



1. Subject name	Development philosophies I. problems, new sciences, technologies, solution				
2. Subject name in Hungarian	Development philosophies I. problems, new sciences, technologies, solution				
3. Code	BMEKOV RD004	4. Evaluation type	exam grade	5. Credits	4
6. Weekly contact hours	2 (0) Lecture	2 (0) Practice	0 (0) Lab		
7. Curriculum	PhD Programme	8. Role	Basic course		
9. Working hours for fulfilling the requirements of the subject					120
Contact hours	56	Preparation for seminars	20	Homework	10
Reading written materials	10	Midterm preparation	0	Exam preparation	24
10. Department	Department of Aeronautics and Naval Architectures				
11. Responsible lecturer	Dr. Rohács József				
12. Lecturers	Dr. Rohács József				
13. Prerequisites					
14. Description of lectures					
A.) Problems and their possible solutions. General problems, mathematical representation, economic problems, safety and security, environmental protection, time effects. Development of the individual, team and company competence. Brain and thinking. Thinking out of the box. Classification of technologies, disruptive technology development. Radically new solutions. Breakthrough innovation. Emerging technologies. Expectation and requirements to new technologies and solutions. Managing with stakeholders and societies. B.) New sciences and technologies. Innovation theory, theory of innovation diffusion. Technology development, technology saving, technology transfer. Systems engineering. Evaluation, modelling and development of the systems. Large technological and technogen systems. Logistics. Lean technologies. Engineering and production process development. Production support systems. New technologies and solutions like MEMS (micro-electro-mechanical systems), smart technologies, solutions based on biological principles, biomechanics, biomimicry, etc.					
15. Description of practices					
Systematic consultancy and working individually on proposal or contribution an article.					
16. Description of laboratory practices					
As it required for performing the practical works.					
17. Learning outcomes					
A. Knowledge Study the major problems required new solutions, understanding the original solutions and their developments; understanding the major features of disruptive technologies, breakthrough innovation and emerging technologies, developing knowledge and competences in implementation of new sciences supporting the developments. B. Skills C. Attitudes D. Autonomy and Responsibility					
18. Requirements, way to determine a grade (obtain a signature)					
19. Opportunity for repeat/retake and delayed completion					
20. Learning materials					
Effective date	27 November 2019	This Subject Datasheet is valid for		Inactive courses	