**COURSE LAYOUT**

1. **GENERAL**

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| **SCHOOL** | APPLIED ECONOMICS AND SOCIAL SCIENCES | | | | |
| **DEPARTMENT** | AGRICULTURAL ECONOMY AND RURAL DEVELOPMENT | | | | |
| **STUDY LEVEL** | *Undergraduate* | | | | |
| **COURSE CODE** | **505** | **SEMESTER** | | 1st | |
| **COURSE TITLE** | Mathematics A (OBLIGATORY) | | | | |
| **INDEPENDENT TEACHING ACTIVITIES** | | | **WEEKLY TEACHING HOURS** | | **ECTS** |
| Lectures | | | **4** | | 5 |
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| **COURSE TYPE** | Infrastructure/ General knowledge/ Skills development | | | | |
| **PREREQUISITES** |  | | | | |
| **LANGUAGE** | Greek | | | | |
| **IS THE COURSE OFFERED forERASMUS STUDENTS?** | Yes (in Greek) | | | | |
| **COURSE WEB PAGE** |  | | | | |

1. **LEARNING OUTCOMES**

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| **Learning Outcomes** | |
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| After this course, the student is expected to be able to:   * use and apply definitions and notions of Infinitesimal Calculus in a pure and applied sense. * Use and apply mathematical methods in basic problems of Agricultural Economy and Rural Environment * develop critical thinking through result verification | |
|  | **General Competenses** |
| 1) Adapt to new situations.  2) Make decisions.  3) Work autonomously.  4) Create new research ideas.  5) Advance free, creative and inductive thinking. | |

1. **COURSE CONTENT**

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| 1) ELEMENTS OF LINEAR ALGEBRA: Euclidean Spaces, Matrices, Rank of a linear transformation - matrix, Systems of Linear Equations, inner and cross product, line and plane equations.  2) INTEGRATION: Definite Integral as area, Fundamental Theorem of Calculus, Indefinite Integral, Integration techniques, Applications.  3) DIFFERENTIAL EQUATIONS: Ordinary Differential Equations, in particular, linear first order and second order with constant coefficients.  4) FUNCTIONS WITH SEVERAL VARIABLES: Limits and Continuity, partial Derivatives, Chain Rule, Directional Derivatives and Gradient, Tangent planes, maxima and minima of functions of two variables. |

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

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| **TEACHING METHOD** | Live, face to face teaching in the classroom\*  \*Due to the special circumstances (COVID-19), synchronous distance teaching can be applied and educational material for asynchronous distance teaching has been uploaded in the Open e-class platform. |
| **USE OF INFORMATICS and COMMUNICATION TECHNOLOGIES** | Educational material, updates and announcements available via Open e-class platform. |
| **TEACHING ORGANISATION** | |  |  | | --- | --- | | *Activity* | *Work Load (hours)* | | Lectures | 52 hours | | Individual study | 48 hours | | Total contact hours and training(25 hours per ECTS) | 100 hours  (5 ECTS) | |
| **STUDENTS EVALUATION** | Written examination of gradual difficulty, based on the lectures offered, containing:  - Problems and/or exercises.  - Comprehension questions. |

1. **BIBILIOGRAPHY**

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| 1. Σακκαλής, Π.  Απειροστικός Λογισμός και Πραγματική Άλγεβρα. Εκδόσεις Τυπωθήτω, Γ έκδοση, Σεπτέμβριος 2008*.*  2. Finney R. L., Weir W. D. A., Giordano F. R. Απειροστικός Λογισμός. Πανεπιστημιακές εκδόσεις Κρήτης, 1Η/2012.  3. Marsden, J. E., Tromba, A. J., Weinstein, A. Basic multivariable calculus, Springer Verlag, Inc. New York 1993.  4. Ross, S. L. Introduction to Ordinary Differential Equations, John Wiley and Sons, Inc. New York, 1980. |