|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Course: | | *Operations Research* | | | | | | | | |
| Course id: ПФПТДИ08 | |
| Number of ECTS: 5 | |
| Teacher: | | Snežana J. Matić-Kekić, Nebojša M. Dedović | | | | | | | | |
| Course status | | Elective | | | | | | | | |
| Number of active teaching classes (weekly) | | | | | | | | | | |
| Lectures: 2 | | Practical classes: 2 | | | Other teaching types: | | Study research work: | | Other classes: | |
| Precondition courses | | None/navesti ako ima | | | | | | | | |
| 1. Educational goal   Mastering the skills and knowledge of subject content, which provides the basis for mathematical modeling  agro-engineering phenomena and their exploitation as well as for the active implementation of elements of applied mathematics in agro-engineering practice. | | | | | | | | | | |
| 1. Educational outcomes   The student qualifies for independent mathematical modeling of agro-engineering phenomena and their  exploitation as well as for the active implementation of elements of applied mathematics in agro-engineering practice. | | | | | | | | | | |
| 1. Course content   Heuristic programming. The methods of heuristic programming: genetic algorithm, a method grabbing, climbing  along the river bank, and generate and test, SA.  Nonlinear optimization problems: integer programming, 0-1 programming, quadratic programming and  general NP problem. Solving methods. Examples.  Game theory: determination of optimal strategies, saddle-point, mixed matrix games, solving  reduction, addressing the application of linear programming.  Network planning and management: network diagram, timing analysis, critical path, time reserves, analysis  costs, expenses-time, optimal allocation of scarce resources over time.  Basics of Monte Carlo: generating random numbers, statistical methods for stochastic processes. | | | | | | | | | | |
| 1. Teaching methods: Consultations and research work. | | | | | | | | | | |
| Knowledge evaluation (maximum 100 points) | | | | | | | | | | |
| Pre-examination obligations | | | Mandatory | Points | | Final exam (izabrati) | | Mandatory | | Points |
| Lecture attendance | | | Yes | 10 | | *Oral part of the exam and written part of the exam-tasks and theory* | | Yes | | 80 |
| Test | | | No | 10 | |  | | | | |
| Literature | | | | | | | | | | |
| Ord. | Author | | Title | | | Publisher | | | | Year |
|  | Petric, J. J. | | Operations Research (in Serbian) | | | Scientific Book, Belgrade, Serbia | | | | 1997 |
|  | Tomić M, Matić-Kekić S, Dedović N, Savin L, Simikić M, Ponjičan O, Desnica E, Ašonja A. | | Optimization of the  locations of overhaul capacities for agricultural engineering in Serbia by applying integer programming | | | African Journal  of Agricultural Research 6(15), 3346 – 3354 | | | | 2011. |
|  | Savin,L., Matić-Kekić, S., Dedović, N. Simikić, M. and Tomić,M. | | Profit maximization algorithm including the loss of yield due to uncertain weather events during harvest | | | Biosystems Engineering 123, 56-67 | | | | 2014 |

|  |  |  |
| --- | --- | --- |
| Znak univerziteta | UNIVERSITY OF NOVI SAD  FACULTY OF AGRICULTURE 21000 NOVI SAD, TRG DOSITEJA OBRADOVIĆA 8 | Znak fakulteta2 |
| Study Programme Accreditation  MASTER ACADEMIC STUDIES *AGRICULTURAL ENGINEERING* |
| Table 5.2 Course specification | | |