

Information sheet for the course Polymeric Materials

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| University: <i>Alexander Dubček University of Trenčín</i> | |
| Faculty: <i>Faculty of Industrial Technologies in Púchov</i> | |
| Course unit code: <i>MI-I-P-3</i> | Course unit title: <i>Polymeric Materials</i> |
| Type of course unit: <i>compulsory</i> | |
| Planned types, learning activities and teaching methods: <i>Lecture: 2 hours weekly/26 hours per semester of study; face to face</i> <i>Seminar: 1 hour weekly/13 hours per semester of study; face to face</i> <i>Laboratory tutorial: 3 hours weekly/39 hours per semester of study; face to face</i> | |
| Number of credits: <i>7</i> | |
| Recommended semester: <i>1st semester in the 1st year full-time</i> <i>1st semester in the 1st year full-time</i> | |
| Degree of study: <i>the 2nd degree of study (Engineer's degree)</i> | |
| Course prerequisites: <i>none</i> | |
| Assessment methods: <i>Student writes two screening control tests during semester and obtains minimally 60 % from both tests, has 100 % participation at laboratory tutorial, elaborates the semestral project. The examination has the writing and oral parts.</i> | |
| Learning outcomes of the course unit: <i>Student knows the fundamental terms from Polymeric Material course. Student evaluates the properties of polymeric materials and orientates in problem which is connected with application of polymeric materials in practice.</i> | |
| Course contents: <i>1. Basic terms, distribution of polymers, characterization of polymers groups.</i> <i>2. Molecular structure of polymers.</i> <i>3. Chemical reactions of polymers, reactivity of polymers.</i> <i>4. Polymerization – radical, ionic, coordination.</i> <i>5. Technological processes of polymerization – characterization, advantages and disadvantages.</i> <i>6. Polyaddition, polycondensation, metathese.</i> <i>7. Physical states of polymers – characterization, the influence on degree of workability and properties.</i> <i>8. Mechanical properties of polymers.</i> <i>9. Rheology and viscosity of polymers.</i> <i>10. Mixing of polymers, preparations of polymeric blends.</i> <i>11. Processing technologies of polymers.</i> <i>12. Testing of polymeric materials.</i> <i>13. The most important types of plastics – properties and application (polyolefins, vinyl polymers, halocarbon plastics, styrene and acrylic polymers, polyesters, polyamides, polyurethanes, phenolic plastics, amino plastics, epoxy and polyester resins)</i> <i>14. Rubbers – properties and application.</i> <i>15. Polymeric composites – main distribution, general characterization of basic types.</i> <i>16. Recycling of polymers.</i> | |
| Recommended of required reading: <i>1. LIPTÁKOVÁ, T. a kol.: Polymérne konštrukčné materiály. Žilina : ŽU, 2012.</i> <i>2. OLŠOVSKÝ, M. – MACHO, V.: Základy chémie polymérov. Trenčín : TnUAD, 2008.</i> <i>3. CHRÁSTOVÁ, V. – BORSIG, E.: Makromolekulová chémia. Bratislava : STU, 1996.</i> <i>4. OLŠOVSKÝ, M.: Kaučuky. Výroba - vlastnosti - použitie. Trenčín : TnUAD, 2012.</i> | |

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| Language: <i>Slovak</i> | | | | | |
| Remarks: | | | | | |
| Evaluation history | | | | | |
| Number of students: 77 | | | | | |
| A | B | C | D | E | FX |
| 23.38 | 23.38 | 15.58 | 9.09 | 7.79 | 20.78 |
| Lecturers: <i>Ing. Vladimíra Krmelová, PhD., prof. RNDr. Mariana Pajtášová, PhD.</i> | | | | | |
| Last modification: <i>31.03.2014</i> | | | | | |
| Supervisor: <i>prof. Ing. Darina Ondrušová, PhD.</i> | | | | | |