



Subject card

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|--|---|--|--|-------------------------------------|--|------------|-----|
| Subject name and code | Biomaterials and materials of natural origin, PG_00061907 | | | | | | |
| Field of study | Materials Engineering | | | | | | |
| Date of commencement of studies | October 2026 | Academic year of realisation of subject | | | 2027/2028 | | |
| Education level | first-cycle studies | Subject group | | | Obligatory subject group in the field of study Subject group related to scientific research in the field of study | | |
| Mode of study | Full-time studies | Mode of delivery | | | at the university | | |
| Year of study | 2 | Language of instruction | | | Polish | | |
| Semester of study | 3 | ECTS credits | | | 1.0 | | |
| Learning profile | general academic profile | Assessment form | | | assessment | | |
| Conducting unit | Department of Polymer Technology -> Faculty of Chemistry -> Faculties of Gdańsk University of Technology | | | | | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | | prof. dr hab. inż. Janusz Datta | | | | |
| | Teachers | | | | | | |
| Lesson types | Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
| | Number of study hours | 15.0 | 0.0 | 0.0 | 0.0 | 0.0 | 15 |
| | E-learning hours included: 0.0 | | | | | | |
| Learning activity and number of study hours | Learning activity | Participation in didactic classes included in study plan | | Participation in consultation hours | | Self-study | SUM |
| | Number of study hours | 15 | 2.0 | | 8.0 | | 25 |
| Subject objectives | To acquaint students with the current knowledge of available types of biomaterials of practical importance and polymers of natural origin | | | | | | |
| Learning outcomes | Course outcome | | Subject outcome | | Method of verification | | |
| Subject contents | Course content – lecture Biomaterials-definition and general properties. Discussion of groups of biomaterials: polymeric, carbon, composite, ceramic, and metallic. The most important areas of application of biomaterials. Quality criteria for biomaterials. Polymers of natural origin: natural rubber, cellulose, lignin, starch, proteins, proteins. Natural modified polymers: cellulose derivatives, starch derivatives. Technical vegetable oils. Application of natural polymers in industry, e.g. for water treatment. Biodegradation of natural polymers. Biopolymers - biodegradable polymers from natural monomers. Biopolyolefins | | | | | | |
| Prerequisites and co-requisites | Basic knowledge of polymers and non-polymeric materials | | | | | | |
| Assessment methods and criteria | Subject passing criteria | | Passing threshold | | Percentage of the final grade | | |
| | written credit | | 50.0% | | 100.0% | | |
| Recommended reading | Basic literature | | Rabek J. F., Biopolimery, Wydawnictwo Naukowe PWN , Warszawa, 2022 | | | | |
| | | | Jozef T. Haponiuk and others, Natural Polymers: Perspectives and Applications for a Green Approach, Apple Academic Press, 2021 | | | | |
| | | | Jan Marciniak, Biomateriały,WPS,2002 | | | | |
| | Supplementary literature | | Tondi Gianluca, Bio-Based Polymers for Engineered Green Materials. Mdpi Ag, 2021 | | | | |
| | eResources addresses | | | | | | |
| Example issues/ example questions/ tasks being completed | Indicate what vulcanization of natural rubber consists of | | | | | | |
| | Discuss ceramic biomaterials | | | | | | |
| | Is cellulose a natural polymer suitable for the modification process? | | | | | | |

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| Practical activities within the subject | Not applicable |
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