

Introduction to higher physics and mathematics - course description

General information	
Course name	Introduction to higher physics and mathematics
Course ID	13.2-WF-FizP-IPM-S17
Faculty	Faculty of Physics and Astronomy
Field of study	Physics
Education profile	academic
Level of studies	First-cycle studies leading to Bachelor's degree
Beginning semester	winter term 2022/2023

Course information	
Semester	1
ECTS credits to win	2
Course type	obligatory
Teaching language	english
Author of syllabus	<ul style="list-style-type: none">dr hab. Maria Przybylska, prof. UZ

Classes forms					
The class form	Hours per semester (full-time)	Hours per week (full-time)	Hours per semester (part-time)	Hours per week (part-time)	Form of assignment
Class	30	2	-	-	Credit

Aim of the course

Students can use the mathematical apparatus at a level sufficient to participate in the lectures in physics and mathematics.

Prerequisites

None – introductory classes.

Scope

Mathematics:

- Linear and quadratic equations,
- Systems of equations,
- Sequences and their limits,
- Derivatives, properties of functions,
- Series, the convergence of numerical series,
- Riemann integral.

Physics:

- Newton's equations,
- Friction force, the law of universal gravitation, inertia,
- Work, power, energy, conservation of energy and momentum,
- Electric field, Coulomb's law,
- Magnetic field, the Lorentz force,
- Laws of thermodynamics.

Teaching methods

Computational classes

Learning outcomes and methods of theirs verification

Outcome description	Outcome symbols	Methods of verification	The class form
Student has the basic knowledge of calculus and linear algebra, and knows the basic laws of classical physics	<ul style="list-style-type: none">K1A_W01K1A_W02	<ul style="list-style-type: none">an evaluation test	<ul style="list-style-type: none">Class

Outcome description	Outcome symbols	Methods of verification	The class form
Student understands the need to supplement her or his knowledge during the lectures in physics and mathematics	<ul style="list-style-type: none"> K1A_K01 	<ul style="list-style-type: none"> an evaluation test 	<ul style="list-style-type: none"> Class

Assignment conditions

The condition of positive assessment is a positive evaluation of all written tests.

Recommended reading

[1] R. Resnick i D. Halliday, Fizyka, tom 1 i 2, PWN, Warszawa 2001.

[2] J. Kalisz, M. Massalska, J. Massalski, Zbiór zadań z fizyki z rozwiązaniami, cz. 1-2, PWN, Warszawa 1987.

[3] G. M. Fichtenholz, Rachunek różniczkowy i całkowy, tom I i II. PWN, Warszawa 2011.

[4] J. Walker, Fundamentals of physics, 10 edition, Wiley, 2007

[5] E. W. Swokowski, *Calculus with Analytic Geometry*, Alternate Edition –PWS Publisher 1983.

Further reading

[1] J. Orear, Fizyka, t. 1-2, WNT, Warszawa 1990.

[2] A. Hennel, W. Krzyżanowski, W. Szuszkiewicz, K. Wódkiewicz, Zadania i problemy z fizyki, cz. 1, PWN, Warszawa 2002.

Notes

Modified by dr Marcin Kośmider (last modification: 11-05-2022 20:36)

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