COURSE MODULE OUTLINE

General information

SCHOOL	School of Science and Tecnhology
PROGRAM COURSE	Quality Management and Technology
LEVEL OF STUDY	Postgraduate
COURSE UNIT CODE	**DIP50**
COURSE TITLE	**Basic Tools and Methods for Quality Control**

INDEPENDENT TEACHING ACTIVITIES *in case credits are awarded for separate components/parts of the course, e.g. in lectures, laboratory exercises, etc. If credits are awarded for the entire course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHNG HOURS**	**CREDITS**
Load per week: 28 hours x 30 weeks	28	30
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail under section 4		

COURSE TYPE Compulsory, Optional, Optional mandatory	Compulsory
PREREQUISITE COURSES:	There are no prerequisite courses for this unit under structure A. DIP40 for structure B.
LANGUAGE OF INSTRUCTIONAND EXAMS:	Greek
THE COURSE IS OFFERED TO ERASMUS STUDENTS	No
COURSE WEBSITE (URL)	

(2) LEARNING OUTCOMES

After completing this module, students are expected to be able to,
- identify the basic elements of a probability model and use laws of the axiomatic theory of probability to find unconditional and conditional probabilities.
- describe univariate and bivariate probability distributions and calculate probabilities, moments, and descriptive measures for specified distributions.
- select appropriate probability models to describe the variability of measurable quality characteristics and calculate probabilities and percentiles of well-known distributions by means of formulae, tables or the Minitab statistical package.
- use descriptive measures and graphical procedures to perform exploratory data analysis.
- identify proper statistics and their corresponding sampling distributions for estimation and tests relating to means, proportions, and variances of performance characteristics.
- find confidence intervals and perform hypotheses tests in one and two-sample problems.
- apply simple and multiple linear regression analyses, correlation analysis and methods of selecting an appropriate model.
- distinguish the categories of measurement errors, apply the laws of propagation of random and systematic errors and estimate the variability due to repeatability, reproducibility, and the uncertainty of measurement.
- understand the function of measurement systems and measuring instruments, select an instrument based on its metrological characteristics and explain the process of calibration and the associated documents.
- apply the 7 main tools of statistical quality control, understand the application of 15 additional tools and select the appropriate tool for confronting specific problems.
- select, construct, and interpret the proper control chart to monitor a process.
- design plans of acceptance sampling for attributes, interpret characteristic curves and apply appropriate standards (MIL-STD-105E, ANSI/ASQC Z1.4, etc).
- determine sampling plans for variables and apply the system MIL-STD-414 (ANSI/ASQC Z1.9).

General Competences

Taking into consideration the general competences that students/graduates must acquire (as those are described in the Diploma Supplement and are mentioned below), at which of the following does the course attendance aim?

Search for, analysis and synthesis of data and information by the use of appropriate technologies,
Adapting to new situations
Decision-making
Individual/Independent work
Group/Team work
Working in an international environment
Working in an interdisciplinary environment
Introduction of innovative research

Project planning and management
Respect for diversity and multiculturalism
Environmental awareness
Social, professional and ethical responsibility and sensitivity to gender issues
Critical thinking
Development of free, creative and inductive thinking
……
(Other…….citizenship, spiritual freedom, social awareness, altruism etc.) …….

Search, analysis and synthesis of data and information, using the necessary technologies.
Autonomous work

(3) COURSE CONTENT

The main aim of DIP50 is to provide students with the theoretical and practical knowledge in basic statistical methodology and basic techniques for testing, assurance and improvement of quality control.

Subjects covered:
- Probability and Statistics
- Quality Control Techniques
- Statistical Quality Control & Sampling

(4) TEACHING METHODS--ASSESSMENT

MODES OF DELIVERY *Face-to-face, in-class lecturing, distance teaching and distance learning etc.*	Distance education with six Contact Sessions held at weekends during the academic year.
USE OF INFORMATION AND COMMUNICATION TECHNOLOGY *Use of ICT in teaching, Laboratory Education, Communication with students*	For the face-to-face contact sessions and written assignments, are used: — Platforms for online meetings (cisco Webex), — Software for presentation (e.g. powerpoint) — Specialised software for the

	material under study (MINITAB)	

COURSE DESIGN	Activity/Method	Annual workload
Description of teaching techniques, practices and methods: Lectures, seminars, laboratorypractice, fieldwork, study andanalysis of bibliography, tutorials, Internship, Art Workshop, Interactive teaching, Educational visits, projects, Essay writing, Artistic creativity, etc.	6 face-to-face sessions (x 4 hours)	24
	Written Assignments (5 assignments x 50 hours)	250
	Exams	3
	Personal Study	563
	Total	840
The study hours for each learning activity as well as the hours of selfdirected study are given following the principles of the ECTS.		

STUDENT PERFORMANCE EVALUATION/ASSESSMENT METHODS	
Detailed description of the evaluation procedures: *Language of evaluation, assessment methods, formative or summative (conclusive), multiple choice tests, short- answer questions, open-ended questions, problem solving, written work, essay/report, oral exam, presentation, laboratory work, other……etc.* *Specifically defined evaluation criteria are stated, as well as if and where they are accessible by the students.*	Students are assigned to submit five (5) written assignments during the academic year. The average grade of the five (5) written assignments, weighted at 30%, is taken into consideration for the calculation of the final grade. The grade of written assignments is activated only with a score equal to or above the pass level (≥5) in the final or resit exams. The grade of the final or the resit exams shall be weighted at 70 % for the calculation of the final grade. Students have the right to participate in the final/resit exams if (a) at least 50% of the potentially excellent grade has been obtained when adding the total of the five (5) assignments and (b) at least four (4) of the five (5) written assignments have been submitted.

(5) SUGGESTED BIBLIOGRAPHY:

- Suggestedbibliography

Τόμοι

Α' : Πιθανότητες και Στατιστική I (I. Κουτρουβέλης)

Β' : Πιθανότητες και Στατιστική II (I. Κουτρουβέλης)
Γ' : Τεχνικές Ελέγχου Ποιότητας (Α.Α. Λουλούδης)
Δ' : Στατιστικός Έλεγχος Ποιότητάς (Δ. Γραφανάκης)
Ε' : Δειγματοληψία (Α. Παπαργύρης)

Τευχίδια
Α' : Πιθανοθεωρία και Περιγραφική Στατιστική (I. Κουτρουβέλης)
Β' : Στατιστική Ανάλυση (I. Κουτρουβέλης)
Δ' : Εργαλεία Στατιστικού Ελέγχου Ποιότητας (Δ. Γραφανάκης)