

## COURSE OUTLINE

### 1. GENERAL

<b>SCHOOL</b>	FOOD AND NUTRITIONAL SCIENCES		
<b>ACADEMIC UNIT</b>	FOOD SCIENCE AND HUMAN NUTRITION		
<b>LEVEL OF STUDIES</b>	POSTGRADUATE		
<b>COURSE CODE</b>		<b>SEMESTER</b>	1 <sup>st</sup>
<b>COURSE TITLE</b>	STATISTICAL PROCESS CONTROL		
<b>INDEPENDENT TEACHING ACTIVITIES</b> <i>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</i>		<b>WEEKLY TEACHING HOURS</b>	<b>CREDITS</b>
		3	5
<i>Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).</i>			
<b>COURSE TYPE</b> <i>general background, special background, specialised general knowledge, skills development</i>	Special background		
<b>PREREQUISITE COURSES:</b>	-		
<b>LANGUAGE OF INSTRUCTION and EXAMINATIONS:</b>	Greek		
<b>IS THE COURSE OFFERED TO ERASMUS STUDENTS</b>	No		
<b>COURSE WEBSITE (URL)</b>			

### 2. LEARNING OUTCOME

<p><b>Learning outcomes</b> <i>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.</i></p> <p><i>Consult Appendix A</i></p> <ul style="list-style-type: none"> <li>• <i>Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area</i></li> <li>• <i>Descriptors for Levels 6, 7 &amp; 8 of the European Qualifications Framework for Lifelong Learning and Appendix B</i></li> <li>• <i>Guidelines for writing Learning Outcomes</i></li> </ul>								
<p>The course aims to introduce graduate students into the basic principles and methods of Statistical Process Control, as applied in the food industry.</p> <p>Upon completion of this course, the student is expected to be able to:</p> <ul style="list-style-type: none"> <li>○ explain the notion of probability distribution</li> <li>○ use the Normal distribution and basic discrete distributions</li> <li>○ apply estimation and testing methods</li> <li>○ interpret statistical significance correctly</li> <li>○ apply and justify methods and tools for statistical quality control</li> <li>○ describe the characteristics of basic experimental designs</li> <li>○ describe the characteristics of basic acceptance sampling plans</li> <li>○ use statistical software for statistical quality control</li> <li>○ comprehend the notion of uncertainty which is always contained in statistical inference critique data-based claims and evaluate data-based decisions</li> <li>○ comply to ethical issues.</li> </ul>								
<p><b>General Competences</b> <i>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?</i></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"><i>Search for, analysis and synthesis of data and information, with the use of the necessary technology</i></td> <td style="width: 50%; border: none;"><i>Project planning and management</i></td> </tr> <tr> <td style="border: none;"><i>Adapting to new situations</i></td> <td style="border: none;"><i>Respect for difference and multiculturalism</i></td> </tr> <tr> <td style="border: none;"><i>Decision-making</i></td> <td style="border: none;"><i>Respect for the natural environment</i></td> </tr> <tr> <td style="border: none;"><i>Working independently</i></td> <td style="border: none;"><i>Showing social, professional and ethical responsibility and sensitivity to gender issues</i></td> </tr> </table>	<i>Search for, analysis and synthesis of data and information, with the use of the necessary technology</i>	<i>Project planning and management</i>	<i>Adapting to new situations</i>	<i>Respect for difference and multiculturalism</i>	<i>Decision-making</i>	<i>Respect for the natural environment</i>	<i>Working independently</i>	<i>Showing social, professional and ethical responsibility and sensitivity to gender issues</i>
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<i>Adapting to new situations</i>	<i>Respect for difference and multiculturalism</i>							
<i>Decision-making</i>	<i>Respect for the natural environment</i>							
<i>Working independently</i>	<i>Showing social, professional and ethical responsibility and sensitivity to gender issues</i>							

<i>Team work</i>	<i>Criticism and self-criticism</i>
<i>Working in an international environment</i>	<i>Production of free, creative and inductive thinking</i>
<i>Working in an interdisciplinary environment</i>	<i>.....</i>
<i>Production of new research ideas</i>	<i>Others...</i>

  

<ul style="list-style-type: none"> <li>○ Search for, analysis and synthesis of data and information, with the use of the necessary technology.</li> <li>○ Adapting to new situations.</li> <li>○ Decision-making.</li> <li>○ Working independently.</li> <li>○ Team work.</li> <li>○ Working in an international environment.</li> <li>○ Working in an interdisciplinary environment.</li> <li>○ Production of new research ideas.</li> <li>○ Production of free, creative and inductive thinking.</li> </ul>
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### 3. SYLLABUS

<ol style="list-style-type: none"> <li>1) Probability distributions and Statistical methods useful in Statistical Process Control <ul style="list-style-type: none"> <li>• Important Discrete Distributions (Hypergeometric, Binomial, Poisson, Geometric)</li> <li>• Normal Distribution and Central Limit Theorem</li> <li>• Descriptive Statistics</li> <li>• Confidence Intervals and Hypothesis Testing</li> </ul> </li> <li>2) Statistical Process Control <ul style="list-style-type: none"> <li>• Cause-and-effect diagram, Pareto chart and Scatter diagram</li> <li>• Control Charts For Variables</li> <li>• Control Charts for Attributes</li> <li>• Process Capability Indexes</li> </ul> </li> <li>3) Acceptance Sampling <ul style="list-style-type: none"> <li>• Single-Sampling Plans</li> <li>• Double, Multiple, and Sequential Sampling</li> <li>• Military Standard 105E (ANSI/ASQC Z1.4, ISO 2859) System Sampling</li> </ul> </li> <li>4) Design of Experiments <ul style="list-style-type: none"> <li>• Basic Principles of Experimental Design and basic experimental designs</li> <li>• Analysis of Variance test</li> </ul> </li> </ol>
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### 4. TEACHING and LEARNING METHODS - EVALUATION

<b>DELIVERY</b> <i>Face-to-face, Distance learning, etc.</i>	Face-to-face	
<b>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY</b> <i>Use of ICT in teaching, laboratory education, communication with students</i>	Statistical packages usage. Use of ICT technologies in teaching and communication with students (E-mail, Microsoft Teams, E-class)	
<b>TEACHING METHODS</b> <i>The manner and methods of teaching are described in detail.</i> <i>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.</i>  <i>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</i>	<b>Activity</b>	<b>Semester workload</b>
	Lectures	39 hrs.
	Individual works	51 hrs.
	Autonomous study	35 hrs.
	Course total	<b>125 hrs.</b>
<b>STUDENT PERFORMANCE EVALUATION</b> <i>Description of the evaluation procedure</i>  <i>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</i>	Language of evaluation: Greek  Autonomous assignments  Examination criteria are publicly available on E-class	

*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.*

## **5. ATTACHED BIBLIOGRAPHY**

*- Suggested bibliography:*

1. Montgomery, D.C. *Introduction to Statistical Quality Control*, Sixth Edition, John Wiley & Sons, Inc, 2009.
2. Παπαδόπουλος, Γ. Κ., *Εισαγωγή στις Πιθανότητες και τη Στατιστική*, Εκδόσεις Gutenberg, 2015

*- Related academic journals:*

1. Journal of Quality Technology (JQT)
2. Quality and Reliability Engineering International (QREI)
3. Quality Technology and Quantitative Management (QTQM)