

Course description

Course abbreviation:	KFY/TFYE	Page:	1 / 3
Course name:	Physics for Electrical Engineers 1		
Academic Year:	2023/2024	Printed:	25.05.2024 04:09

Department/Unit /	KFY / TFYE			Academic Year	2023/2024
Title	Physics for Electrical Engineers 1			Type of completion	Exam
Accredited/Credits	Yes, 6 Cred.			Type of completion	Combined
Number of hours	Lecture 4 [Hours/Week] Tutorial 2 [Hours/Week]			Course credit prior to	YES
Occ/max	Status A	Status B	Status C	Counted into average	YES
Summer semester	0 / -	0 / -	0 / -	Min. (B+C) students	10
Winter semester	0 / -	0 / -	0 / -	Repeated registration	NO
Timetable	Yes			Semester taught	Winter semester
Language of instruction	Czech			Internship duration	0
Optional course	Yes			Ev. sc. – cred.	S N
Evaluation scale	1 2 3 4				
No. of hours of on-premise					
Auto acc. of credit	No				
Periodicity	K				
Substituted course	KFY/TFY				
Preclusive courses	N/A				
Prerequisite courses	N/A				
Informally recommended courses	N/A				
Courses depending on this Course	N/A				

Course objectives:

To introduce basic principles of classical mechanics, special relativity, oscillations and waves, thermodynamics, and quantum mechanics: their primary physical meaning, consequences, and actual implementation through the mathematical relationships. To allow the students be able to apply these principles to problems or practical applications: combination with theoretical tutorials and laboratory practicals. To give physical background for the studies of special disciplines.

Requirements on student

Credit-theoretical tutorials: class test.

Credit-laboratory practicals: solving of the problems and writing of reports.

Examination: knowledge of the theory from the lectures and problems from the tutorials.

Content

Kinematics and dynamics of motion, basics of special relativity, vibrational motion and propagation of waves, mechanical and thermal properties of matter; thermodynamics of gases.

Fields of study

Guarantors and lecturers

- **Guarantors:** Ing. Radomír Čerstvý, Ph.D. (100%)
- **Lecturer:** Ing. Radomír Čerstvý, Ph.D. (100%)
- **Tutorial lecturer:** Ing. Radomír Čerstvý, Ph.D. (100%)

Literature

- **Recommended:** *Fyzika : Celost. vysokošk. učebnice pro skupinu stud. oborů Strojírenství a ostatní kovodělná výroba.*

- 1. vyd. Praha : SNTL, 1989. ISBN 80-03-00166-8.
- **Recommended:** Halliday, David; Resnick, Robert; Walker, Jearl; Musilová, Jana; Obdržálek, Jan; Dub, Petr. *Fyzika : vysokoškolská učebnice obecné fyziky. Část 1, Mechanika*. Brno : VUTIM, 2000. ISBN 80-214-1868-0.
- **Recommended:** Halliday, David; Resnick, Robert; Walker, Jearl; Obdržálek, Jan; Dub, Petr. *Fyzika : vysokoškolská učebnice obecné fyziky. Část 2, Mechanika - Termodynamika*. Brno : VUTIM, 2000. ISBN 80-214-1868-0.
- **Recommended:** Halliday, David; Resnick, Robert; Walker, Jearl; Štrunc, Marian; Obdržálek, Jan; Dub, Petr. *Fyzika : vysokoškolská učebnice obecné fyziky. Část 3, Elektřina a magnetismus*. Brno : VUTIM, 2000. ISBN 80-214-1868-0.
- **Recommended:** Halliday, David; Resnick, Robert; Walker, Jearl; Komrská, Jiří; Obdržálek, Jan; Dub, Petr. *Fyzika : vysokoškolská učebnice obecné fyziky. Část 4, Elektromagnetické vlny - Optika - Relativita*. Brno : VUTIM, 2001. ISBN 80-214-1868-0.
- **Recommended:** Halliday, David; Resnick, Robert; Walker, Jearl; Dub, Petr; Obdržálek, Jan; Lencová, Bohumila. *Fyzika : vysokoškolská učebnice obecné fyziky. Část 5, Moderní fyzika*. Brno : VUTIM, 2000. ISBN 80-214-1868-0.
- **Recommended:** Slavík, Jan. *Řešené příklady z fyziky : 1. klasická fyzika*. 3. vyd. Plzeň : ZČU, 1998. ISBN 80-7082-487-5.

Time requirements

All forms of study

Activities	Time requirements for activity [h]
Contact hours	78
Preparation for an examination (30-60)	50
Preparation for formative assessments (2-20)	15
Preparation for laboratory testing; outcome analysis (1-8)	15
Total:	158

assessment methods

Knowledge - knowledge achieved by taking this course are verified by the following means:

- Combined exam
- Test
- Individual presentation at a seminar

prerequisite

Knowledge - students are expected to possess the following knowledge before the course commences to finish it successfully:

- Available to all students.

teaching methods

Knowledge - the following training methods are used to achieve the required knowledge:

- Lecture
- Practicum
- Laboratory work

learning outcomes

Knowledge - knowledge resulting from the course:

- At the end of the course the student should:
- be able to give an account of the concepts of classical mechanics, special relativity, oscillations and waves and thermodynamics;
- be able to mathematize and solve elementary problems using these concepts and to interpret the results;
- understand how to apply the theory they have learned to novel physical situations;
- be able to work in a physics laboratory environment;

be able to write an experimental report in a clear and concise way.

Course is included in study programmes:

Study Programme	Type of	Form of	Branch	Stage	St. plan	v. Year	Block	Status	R.year	R.
Applied electrical engineering	Bachelor	Full-time	Applied electrical engineering	1	16	2023	Povinné předměty 2. roč. FEL - obor AEL	A	2	ZS
Applied Electrical Engineering	Bachelor	Combined	Applied Electrical Engineering	1	16	2023	Povinné předměty 2. roč. FEL - obor AELk	A	2	ZS
Electrical Engineering and Informatics	Bachelor	Full-time	Commercial Electrical Engineering	1	16	2023	Povinné předměty 2. roč. FEL - obor KOE	A	2	ZS
Electrical Engineering and Informatics	Bachelor	Full-time	Electrical and Power Engineering	1	16	2023	Povinné předměty 2. roč. FEL - obor ELE	A	2	ZS
Applied Electrical Engineering	Postgraduate Master	Combined	Applied Electrical Engineering	1	16	2023	blok Fyzika	B	1	ZS