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| 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 modelingagro-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 theirexploitation 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, climbingalong the river bank, and generate and test, SA.Nonlinear optimization problems: integer programming, 0-1 programming, quadratic programming andgeneral NP problem. Solving methods. Examples.Game theory: determination of optimal strategies, saddle-point, mixed matrix games, solvingreduction, addressing the application of linear programming.Network planning and management: network diagram, timing analysis, critical path, time reserves, analysiscosts, 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.
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| 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 thelocations of overhaul capacities for agricultural engineering in Serbia by applying integer programming | African Journalof 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 |

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