Advanced theory of flight I. Aerodynamics

1. Subject name	Advanced theory of flight I. Aerodynamics				
2. Subject name in Hungarian	Advanced theory of flight I. Aerodynamics				
3. Code	**BMEKOVRD002**	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.) Basic aerodynamics. Lift generation. Boundary layer theory. Drag and its components. Aerodynamics coefficients. Theory of profiles. Theory of finite wing. Aerodynamics of 3D bodies. Subsonic, transonic and supersonic aerodynamics. Polar curve calculations, aircraft aerodynamic design.
B.) Advanced aerodynamics. Flow control. Laminar wing. Airframe – propulsion system integration. Control of the flow separation. Non-steady aerodynamics. Aerodynamics of flexible wings. Morhing. Biomimicry. Models of the aerodynamics coefficients. Numerical aerodynamics. Measuring the aerodynamic coefficients. Identification of models of aerodynamic coefficients. Role of aerodynamics in aircraft conceptual design.

15. Description of practices

PhD studentt have not studied the aerodynamics earlier must perform aerodynamic calculation/ design of an aircraft, systematic consultancy on a special project and working individually on proposal or contribution an article.

16. Description of labortory practices

As it required for performing the practical works.

17. Learning outcomes

A. Knowledge B. Skills C. Attitudes D. Autonomy and Responsibility

- Objectives: increasing knowledge in aerodynamics; developing the competence in understanding, measuring, calculation and predicting the aerodynamic characteristics; developing knowledge and competence in aerodynamic design

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	2023/2024 semester II