**COURSE OUTLINE**

1. **GENERAL**

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| **SCHOOL** | FINANCE AND STATISTICS | | | | |
| **ACADEMIC UNIT** | STATISTICS AND INSURANCE SCIENCE | | | | |
| **LEVEL OF STUDIES** | Undergraduate | | | | |
| **COURSE CODE** | **ΣΑΑΝΑ71** | **SEMESTER** | | **8Ο** | |
| **COURSE TITLE** | RUIN THEORY | | | | |
| **INDEPENDENT TEACHING ACTIVITIES** *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* | | | **WEEKLY TEACHING HOURS** | | **CREDITS** |
| Lectures | | | 5 | | 6 |
|  | | |  | |  |
|  | | |  | |  |
| *Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).* | | |  | |  |
| **COURSE TYPE**  *general background,  special background, specialised general knowledge, skills development* | |  | | --- | | Special background | | | | | |
| **PREREQUISITE COURSES:** |  | | | | |
| **LANGUAGE OF INSTRUCTION and EXAMINATIONS:** | Greek | | | | |
| **IS THE COURSE OFFERED TO ERASMUS STUDENTS** | No | | | | |
| **COURSE WEBSITE (URL)** | <http://www.unipi.gr/unipi/el/sta-proptuxiakes-spoudes/programma-eksamhnwn/item/1152-7%CE%BF-%CE%B5%CE%BE%CE%AC%CE%BC%CE%B7%CE%BD%CE%BF_temp.html> | | | | |

1. **LEARNING OUTCOMES**

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| **Learning outcomes** | |
| *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.*  *Consult Appendix A*   * *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area* * *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B* * *Guidelines for writing Learning Outcomes* | |
| The main objective of the course is to introduce students to the stochastic models in risk theory. The ruin probability is studied in the classical and renewal risk model. Exact expressions, asymptotic results, bounds and approximations are also obtained. The concept of adjustment coefficient are discussed in details.  On completion of this course the student should be able to:   * Understand the concept of ruin probability. * Find exact formulas and asymptotic results for ruin probability. * Construct bounds and apply approximation methods. * Find the adjustment coefficient for claims follow a light tail distribution. * Find the distribution of ladder heights. | |
| **General Competences** | |
| *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?* | |
| *Search for, analysis and synthesis of data and information, with the use of the necessary technology*  *Adapting to new situations*  *Decision-making*  *Working independently*  *Team work*  *Working in an international environment*  *Working in an interdisciplinary environment*  *Production of new research ideas* | *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*  *Production of free, creative and inductive thinking*  *……*  *Others…*  *…….* |
| *Decision making*  *Group work*  Producing new research ideas  *Promote free, creative and inductive thinking* | |

1. **SYLLABUS**

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| Introduction to probability theory and stochastic processes, Classical risk model, Discrete model, Ruin probability, Deficit at ruin, Time of ruin, Surplus just before ruin, Defective renewal equations, Adjustment coefficient, Computation of ruin probability, Approximation methods, Bounds, Asymptotic results, Renewal risk model. |

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

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| **DELIVERY** *Face-to-face, Distance learning, etc.* | Face to face lectures |
| **USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY** *Use of ICT in teaching, laboratory education, communication with students* | Electronic communication with students. |
| **TEACHING METHODS**  *The manner and methods of teaching are described in detail.*  *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.*  *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* | |  |  | | --- | --- | | ***Activity*** | ***Semester workload*** | | Lectures | 60 | | *Exercises* | 10 | | Independent Study | 80 | |  |  | |  |  | |  |  | |  |  | |  |  | |  |  | |  |  | | Course total | **150** | |
| **STUDENT PERFORMANCE EVALUATION**  *Description of the evaluation procedure*  *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 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.* | Written final exam (100%) that includes development topics. |

1. **ATTACHED BIBLIOGRAPHY**

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| *- Suggested bibliography:*   1. Koutsopoylos, C.J. (1999). Actuarial Mathematics, Part Ι, Risk Theory. Symmetria Publications, Athens (in Greek). 2. Politis, K. (2012). Introduction to Collective Risk Theory. Stamouli Publications, Athens (in Greek). |