

SUBJECT:	Industrial Commodity Science		
HOURS:	30/60	ECTS:	6
semester	4	Academic year	2

Name/title of the author:	Dr hab. inż. R. Salerno-Kochan, dr inż. P. Przybek, dr inż. J. Szakiel, mgr inż G. Zielińska
Course Description:	<p>Technology of ceramic products. Chosen parameters of ceramic products examination. Glass and glass products. Chemical resistance of glass. Examination of internal glass tension. Thermal stress resistance. Properties of common used metals and alloys. Microscopic, organoleptic and chemical methods of metals identification. Profilography; surface roughness testing. Plastics types and their identification according to their flammability. Additives for plastics. Rubber and its quality criteria. Determination of rubber elasticity. Rubber hardness measurement. Determination of mechanical properties of rubber in tension. Paints and protective coatings examination. Classification of painting materials. Binders. Pigments. Fillers. Solvents. Thinners. Testing of painting materials. General characteristics of synthetic detergents. Criteria for assessing the quality of synthetic detergents. Organoleptic methods of detergent properties assessment.</p> <p>Textile fibers and their properties. Identification of fibres by the use of organoleptic, burning, microscopic and chemical analyses. Yarn classification. Technological, mechanical and utility properties of woven and non woven fabrics. Laboratory methods of testing and assessment of aesthetics, mechanical and utility properties of fabrics in accordance with European standards. Labelling and care of textile products. Histological structure and chemical composition of leather. Factors affecting the quality of leather. Methods of tanning and finishing leather. Range of leathers. Factors affecting the quality of leather. Methods of tanning and finishing leather. Range of leathers. Qualitative classification of leather based on organoleptic analysis and instrumental measurements. Identification of origin, method of tanning and finishing of leather. Properties of leather. Qualitative assessment of leather based on Polish, European and international standards.</p>
Learning Outcomes (Goals and Objectives of the course):	<p>Gaining knowledge on common raw materials and industrial products properties.</p> <p>Acquiring skills of proper application of methods and the use of basic equipment in solving simple practical engineering tasks. Gaining skills to correct interpretation of results and their practical application.</p> <p>Acquiring awareness of the influence of a commodity science engineer activity on the environment and production and his responsibility for decisions.</p>
Entrance qualifications:	Basic knowledge within chemistry & metrology

Course Content:	<ol style="list-style-type: none"> 1. Introduction to industrial commodity science. Basic terms and definitions. Mandatory and others requirements for industrial products of common use. Quality assessment of industrial products in brief. Labelling and care of industrial products. Environmental concerns of industrial products manufacturing and waste disposal. 2. Ceramic types. Selected properties of ceramics examination. Chemical and mechanical properties of glass. 3. Metal types. Selected mechanical properties of metals and alloys. Paints and protective coatings examination. 4. Plastics. Thermal and mechanical properties of plastics. Rubber and its quality criteria. 5. Soaps and detergents. Criteria affecting the quality of synthetic detergents. Methods of detergent properties assessment. 6. Textiles. Fibers types and their properties. Yarns and fabrics classification. Factors influencing the quality of textile products. Methods of testing and assessing technological, mechanical and utility properties of fabrics. Quality and safety assessment of clothes and other textile goods. 7. Leather as a material of excellent hygienic properties and high strength-basics. Brands of leather, methods of leather tanning. Application of leather in industry. Analytical tests for qualitative assessment of leather. Certificate of quality for leather
Assessment policy (examination):	exam
Course materials/bibliography:	<ol style="list-style-type: none"> 1. <i>ASM metals reference book</i>, eds. by M. Baucio, Third ed., ASM International, 2005. 2. <i>Ceramic and Glass Materials. Structure, Properties and Processing</i>, ed. by, J.F. Shackelford and R.H. Doremus, Springer, 2008. 3. <i>Chemical testing of textiles</i>, ed. by Q. Fan, Woodhead Publishing Ltd., Cambridge 2005. 4. Covington A.,D., <i>Tanning Chemistry: The Science of Leather</i>, Royal Society of Chemistry, Cambridge 2009. 5. Kadolph S.J., <i>Textiles</i>, Eleventh ed., Pearson Education, Iowa State University, 2010. 6. Osswald T., Menges G., <i>Materials Science of Polymers for Engineers 3E</i>, Hanser Publ., 2012. 7. Thorstenson T.C., <i>Practical Leather Technology</i>, R.E. Krieger Publishing Co., Florida 1985. 8. European standards concerning ceramic, metals, glass, plastics, rubber, textiles and leather.
Methods of Instruction:	lectures, tutorials, laboratory classes, e-learning,
Notes / suggestions:	