**COURSE LAYOUT**

1. **GENERAL**

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| **SCHOOL** | APPLIED ECONOMIC AND SOCIAL SCIENCES | | | | |
| **DEPARTMENT** | AGRICULTURAL ECONOMICS & RURAL DEVELOPMENT | | | | |
| **STUDY LEVEL** | *Undergraduate* | | | | |
| **COURSE CODE** | **3700** | **SEMESTER** | | 4 | |
| **ΤΙΤΛΟΣ ΜΑΘΗΜΑΤΟΣ** | QUANTITATIVE METHODS | | | | |
| **INDEPENDENT TEACHING ACTIVITIES** | | | **WEEKLY TEACHING HOURS** | | **ECTS** |
| Lectures | | | 5 | | 5 |
|  | | |  | |  |
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| **COURSE TYPE** | Background (mainly) | | | | |
| **PREREQUISITES:** |  | | | | |
| **LANGUAGE** | Greek | | | | |
| **IS THE COURSE OFFERED for ERASMUS STUDENTS?** | Yes | | | | |
| **COURSE WEB PAGE** | The course will be presented together with notes and other supporting material in the e class of GPA (http://openeclass.aua.gr/) | | | | |

1. **LEARNING OUTCOMES**

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| **Learning Outcomes** |
| The aim of the course is to offer the students mathematical knowledge, not taught in the general Mathematics courses of the first two semesters, with a special emphasis on economic analysis and agricultural economics. Students will be taught and learn applications of these methods both in exploring theory and developing practice, as well as in solving specific financial problems faced by businesses or policy-making. Students are expected to understand the necessity of the previous mathematical knowledge they have acquired and which they will practice again, and they will be able to judge and decide what specific mathematical methods and tools taught in this course are suitable for solving specific problems. Application of the methods will be assisted with exercises and examples.  Applications of these mathematical methods are expected to:  • improve the student's perception of theoretical and practical problems as well as their judgment for solving optimization problems with applications especially in agricultural economics.  • being able to communicate information, results and solutions based on the application of appropriate mathematical optimization methods (maximization / minimization problems) to both specialized and non-specialized audiences.  • In addition, to acquire the necessary basic knowledge in mathematical optimization that will undoubtedly be needed by those who decide to continue with postgraduate / doctoral studies and research. |
| **General Competenses** |
| Students have developed those knowledge acquisition skills that they need to pursue further studies with a high degree of autonomy. |

1. **COURSE CONTENT**

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| * Linear models and matrix algebra with applications on input-output problems and Markov chains. * Structure of optimization problems, conditions for existence of solutions, total solution, unique solution, etc. * Lagrange method and applications on the theory of demand and production. * The case of linear programming, Simplex algorithm, methods for maximization and minimization problems. |

1. **TEACHING and LEARNING METHODS - Evaluation**

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| **TEACHING METHOD** | Lectures in the class and meetings with students |
| **USE OF INFORMATICS and COMMUNICATION TECHNOLOGIES** | * Computer and interactive whiteboard will be used in teaching. * Learning process support through the electronic platform e-class.      * Communication with students will be done on a personal level, also using e-mail and direct telecommunication (e.g. skype). |
| **TEACHING ORGANISATION** | |  |  | | --- | --- | | *Activity* | *Work Load* | | Lectures | 65 | | Independent study | 27 | | Homework | 33 | |  |  | |  |  | |  |  | |  |  | |  |  | |  |  | | *Course total*  *(25 hours of student work load per ECTS)* | 125 | |
| **STUDENTS EVALUATION** | Written final exams (100%) |

1. **BIBLIOGRAPHY**

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| Suggested bibliography:   * Κουτρουμανίδης, Θ., Ζαφειρίου, Ε. και Μαλέσιος, Χ. (2016). Εφαρμοσμένα μαθηματικά στη γεωπονική επιστήμη. Εκδόσεις Τζιόλα, Θεσσαλονίκη. * Chiang, Α. and Wainwright, Κ. (2009). Μαθηματικές μέθοδοι οικονομικής ανάλυσης. Εκδόσεις Κριτική, Αθήνα. * Μάνος Β. (2009). Μέθοδοι ποσοτικής ανάλυσης. Εκδόσεις Ζήτη, Θεσσαλονίκη. |