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| 1. Subject name | **Aircraft analysis I.** | | | | |
| 2. Subject name in Hungarian | Repülőgépek vizsgálata I. | | | | |
| 3. Code | **BMEKOVRM631** | 4. Evaluation type | **exam grade** | 5. Credits | **4** |
| 6. Weekly contact hours | **2 (10) Lecture** | **0 (0) Practice** | **2 (11) Lab** | | |
| 7. Curriculum | **Vehicle Engineering MSc (J)** | 8. Role | **Specialization (sp) at Vehicle Engineering MSc (J)** | | |
| 9. Working hours for fulfilling the requirements of the subject | | | | | **120** |
| Contact hours | 56 | Preparation for seminars | 18 | Homework | 18 |
| Reading written materials | 18 | Midterm preparation | 0 | Exam preparation | 10 |
| 10. Department | **Department of Aeronautics and Naval Architectures** | | | | |
| 11. Responsible lecturer | Dr. Beneda Károly | | | | |
| 12. Lecturers | Dr. Beneda Károly, Dr. Szirovczák Dávid, Dr. Veress Árpád | | | | |
| 13. Prerequisites | **strong: KORHM620 - Advanced Flight Theory** | | | | |

## 14. Description of lectures

Measurement technics. Powerplant or aircraft practical measurements.
Control of aircraft engines based on different control laws. Analysis methods of aircraft engines; application of mathematical models.

## 15. Description of practices

## 16. Description of labortory practices

Design of aircraft engine control system on computer; measurement carried out on engine or on aircraft, establishment of mathematical model and simulation.

## 17. Learning outcomes

A. Knowledge

- The student knows the mathematical-physical background of aircraft engine control and the methods of aircraft engine analysis, knows the possible mathematical models of different components of an aircraft engine.
- The student knows the technical terms of measurements, the planning of measurements, the process of data acquisition and interpretation of results.

B. Skills

- The student is able to plan measurement processes, perform data acqusition and process the acquired data.
- Able to design an aircraft engine control system based on computer simulation.
- Able to carry out measurements on an aircraft engine.
- Able to develop different depth mathematical models evaluating the acquired data.

C. Attitudes

- The student looks self-supporting for creative solutions considering the available resources.
- Cooperates with the teacher and the colleagues; aims the precise documentation of his/her work.
- Able to obey the safety regulations during the work nearby an aircraft engine.

D. Autonomy and Responsibility

- The student can choose one from the existing methods with different precision considering the goals and available resources; accepts the frame of cooperation

## 18. Requirements, way to determine a grade (obtain a signature)

Design of measurement task, data acquisition (power plant or aircraft, one task chosen by the student), processing and evaluation of measurement data. The outcome of the task is a project report (in MS Word or PowerPoint format). The deadline of completing this document and delivering to the lecturer is the last week of the semester. The students will get grade to the analysis task. The requirement for the signature is the delivered and accepted analysis task. The final grade of the subject is the mathematical average of the grade given for the exam and for the analysis tasks.

## 19. Opportunity for repeat/retake and delayed completion

If measurement task is not delivered in time, it is also possible to deliver the documentation in the supplementary week besides paying administration fee.

## 20. Learning materials

K. Beneda: Measurement techniques of gas turbines slides
A. Giampaolo: Gas Turbine Handbook - Principles and Practices. Taylor & Francis, 2006, ISBN 0-88173-516-7
M. P. Boyce: Gas Turbine Engineering Handbook. Elsevier, 2017, ISBN 978-0-7506-7846-9

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| **Effective date** | 10 October 2019 | **This Subject Datasheet is valid for** | Inactive courses |