



subject of PhD studies

Géza Pattantyús-Ábrahám  
Doctoral School of Mechanical Engineering

## SUBJECT DATA SHEET AND REQUIREMENTS

last modified: 20<sup>th</sup> May 2016

### COMPUTATIONAL FLUID DYNAMICS (PhD)

### NUMERIKUS ÁRAMLÁSTAN (PhD)

1	Code	Semester Nr. or fall/spring	Contact hours/week (lect.+semin.+lab.)	Requirements p / e / s	Credit	Language
	BMEGEÁT4A14	1.(2.*) fall/spring	2+0+0	e	3	English

\*: in case of enrolment in fall

#### 2. Subject's responsible:

Name:	Title:	Affiliation (Department):
Dr. Gergely KRISTÓF	associate professor	Dept. of Fluid Mechanics

#### 3. Lecturer:

Name:	Title:	Affiliation (Department):
Dr. Gergely KRISTÓF	associate professor	Dept. of Fluid Mechanics

4. Thematic background of the subject:  
physics, fluid dynamics

#### 5. Compulsory / suggested prerequisites:

Compulsory: -  
Suggested: Fluid Mechanics, MSc level

#### 6. Main aims and objectives, learning outcomes of the subject:

The course aims to introduce students to the PhD-level areas of fluid dynamics, according to the individual doctoral research topic and interest, with respect to the following (ch.8.) thematic description, in consultation with the lecturer.

#### 7. Method of education:

lecture 2h/w, and private consultation

#### 8. Detailed thematic description of the subject:

Summary of governing equations of motion in fluid dynamics, possibilities & methods for numerical solutions, the applied boundary conditions.

Main assumptions, neglected / disregarded terms.

Basic methods for discretising: finite difference, finite element and finite volume methods.

Consistence, stability, convergence.

Numerical solutions for the governing equations.

Application of commercial CFD codes.

Methods for grid generation / meshing, setting up the boundary conditions.

Various modes for running simulations.

Analysis of the simulation results.

#### 9. Requirements and grading



a) in term-period

-

b) in examination period

Written and/or oral exam. Totally max. achievable 100 scores equal to 100% as base of the final grading. Minimum 40 %.

Grading: 0%-39%: fail(1); 40%-54% pass(2), 55%-69%: satisfactory (3), 70%-84%: good(4), 85%-100%: excellent (5)

c) The students are subject to disciplinary measures against the application of unauthorized means at mid-terms, term-end exams and homework and the application of the 1/2013. (I.30.) Dean's Order must be followed.

10. Retake and repeat

Due to the Code of Studies and Exams of BME. Any further movements are due to the Code of Studies and Exams of BME.

11. Consulting opportunities:

Consultation hours: by email appointments and as it is indicated on the department's website.

12. Reference literature (compulsory, recommended):

- Downloadable materials: [www.ara.bme.hu/oktatas/tantargy/NEPTUN/BMEGEAT4A14](http://www.ara.bme.hu/oktatas/tantargy/NEPTUN/BMEGEAT4A14)

13. Home study required to pass the subject:

Contact hours	28	h/semester
Home study for the courses	28	h/semester
Home study for the mid-semester checks	-	h/check
Preparation of mid-semester homework	-	h/homework
Home study of the allotted written notes	20	h/semester
Home study for the exam	28	h/semester
Totally:	90	h/semester

14. The data sheet and the requirements are prepared by:

Name:	Title:	Affiliation (Department):
Dr. Gergely KRISTÓF	associate professor	Dept. of Fluid Mechanics

