COURSE OUTLINE

(1) OVERVIEW

SCHOOL	MARITIME & INDUSTRY		
DEPARTMENT	INDUSTRIAL MANAGEMENT & TECHNOLOGY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	ΤΕΠΑΡ24	SEMESTER	3
COURSE TITLE	TOTAL QUALITY MANAGEMENT		

DISCRETE TEACHING ACTIVITIES *In cases where ECTS credits are awarded to distinct components of the course (e.g., Lectures, Laboratory Exercises, etc.), please indicate them separately. If the credits are awarded as a whole for the entire course, please state the weekly teaching hours and the total number of credits*	WEEKLY TEACHING HOURS	ECTS
Lectures, Project	4	5.5
Please add additional rows if needed. A detailed description of the teaching organization and instructional methods is provided in Section (4).		

COURSE TYPE *core (C), core elective (CE), elective (E) - background, specialization, skill development*	C - Specialization
PREREQUISITE COURSES:	None.
LANGUAGE OF TEACHING AND EXAMINATIONS:	Greek (English for ERASMUS students)
THIS COURSE IS AVAILABLE TO ERASMUS STUDENTS	Yes
COURSE WEBPAGE (URL)	

(2) LEARNING OUTCOMES

Learning Outcomes

The learning outcomes of the course are described, specifying the particular knowledge, skills, and competencies at the appropriate level that students will acquire upon successful completion of the course.

Please refer to Appendix A

- *Description of the Level of Learning Outcomes for each study cycle according to the Qualifications Framework of the European Higher Education Area.*
- *Descriptive Indicators of Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B.*
- *Concise Guide for Writing Learning Outcomes*

The primary goal of this course is to introduce students to the concepts, principles, and tools of Total Quality Management (TQM), with an emphasis on understanding and applying them within the dynamic and demanding environment of modern organizations. During the course, the following thematic units are presented:

- The fundamental concepts of quality, total quality management, continuous improvement, and quality cost.
- The main methods and tools of total quality management.
- The quality assurance systems and international standards, with special focus on ISO 9001 and EMAS.

Particular emphasis is placed on linking quality with strategy and organizational culture, aiming for the long-term improvement of overall performance and sustainability of organizations. Theoretical concepts are supported by examples and case studies from industry and the service sector, promoting a practical and thorough understanding of TQM tools.

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

- Understand the strategic importance of Total Quality Management as a key tool for enhancing organizational performance and sustainability, while appreciating the critical factors and cultural change necessary for its successful implementation.
- Define the concept of quality, describe its key dimensions, and evaluate products/services based on these dimensions, translating customer requirements into quality terms.
- Understand the categories of quality costs and calculate the cost of simple quality management programs.
- Apply basic TQM tools such as Ishikawa diagrams, Pareto charts, and flowcharts.
- Utilize process improvement methods including the 5 Whys, benchmarking, brainstorming, Plan-Do-Check-Act

(PDCA), Kaizen, failure analysis, and Six Sigma.

- Analyze production problems and propose corrective actions by interpreting the causes of failures.
- Apply the basic principles of the Taguchi approach to identify critical factors and evaluate the impact of production process variability.
- Apply quality award principles for designing organizational improvement plans.
- Understand total quality management standards and apply their fundamental principles to develop and improve quality management systems.
- Understand the development and certification process of total quality systems, along with the advantages and challenges involved.

General Competences

Taking into account the general competences that a graduate should have acquired (as listed in the Diploma Supplement and outlined below), which of these competences does the course aim to develop?

Searching, analyzing, and synthesizing data and information, using the necessary technologies	*Project design and management*
Adaptation to new situations	*Respect for diversity and multiculturalism*
Decision making	*Respect for the natural environment*
Autonomous work	*Demonstration of social, professional, and ethical responsibility and sensitivity to gender issues*
Teamwork	*Exercising critical and self-critical thinking*
Working in an international environment	*Promotion of free, creative, and inductive thinking*
Working in an interdisciplinary environment	*…*
Generation of new research ideas	*Other competences: …*

- Searching, analyzing, and synthesizing data and information, using the necessary technologies
- Adaptation to new situations
- Decision making
- Autonomous work
- Teamwork
- Project design and management
- Respect for diversity and multiculturalism
- Respect for the natural environment
- Demonstration of social, professional, and ethical responsibility and sensitivity to gender issues
- Exercising critical and self-critical thinking
- Promotion of free, creative, and inductive thinking

(3) COURSE CONTENT

During the lectures, the following topics are presented:

Εβδομάδα	Ενότητα
1	The Concept and importance of quality. Quality dimensions.
2	Quality Cost: quality cost model of process costing & costing of prevention, appraisal, and failure.
3	Quality philosophies: Juran, Crosby, Feigenbaum, Ishikawa, Deming, Shingo, Taguchi.
4	Total Quality Management: principles, framework, policy.
5	TQM techniques & tools (Ishikawa, Pareto, Flowcharts).
6	Process improvement methods & tools (5 whys, benchmarking, brainstorming, plan-do-check-act, kaizen, failure analysis, six sigma).
7	Quality assurance systems & standards. Models & awards.
8	Translating standards' requirements into quality indicators: from theory to practice (definition of KPIs, compliance indicators in production lines, non-compliance analysis and quantification of improvement actions).
9	Taguchi approach (design & analysis).

10	Quality evaluation models (Kano model, multidimensional satisfaction questionnaires, and requirement categorization techniques).
11-13	Review topics. Presentation of projects.

The course includes lectures, self-study, small group assignments, participation in activities during lectures, as well as short assessments to evaluate understanding. Students present the results of their assignments, developing skills in technical analysis, use of computational tools, and effective oral communication. Furthermore, articles, audiovisual lecture material, web links to useful resources, exercises, and software are uploaded in electronic format on the eClass platform.

(4) TEACHING and LEARNING METHODS - ASSESSMENT

<table>
<tr><td>TEACHING MODE
Face-to-face, in-class lecturing, distance teaching and distance learning etc.</td><td>• Face-to-face in a classroom
• Distance teaching & learning (if required)</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATION TECHNOLOGY
Use of ICT in Teaching, Laboratory Education, Communication with students</td><td>Teaching: Lectures using modern audiovisual equipment, learning support through the eClass electronic platform, synchronous distance teaching via MS Teams.
Laboratory: open-access software for laboratory exercises
Communication with students: face-to-face during office hours, email, eClass platform, MS Teams tools</td></tr>
<tr><td>Organization of Teaching
A detailed description of the teaching methods and approach is provided.
Lectures, seminars, laboratory exercises, fieldwork, study and analysis of literature, tutorials, internships (placements), clinical practice, artistic workshops, interactive teaching, educational visits, project work, writing assignments, artistic creation, etc.

The student's study hours for each learning activity, as well as the hours of independent study, are specified in accordance with the principles of ECTS</td><td>
<table>
<tr><th>Activity</th><th>Semester Workload</th></tr>
<tr><td>Lectures</td><td>52</td></tr>
<tr><td>Project</td><td>15</td></tr>
<tr><td>Preparation for quizzes</td><td>10</td></tr>
<tr><td>Self-study of lecture material</td><td>48</td></tr>
<tr><td>Study of the bibliography</td><td>10</td></tr>
<tr><td>Consultation Support</td><td>0.5</td></tr>
<tr><td>Exams (written)</td><td>2</td></tr>
<tr><td>Course Total</td><td>137.5</td></tr>
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<tr><td>STUDENT ASSESSMENT
Description of the assessment process

Language of assessment, assessment methods, formative or summative evaluation, multiple-choice tests, short-answer questions, essay questions, problem-solving, written assignments, reports, oral examinations, public presentations, laboratory work, clinical patient examination, artistic interpretation, other(s)

Explicitly state assessment criteria and information on whether and where these criteria are accessible to students are included.</td><td>Language of Assessment: Greek (English for ERASMUS students)
Assessment Mode: Face-to-face and/or distance learning (if required)
Assessment Methods: The final grade for the course is determined as follows:
• 60% from the performance in the written exam during the winter semester examination period or, in case of failure, during the September resits.
• 10% from the scores in short comprehension quizzes (one per thematic unit).
• 20% from the group project, which includes both the writing and the presentation.
• 10% from participation in activities during the lectures.
Students from previous semesters are assessed 100% based on their performance in the written examination.
The written exam is closed-book and includes multiple-choice questions, short-answer questions, and problem-solving tasks.
Students with Learning Difficulties: Students with certified learning difficulties in reading and writing (as recognized by the competent authority) are assessed according to the procedures established by the Department.
Disclosure of Assessment Criteria: The assessment criteria are communicated during the first class and are clearly stated on the course website and the eClass platform. The exam syllabus is announced on eClass following the final lecture of the semester. The exam answers are posted on eClass after the examinations take place. Students have the right to review their graded exams and receive</td></tr>
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	explanations regarding their grades. In cases of further requests, the procedures outlined in the current Study Regulations apply.

(5) SUGGESTED BIBLIOGRAPHY

- Books:

- Tsiotras, G. (2022). Total Quality Management- With a Concise Guide of Best Practices, Broken Hill Publishers Ltd, ISBN: 9789925588862 [112690762] – in Greek
- Psomas, E., Tsarouchas, P., Deliou, K. (2023). Total Quality Management, DISIGMA Publications, ISBN: 9786182021668 [122092518] – in Greek

- Journals:

- The TQM Journal
- Total Quality Management & Business Excellence

- Other educational material:

- Koulouriotis, D., Metaxas, I. (2022). Total Quality Management and Business Excellence, KALLIPOS Open Academic Editions ISBN: 9786185667528 [112816060], available online https://repository.kallipos.gr/handle/11419/8456 - in Greek
- Lecture Notes and Supporting Material provided by the Instructor