

University: University of Žilina in Žilina	
Faculty: Faculty of Mechanical Engineering	
Subject code: 2Y011	Subject name: Applied Tribology
Profile subject: no	
Type, scope and method of educational activities:	
Weekly number of teaching hours in the form of lectures, exercises, seminars, clinical practice.	2 - 2 - 0 (lectures-exercises-laboratory exercises) hours
The method by which the educational activity is carried out	The teaching takes place in person.
Methods of achieving educational results	Lectures: systematic theoretical problem interpretation of the issue, problem-oriented teaching, consultations in connection with feedback Exercises: model examples, explanation, problem-based teaching,
Number of credits: 5.0	
Student workload: $4h * 13$ (full-time teaching) + 52h (self-study) = 104 hours	
Recommended semester / trimester study: summer semester	
Degree of study: 1. and 2. degree	
Prerequisites:	
Conditions for passing the subject: 2 tasks performed during the semester as a team work with a clearly defined and stated share of the achieved result are used for the ongoing assessment. The overall level, the complexity of the work solution is evaluated.	
Final rating: Project and multimedia personal presentation of the project max. 40 points + discussion exam max. 20 points. In order to register for the exam, the student must prepare 2 written assignments completed during the semester in an independent study (minimum graded "sufficient"), for which he can use individual and group consultations.	
The resulting classification of the subject: Rating A: 93 - 100 points Rating B: 85 - 92 points Rating C: 77 - 84 points Rating D: 69 - 76 points Rating E: 61 - 68 points FX rating: less than 61 points.	
The specific method of evaluating the student's work during the semester and the exam will be specified at the beginning of the semester by the subject teacher. The final evaluation of the student's study results for	

completing the course - expressed by a grade - is governed by Art. 9 Directive no. 209 Study Regulations for the first Degree of University Studies at the University of Žilina in Žilina.

Learning Outcome Scoreboard:

Forms and methods of evaluation	Scale	Area of knowledge, skills, competences
2 tests	20	Professional knowledge, independent work with professional literature
Written semester project work	40	Professional knowledge, independent work with professional literature
Oral presentation	20	Professional knowledge

Learning outcomes:

By completing the course Alternative energy sources, the student will be able to:

- Expanding and deepening the knowledge of students in the field of tribology related to the subject of the bachelor study subject "Fundamentals of Tribology".
- The course is focused on application of knowledge of processes of friction, wear and lubrication in technological, biological and biotechnical systems.
- It deals with appropriate solution in terms of design, production and economic use in achieving maximum reliability and environmental protection.

Course contents:

Lectures

- Definitions of tribological processes.
- Reliability of tribotechnical systems.
- Friction and anti-friction materials.
- Mono material tribological systems.
- Multimaterial tribological systems.
- Tribological systems using material mono layers, multi layers, soft and hard coatings.
- Tribological systems using coatings.
- Micromechanical Tribology and MEMS.
- Ecological Aspects of Tribology.

Exercises

- The content of the exercises is the elaboration of a semester project focused on
- the design, construction of machine parts and
- design of machinery using knowledge from the field of applied tribology.

Recommended reading:

Holmberg, K., Matthews, A.: Coatings Tribology, Elsevier 2009

BHARAT BHUSHAN: Principles and Applications of Tribology, Second Edition published John Wiley & Sons, Ltd. 2013

GWIDON W. STACHOWIAK, ANDREW W. BATCHELOR: ENGINEERING TRIBOLOGY, Elsevier Butterworth-Heinemann, Amsterdam * Boston Heidelberg London New York Oxford Paris San Diego San Francisco Singapore Sydney Tokyo

HORST CZICHOS : Tribology: a systems approach to the science and technology of friction, lubrication, and wear, eBook ISBN: 9780080875651, Elsevier Science, 2000

A language whose knowledge is required to complete the course: english

Notes:**Course evaluation**

Total number of evaluated students: 25

A	B	C	D	E	FX
75.00%	25.00%	0.00%	0.00%	0.00%	0.00%

Person securing the subject (subject guarantor):

prof. Ing. Marián Dzimko, PhD.

Teaching:

Name and surname of the teacher, titles	Organizational form provided by the university teacher (Lectures, exercises, laboratory work, field exercises)
prof. Marián Dzimko, M.Sc., PhD.	Lectures
prof. Marián Dzimko, M.Sc., PhD.	exercises

Date of last change: 16.11.2021 10:05

Approved: prof. Dr. Ing. Ivan Kuric