?id=287

LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area

Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B

Guidelines for writing Learning Outcomes

Modern businesses and organizations operate in an environment where production, business processes, and decision-making are continuously being transformed by emerging technologies. This course bridges the fundamental principles of Operations Management with contemporary tools and technologies, focusing not only on how organizations can operate effectively today, but also on how they can design and manage their operations for the future.

Students engage with critical operational decisions related to production planning and management, project management, inventory management, product and service design, aggregate planning, and the simulation of operational systems. At the same time, they explore how these decisions are linked to productivity, competitiveness, and organizational strategy. Particular emphasis is placed on the practical application of Project Management methods and techniques and on the use of specialized software for planning and managing real-world projects.

The course goes one step beyond traditional Operations Management by introducing students to technologies that are reshaping the way we design, produce, and make decisions. Three-Dimensional Printing (3D Printing) is explored as an innovative approach to product design and production, with applications that can transform the entire supply chain, while students also gain hands-on experience with the fundamentals of 3D design.

At the same time, Machine Learning is introduced as a contemporary tool for leveraging data and supporting decision-making. Students become familiar with the fundamental concepts and techniques of supervised and unsupervised learning, as well as the principles of Deep Learning, and explore how these technologies can be applied to address operational challenges and enhance organizational performance and effectiveness.

Upon successful completion of the course, students will be able to:

- analyze and evaluate business processes and production systems;
- apply contemporary methods for project management, inventory management, and operations planning;
- use specialized digital tools to design, analyze, and support operational decision-making;
- relate operations management decisions to organizational strategy, productivity, and competitiveness;
- understand the potential of 3D Printing and assess its impact on production processes and supply chains;
- apply fundamental principles of 3D design;
- understand key Machine Learning and Deep Learning techniques and identify their potential business applications;
- integrate quantitative methods, data, and emerging technologies to address real-world operational and decision-making problems.

The above learning outcomes correspond to Level 8 of the European Qualifications Framework.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology

Adapting to new situations

Decision-making

Project planning and management

Respect for difference and multiculturalism

Respect for the natural environment

Working independently *Team work* *Working in an international environment* *Working in an interdisciplinary environment* *Production of new research ideas*	*Showing social, professional and ethical responsibility and sensitivity to gender issues* *Criticism and self-criticism* *Production of free, creative and inductive thinking* *……* *Others…* *…….*

Search for, analysis and synthesis of data and information, with the use of the necessary technology Προσαρμογή σε νέες καταστάσεις

Decision-making

Project planning and management

Team work

Working in an interdisciplinary environment

Production of new research ideas

SYLLABUS

Basic modules

Operations and Production Management

- Business processes
- Production Models

Project Management.

- Methods and Techniques for Project Planning and Management.
- Project Management with Special Software (MS Project).
- Inventory Management.
- Competitiveness and Strategy of Business Operations.
- Product and Service Design.
- Aggregate Planning.
- Business Systems Simulation.

3D printing

Introduction to 3D Printing
Applications of 3D printing & copyrights
Supply chain & 3D printing

Machine Learning

- Introduction to Machine Learning
- Machine Learning Techniques (supervised and unsupervised)
- Business efficiency using ML
- Deep learning ML for Business

TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Blended methods of learning (face to face and distance learning)
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Use of ICT in teaching **(**power point presentations). Use of software Communication with students through the moodle platform and email Post slides and material
TEACHING METHODS *The manner and methods of teaching are described in detail.* *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.* *The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS*	

Activity	***Semester workload***
Lectures	30
Laboratory practice	5
Lectures study	30
Collection and study of report bibliography	65
Report writing	70
Course total	***200***

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	Assessment is done by writing reports (two during the course and one at the end of the semester). • The evaluation language is Greek

ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

- Lectures' presentations
- Anderson, C., (2012). "Makers: The new Industutrial Revolution" Crown Business Eds
- Lipson, H., Kurman, M., (2011). "Fabricated the new word of 3D printing" Wiley Eds
- Slack, N., Chambers, S., Johnston, R. (2010), "Operation Management", 6th ed., *FT/Prentice Hall*.
- Taha, H., (2011). "Επιχειρησιακή Έρευνα", Εκδόσεις Τζιόλα
- Watt, J., Borhani. R., (2020). " Machine Learning Refined: Foundations, Algorithms, and Applications", Cambridge University Press
- Μαύρη, Μ. (2024). «Τρισδιάστατη εκτύπωση: Μια νέα Πραγματικότητα», Εκδόσεις Προπομπός

- Suggested Scientific journals

- Journal of Service Science and Management
- International Journal of Advanced Manufacturing Technology,
- Journal of Operations Management
- International Journal of Operations and Production Management
- International Journal of Project Management
- International Journal of Productivity and Performance Management
- Journal of Operations Management