



Erasmus Module
Operations Research
 Description

Vasil Levski National Military University
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Country BULGARIA	Institution Vasil Levski National Military University	Module Operations Research	ECTS 3.0
Service All Languages	Minimum Qualification for Lecturers		
English, Bulgarian	<ul style="list-style-type: none"> English: Common European Framework of Reference for Languages (CEFR) Level B2 or NATO STANAG 6001 Level 2. Adequate pedagogical and psychological competences. Thorough knowledge of the topic taught. Spent at least two semesters higher mathematics courses 		
Prerequisites for international participants: <ul style="list-style-type: none"> English: Common European Framework of Reference for Languages (CEFR) Level B1 or NATO STANAG Level 2. The end of the 1st year of national (military) higher education. 		Goal of the Module: Presentation of: <ul style="list-style-type: none"> Philosophical basis of decision making process Linear optimization tasks Assignment tasks Queuing theory 	

Learning outcomes	Knowledge	As a result of the training under this program, learners should acquire new knowledge about: <ul style="list-style-type: none"> Analyzing of 5 stage – decision making model Creating of mathematical model of applied task. Examining different applied assignment task of liner optimization Application of Microsoft Excel-Solver program for solving of applied management tasks Main elements of queuing systems Differential equation for describing queuing processes Main static parameters of queuing systems Final analysis of mathematical results
	Skills	<ul style="list-style-type: none"> As a result of the exercises foreseen in the program, learners should build new skills: <ul style="list-style-type: none"> To use of Microsoft Excel-Solver program for solving of applied management tasks To interpreted gotten results To create adequate reports to the superior and subordinate structures



	Competences	In response to the need of managerial knowledge, skills and competences, the Operation Research examines the prerequisites for the Operations research concepts, researches and creating mathematical model of applied tasks
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Verification of learning outcomes

The main academic methods of giving knowledge are lectures and seminar sessions, which are held in mix training courses of both students and cadets. Evaluation on results of the course is built on the current curriculum. For this purpose, it is provided a semester examination as a preparation course project on a topic of curriculum.

Module Details		
Main Topic	Recommended WH	Details
Basis of OR	5	<ul style="list-style-type: none"> Knowledge of basic physical features of the decision making proses . Knowledge of principles of different approaches of solving optimization tasks.
Linear optimization	10	<ul style="list-style-type: none"> Elements of mathematical model of linear optimization task Simplex method Different applying tasks of linear optimization Application of Microsoft-excel-solver Principles of analysis of gotten results
Assignment tasks	10	<ul style="list-style-type: none"> Elements of mathematical model of linear assignment tasks task Method of potentials Balanced and not balanced assignment task Application of Microsoft-excel-solver Time assignment task
Queuing theory	5	<ul style="list-style-type: none"> Main elements of queuing systems Dynamic regime of queuing systems Stationary regime of queuing systems
Additional hours to increase the learning outcomes		
Self-Study	10	<ul style="list-style-type: none"> Enhancing knowledge by studying specific looks and documents related to Operqation Research. Reflection of the topics issued.
Total	40	