

## MODULE INFORMATION SHEET

<b>Name of Module Unit</b>	<b>Fluid mechanics</b>
Name in Polish language	Mechanika Płynów
Module type	compulsory / <del>elective</del>
Form of studying	full-time day courses
Level of study	undergraduate course (B.Sc. level)
Type of study ( for extra-mural courses)	-
Programme	Environmental Engineering
Speciality	Environmental Engineering
Responsible department	Department of Hydro-Engineering and Hydraulics
Responsible person	Dr inż. Apoloniusz Kodura

Semester	Lectures(E)	Tutorials	Laboratory	Computer Exercises	Projects	ECTS
4	-	-	30	-	-	2

### Objectives (summary)

The first goal of this unit is to understand the phenomenon and basic rules of fluids' motion. The second one is practical application of knowledge of fluid mechanics in a field of analysis and hydraulics calculations of flows in pressure pipes, open channels and porous medium and by designing of machinery and installations that are used in environmental engineering.

### Prerequisites

Mathematic at the level of the first year of studies (differentials, integrals, differential equations)  
 Physics (applied mechanics, elements of thermodynamics)

### Rules of integrated grade setting

Integrated grade = 0.5 exam's grade + 0.25 tutorials' grade + 0.25 laboratory's grade.

### Recommended readings

„Fluid mechanics and hydraulics”, R.V. Giles, J.B. Evett, C. Liu, Schaum's Outline Series, McGraw-Hill, New York 1995,  
 2500 Solved Problems in Fluid Mechanics and Hydraulics. Evett J. B., Liu C. 1989.  
 Streeter V. L., Wylie B. E., Bedford K. W., 'Fluid Mechanics' 1998 New York, WCB McGraw-Hill

## Contents of laboratory

	Topics	Time (hrs.)	Scope (S / Ex)
1	Manometers, measurements class, theory of measurements method.	2	S/Ex
2	Reynolds experiment (demonstration)	1	S
3	Stability of floating bodies – metacenter.	2	S
4	Hydrostatic force on surface	2	S
5	Rotation of fluid masses – open vessels.	2	S
6	Flow measurement in pressure conduits and open channels	3	Ex
7	Energy losses in pressure conduits.	3	S
8	Ejector.	1	Ex
9	Stead and unsteady outflow from orifices.	2	S
10	Pump cooperation with pipeline	2	Ex
11	Pumps in complex pipeline system	2	Ex
12	Investigation methods of liquid viscosity	2	S
13	Adiabatic outflow	2	S
14	Sharp crested weirs	2	S
15	Credit	2	-
<b>Total</b>		<b>30</b>	<b>hours</b>

S – topics listed in the legal study programme standards from 12.07.2007

Ex – extended topics

### Person responsible for laboratory

dr inż. Apoloniusz Kodura

### Assessment method for laboratory

Compulsory presence, reports from each laboratory exercises, credit in a form of report's defense. Final grade = arithmetical average of each exercise grade.