

Information sheet for the course: Polymeric Materials

University: Alexander Dubček University of Trenčín	
Faculty: Faculty of Industrial Technologies in Púchov	
Course unit code: MI-I-P-3	Course unit title: Polymeric Materials
Form, scope and method of educational activity:	
Form of study: Lecture / Seminar / Laboratory tutorial	
Recommended number of lessons (hours):	
Weekly: 2 / 1 / 3	During the semester: 24 / 12 / 36
Method of study: attendance method	
Number of credits: 7	
Recommended semester: 1.	
Degree of study: The 2nd degree of study	
Course prerequisites:	
Assessment methods:	
Assessment during the semester:	
Summary assessment of work results during the semester = 40 points	
Semestral work and individual work during semester = 20 points	
Active participation on laboratory tutorial, elaboration of protocols = 20 points	
Student can sign in exam after 20 points achievement at least in the assessment during the semester.	
Final assessment:	
Assessment of exam results = 60 points	
Grading scale:	
Grade A: 91 – 100 points	
Grade B: 81 – 90 points	
Grade C: 71 – 80 points	
Grade D: 61 – 70 points	
Grade E: 55 – 60 points	
Grade FX: less than 55 points	
Learning outcomes of the course unit:	
Student gets to know the terminology of polymeric materials, knows how to evaluate properties of polymeric materials and has a knowledge of the industrial polymeric materials application issue in practice.	
Course contents:	
Basic terms, dividing of polymers, characterization of polymers.	
Molecular structure of polymers.	
Chemical reactions of polymers, reactivity of polymers.	
Polymerization – radical, ionic, coordination.	
Technological processes of polymerization – characteristics, advantages and disadvantages.	
Polyaddition, polycondensation, metathesis.	
Physical states of polymers - characterization, influence on workability and properties.	
Mechanical properties of polymers.	
Rheology and viscosity of polymers.	
Mixing of polymers, preparation of polymer blends.	
Processing technologies of polymers.	
Testing of polymeric materials.	
The most important types of plastics – properties and application (polyolefins, vinyl polymers, halogenated plastics, styrene and acrylic polymers, polyesters, polyamides, polyurethanes, phenoplasts, aminoplasts, epoxy and polyester resins.	
Rubbers – properties and application.	
Polymeric composites – division, general characteristics of basic types.	
Polymer recycling.	
Recommended of required reading:	

LIPTÁKOVÁ, T. a kol.: Polymérne konštrukčné materiály. Žilina: ŽU, 2012.
 ONDRUŠOVÁ, D., PAJTÁŠOVÁ, M.: Rubber components and their influence on rubber properties and enviromental aspects of production. 1.vyd. Krakow: Spolok Slovákov v Poľsku, 166 s., 2011. ISBN 978-83-7490-385-1.
 CHRÁSTOVÁ, V., BORSIG, E.: Makromolekulová chémia. Bratislava: STU, 1996.
 ONDRUŠOVÁ, D., a kol.: Alternative Filler Based on the Waste from Glass Production and Its Effect on the Rubber Properties. In: Procedia Engineering. Vol.177, p.462-469. 2017. ISSN 1877-7058.
 KYSELÁ, G.-HUDEC, I.-ALEXY, P.: Výroba a spracovanie kaučukov a gumeny. Bratislava: STU, 296 s., 2010. ISBN 978-80-227-3324-3.
 OLŠOVSKÝ, M. – MACHO, V.: Základy chémie polymérov. Trenčín: TnUAD, 2008
 JANÍK, R., PAJTÁŠOVÁ, M., ONDRUŠOVÁ, D. a kol.: Odpad ako zdroj materiálov a energie. 1. vyd. TnUAD, FPT Trenčín 2021. 256 s. ISBN 978-80-8075-960-5
 E-learning TnUAD.

Language:

English

Remarks:

Compulsory course / Profile course

Evaluation history: 198

Total number of graded students:

A	B	C	D	E	FX
55.56	22.22	11.62	5.56	4.55	0.51

Lecturers: prof. RNDr. Mariana Pajtášová, PhD., Ing. Slavomíra Božeková, PhD., Ing. Ivan Labaj, PhD., Ing. Zuzana Mičicová, PhD., Ing. Juliána Vršková, PhD.

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Supervisor: prof. RNDr. Mariana Pajtášová, PhD.