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|-----|--|--|---|-----------|
| 1.  | Course title   | <b>Decision support systems</b>  |   |           |
| 2.  | Course code  | SI-I-14  |   |           |
| 3.  | Study program  | <b>Master Studies in Computer Science and Engineering<br/>- Software engineering</b> |   |           |
| 4.  | Unit offering the course   | <b>FCSE</b>  |   |           |
| 5.  | Undergraduate/master/PhD   | <b>Master</b>  |   |           |
| 6.  | Year/semester<br>2/ summer/elective  | 7. ECTS: <b>6</b>  |   |           |
| 8.  | Teacher(s)   | assist. prof. dr. Gjorgji Madjarov, assoc. prof. dr. Dejan<br>Gjorgjevikj            |   |           |
| 9.  | Course prerequisites   | None   |   |           |
| 10. | Goals (competences):<br>To introduce the students to the modern concepts of decision analysis, methods, techniques and decision support systems. Upon completion the course the students are expected: to have deepened knowledge of the advanced techniques and methodologies of decision analysis; to be able to understand, analyse and model decision support systems on real world problems; to be able to realize and estimate the performance of a decision support system.   |  |   |           |
| 11. | Course content:<br>Decision making and decision support. The process of decision making, decision components, taxonomy of decision making. The main concepts of decision analysis, artificial intelligence and predictive model construction and evaluation in a specific context. The advantages and disadvantages of using these methods in real-world systems and hands-on experience. Decision support, knowledge-based systems (qualitative and quantitative), learning systems (including logistic regression, classification trees, neural networks, rough sets), and techniques to evaluate the performance of such systems. |  |   |           |
| 12. | Teaching methods:<br>Lectures supported by slide presentations, interactive lectures, trainings (using lab equipment and software packages), team work, case studies, invited guests and lectures, individual practical assignments presentations, seminar paper, e-learning (forums, consultations).  |  |   |           |
| 13. | Total available time   | 6 ECTS x 30 hours = 180 hours  |   |           |
| 14. | Distribution of the available time   | 60 + 0 + 120 = 180 hours   |   |           |
| 15. | Teaching activities  | 15.1.  | Lectures  | 60 hours  |
|     |  | 15.2.  | Training (labs, problem solving), seminar and team work | 0 hours   |
| 16. | Other activities   | 16.1.  | Project work  | 45 hours  |
|     |  | 16.2.  | Self study  | 45 hours  |
|     |  | 16.3.  | Home work   | 30 hours  |
| 17. | Grading  |  |   |           |
|     | 17.1.  | Tests  |   | 45 points |

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|     | 17.2.                     | Seminar work/project (written or oral presentation)   |  |   | 45 points          |      |
|     | 17.3.                     | Active participation  |  |   | 10 points          |      |
| 18. | Grading criteria          | to 59 points  |  |   | 5 (five) (F)       |      |
|     |                           | from 60 to 68 points  |  |   | 6 (six) (E)        |      |
|     |                           | from 69 to 76 points  |  |   | 7 (seven) (D)      |      |
|     |                           | from 77 to 84 points  |  |   | 8 (eight) (C)      |      |
|     |                           | from 85 to 92 points  |  |   | 9 (nine) (B)       |      |
|     |                           | from 93 to 100 points   |  |   | 10 (ten) (A)       |      |
| 19. | Final exam prerequisites  | Successfully completed activities 15.1 and 15.2   |  |   |                    |      |
| 20. | Course language           | Macedonian and English  |  |   |                    |      |
| 21. | Quality assurance methods | Internal evaluation and student questionnaires  |  |   |                    |      |
| 22. | Literature                |   |  |   |                    |      |
|     | 22.1.                     | Compulsory  |  |   |                    |      |
|     |                           | No.   | Authors  | Title   | Publisher          | Year |
|     |                           | 1.  | Robert T. Clemen   | Making Hard Decisions: An Introduction to Decision Analysis | Duxbury Press      | 1997 |
|     |                           | 2.  | Richard O. Duda, Peter E. Hart and David G. Stork                        | Pattern Classification (2nd ed.)                            | Wiley-Interscience | 2000 |
|     | 3.                        | M. G. Myriam Hunink, Paul P. Glasziou, Joanna E. Siegel, Jane C. Weeks, Joseph S. Pliskin, Arthur S. Elstein, Milton C. Weinstein | Decision Making in Health and Medicine: Integrating Evidence and Values. | Cambridge, UK: Cambridge University Press                   | 2001               |      |
|     | 22.2.                     | Additional  |  |   |                    |      |
|     |                           | No.   | Authors  | Title   | Publisher          | Year |
|     |                           | 1.  |  |   |                    |      |
|     |                           | 2.  |  |   |                    |      |
| 3.  |                           |   |  |   |                    |      |