

COURSE OUTLINE

1. GENERAL

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|--|---|------------------------------|----------------|
| SCHOOL | APPLIED ECONOMIC AND SOCIAL SCIENCES | | |
| ACADEMIC UNIT | AGRIBUSINESS AND SUPPLY CHAIN MANAGEMENT | | |
| LEVEL OF STUDIES | <i>Undergraduate</i> | | |
| COURSE CODE | GEN306 | SEMESTER | 3rd |
| COURSE TITLE | STATISTICS | | |
| INDEPENDENT TEACHING ACTIVITIES | | WEEKLY TEACHING HOURS | CREDITS |
| Lectures | | 4 | 5 |
| | | | |
| COURSE TYPE | General Background | | |
| PREREQUISITE COURSES | NO | | |
| LANGUAGE OF INSTRUCTION and EXAMINATIONS | Greek | | |
| IS THE COURSE OFFERED for ERASMUS STUDENTS? | YES (in English) | | |
| COURSE WEBSITE(URL) | https://oeclass.aua.gr/eclass/courses/4817/ | | |

2. LEARNING OUTCOMES

| Learning Outcomes |
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| <p>The aim of the course is: To introduce students to the fundamentals of Probability and Statistics which are relevant to economy and management.</p> <p>Upon successful completion of the course, the student will be able to:</p> <ul style="list-style-type: none"> • Distinguishes the basic principles of Probability and Statistics. • using enumeration methods and basic probability tools • describe and summarize data gathered from observing a phenomenon or performing an experiment • apply estimation and testing methods in order to make data-based decisions • identify the selected method's assumptions and keep in mind that it is required to apply checks for them • critique data-based claims and evaluate data-based decisions • complete a research project that employs simple statistical inference • comply to ethical issues related to data gathering, data usage and publication of results • Understands the basic "tools" for dealing with theoretical and practical problems that arise in the modern business environment. |
| General Competences |
| Adapting to new situations |

Decision-making

Working independently

Teamwork

Working in an international environment

Working in an interdisciplinary environment

Production of new research ideas Teamwork

Project planning and management

Respect for difference and multiculturalism

Respect for the natural environment

Showing social, professional, and ethical responsibility and sensitivity to gender issues

Criticism and self-criticism

3. SYLLABUS

1. Statistical approach: a brief overview. Useful counting rules (multiplication principle, permutations, k-permutations, combinations).
2. Practical notion of probability; basic probability tools.
3. Conditional probability (multiplication rule; law of the total probability; Bayes theorem); Independence.
4. Random variables (cumulative distribution function; discrete and continuous random variables; probability function; probability density function; mean and variance).
5. Useful discrete distributions (Bernoulli; Binomial; Poisson).
6. Useful continuous distributions (Normal; χ^2 ; t and F).
7. Central limit theorem. The role of probability in statistics.
8. Descriptive statistics (frequency table; numerical descriptive measures; barchart; piechart; box plot; histograms).
9. Sampling distributions.
10. Estimation; point estimation (properties of an estimator); interval estimation (confidence intervals for a (difference of) population mean (s) or proportion (s));
11. Testing hypotheses for a (difference of) population mean (s) or proportion (s));
12. Analysis of variance (single-factor ANOVA; two-factor ANOVA).
13. Goodness-of-fit test; Chi-Square test of independence.

A combination of teaching and learning methods will be used, aiming at the active participation of the students and the practical application of the thematic units under examination; there will also be lectures using audiovisual media, discussions, and analyses of case studies on real business issues, experiential (group) activities, as well as projections of relevant videos. The students will also undertake an individual or group project. Furthermore, articles, audiovisual lecture materials, web links/addresses, useful information, case studies and exercises for further practice are posted in digital form on the AUA Open e-Class platform.

4. TEACHING and LEARNING METHODS - EVALUATION

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| DELIVERY | Face –to- face, Distance learning |
| USE OF INFORMATION and COMMUNICATIONS | • Support of the learning process through the University's AUA Open eClass platform (integrated e-Course Management System) |

| TECHNOLOGY | <ul style="list-style-type: none"> • Support of lectures using presentation software • Use of audiovisual material • Use of web applications <p>Communication with students: face to face at office hours, email, eclass platform</p> | | | | | | | | | | | | | | | | |
|---|---|----------|----------|-------------------|----|-----------------------|----|-------------------|----|------------------|-----|-------|---|---|---------|--|--|
| TEACHING METHODS | <table border="1"> <thead> <tr> <th>Activity</th><th>Workload</th></tr> </thead> <tbody> <tr> <td>Lectures (direct)</td><td>52</td></tr> <tr> <td>Writing paper/ papers</td><td>32</td></tr> <tr> <td>Independent Study</td><td>39</td></tr> <tr> <td>Advisory support</td><td>0,5</td></tr> <tr> <td>Exams</td><td>2</td></tr> <tr> <td>Course Total (Approximately 25 hours of workload per credit unit125.5)</td><td>125,5 h</td></tr> <tr> <td></td><td></td></tr> </tbody> </table> | Activity | Workload | Lectures (direct) | 52 | Writing paper/ papers | 32 | Independent Study | 39 | Advisory support | 0,5 | Exams | 2 | Course Total (Approximately 25 hours of workload per credit unit125.5) | 125,5 h | | |
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| Lectures (direct) | 52 | | | | | | | | | | | | | | | | |
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| Exams | 2 | | | | | | | | | | | | | | | | |
| Course Total (Approximately 25 hours of workload per credit unit125.5) | 125,5 h | | | | | | | | | | | | | | | | |
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| STUDENT PERFORMANCE EVALUATION | <p>The evaluation process is in the language that the course is taught (Greek or English) and consists of:</p> <p>Compulsory written final examination at the end of the semester (weighting factor 100%) which may includes:</p> <ul style="list-style-type: none"> • Multiplechoice questionnaires • Open-endedquestions • Problemsolving • Oral examination <p>Evaluation criteria: correctness, completeness, clarity</p> <p>Special learning difficulties:</p> <p>Students with special learning difficulties in writing and reading (as they are certified and characterized by a competent body) are examined based on the procedure provided by the Department.</p> <p>Specifically-Defined Criteria:</p> <p>The evaluation criteria are made known during the first lesson and are clearly stated on the course website and the AUA Open e-class platform. The answers to the exam questions are posted on the AUA Open e-Class platform after the exam. The students are allowed to see their exam paper after its grading (during the announced office hours) and receive explanations about the grade they received.</p> | | | | | | | | | | | | | | | | |

5. ATTACHED BIBLIOGRAPHY

Suggested bibliography:

- Χαλικιάς, Ι. *Στατιστική*, Εκδόσεις Rosili 2017.

- Παπαδόπουλος, Γ. Κ., *Εισαγωγή στις Πιθανότητες και τη Στατιστική, Εκδόσεις Gutenberg*, 2015.
- Κουνιάς, Σ., Κολυβά-Μαχαίρα, Φ., Μπαγιάτης, Κ. και Μπόρα-Σέντα, Ε., *Εισαγωγή στη Στατιστική*, Εκδόσεις Χριστοδουλίδη, Θεσσαλονίκη 2001.

Related academic journals:

- Journal of Applied Probability
- Journal of Statistical Computation and Simulation.