**Course description**

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| **Generic information** | | | |
| Head of Course | PhD Svjetlana Hess | | |
| Course | Transport Process Optimization | | |
| Study Programme | Technology and Organization of Transport | | |
| Type of Course | Mandatory | | |
| Year of Study | 2. |  | |
| Estimated Student Workload and Methods of Instruction | ECTS coefficient of Student Workload | | 5 |
| Number of Hours (L+E+S) | | 30+0+10 |

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| **1. GENERAL COURSE DESCRIPTION** | | | | | | | | | | | | |
| *1.1. Course Objectives* | | | | | | | | | | | | |
| The main objective of the course is to enable students to apply selected methods of optimization of the transport process, through the adoption of techniques, analytical calculation and analysis of results. The above results in the adoption of practically applicable knowledge and skills as a basis for optimal and efficient planning and organization of the transport process. | | | | | | | | | | | | |
| *1.2. Prerequisites for Course Registration* | | | | | | | | | | | | |
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| *1.3. Expected Learning Outcomes* | | | | | | | | | | | | |
| 1. establish and define the basic parameters and phases of the transport process and determine the decision criteria for optimal organization 2. set up a model for the organization of the movement of means of transport and determine the appropriate method of solving and finding the optimal solution for the distribution of goods 3. define and compare types of itineraries and explain the differences between individual types 4. plan travel routes, schematically present and solve an illustrative example of a transport process (itinerary) by calculating all the necessary travel indicators 5. adopt a method of dynamic programming for optimal solution of a multi-phase process of transport problems and interpret the optimal solution with regard to the criterion and limitations 6. identify possible changes and deviations in conditions of uncertainty | | | | | | | | | | | | |
| *1.4. Course Outline* | | | | | | | | | | | | |
| Analytical tools and techniques needed for optimal organization of transport process, types of itineraries, calculation of all indicators of transport process for a particular itinerary, operational planning problem, distribution network problem, dynamic programming for transport problem, scheduling and allocation of transport vehicles and equipment, organization of vehicle loading, solving examples with widely available computer support (MS Excel Solver or WinQSB). The emphasis is on solving techniques and the application of analytical methods on real examples, where quantification and optimization of process is required. | | | | | | | | | | | | |
| *1.5. Modes of*  *Instruction* | | Lectures  Seminars and workshops  Exercises  E-learning  Field work | | | | | Practical work  Multimedia and Network  Laboratory  Mentorship  Other \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | | | |
| *1.6. Comments* | |  | | | | | | | | | | |
| *1.7. Student Obligations* | | | | | | | | | | | | |
| Colloquia and assignments, continuous assessment during classes and final exam. | | | | | | | | | | | | |
| *1.8. Assessment1 of Learning Outcomes* | | | | | | | | | | | | |
| Course attendance | 1 | Class participation | |  | Seminar paper | | | 1.5 | Experiment | | |  |
| Written exam | 1 | Oral exam | |  | Essay | | |  | Research | | |  |
| Project |  | Continuous Assessment | | 1.5 | Presentation | | |  | Practical work | | |  |
| Portfolio |  |  | |  |  | | |  |  | | |  |
| *1.9. Assessment of Learning Outcomes and Examples of Evaluation during Classes and on the Final Exam* | | | | | | | | | | | | |
| *Evaluation procedure is following:* 70% of the grade through exams for students' continuous assessment and 30% of the grade through final exam, ie:  - continuous assessment during classes through 2 exams and 1 assignment and  - the final exam checks the integrity of theoretical knowledge and understanding of specific knowledge in the field of organization and optimization of transport processes with application to specific cases in transport and logistics.  *Valuation examples by individual learning outcomes:*  1. define the basic parameters and phases of the transport process and determine possible optimization criteria  2. select and verbally formulate an arbitrary problem of freight transport and present the procedure of the transport process with the determination of a possible distribution of cargo  3. define the types of itineraries with a schematic representation of each and identify the differences  4. present the travel route (itinerary) for one problem from practice, collect data, and make a calculation of all indicators of the transport process  5. for a specific problem of freight transport set the model, interpret the function of criteria and constraints, calculate the solution by the method of dynamic programming and interpret the optimal solution with respect to the criteria and constraints  6. list possible changes and deviations from the plan in conditions of uncertainty and suggest solutions | | | | | | | | | | | | |
| *1.10. Main Reading* | | |  | | | | | | |  | | |
| * Lectures posted as teaching text on the website (Merlin) * Stanković, R., Pašagić Škrinjar, J., Logistika i transportni modeli, autorizirana predavanja, web izdanje, Fakultet prometnih znanosti, Zagreb, 2015. | | | | | | | | | | | | |
| *1.11. Recommended Reading* | | |  | | | | | | |  | | |
| * Lindov, O., Džaferović, S., Tehnologija cestovnog transporta, zbirka zadataka, Sarajevo, 2011. * Logistics Engineering Handbook, editor G. Don Taylor, CRC Press Taylor & Francis Group, 2008. * Bather, J., Decision Theory: An Introduction to Dynamic Programming and Sequential Decisions, John Wiley and Sons, London, 2000. * Vuleta, J., Backović, M., Ekonomsko matematički metodi i modeli, Ekonomski fakultet Univerziteta u Beogradu, 2015. * Pavlović, I., Kvantitativni modeli i metode u poslovnom odlučivanju, Mostar-Dubrovnik, 2005. | | | | | | | | | | | | |
| *1.12. Number of Main Reading Examples* | | |  | | | | | | |  | | |
| *Title* | | | *Number of examples* | | | | | | | *Number of students* | | |
| Stanković, R., Pašagić Škrinjar, J., Logistika i transportni modeli, autorizirana predavanja, web izdanje, Fakultet prometnih znanosti, Zagreb, 2015. | | | | | | web | | | | | 35 | |
| Lectures posted as teaching text on the website (Merlin) | | | | | | web | | | | | 35 | |
| *1.13. Quality Assurance* | | | | | | | | | | | | |
| The studying quality is monitored following the ISO 9001 system, as well as European standards and guidelines for quality assurance, carried out at the Faculty of Maritime Studies, University of Rijeka. Analysis of exam passing is done once a year, and once a semester a survey is conducted among students. | | | | | | | | | | | | |

1 **NOTE:** Name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course. Use empty fields for additional activities.