SZKOŁA GŁÓWNA GOSPODARSTWA WIEJSKIEGO

Papermaking Pulps Technology

Educational subject description sheet

Basic information

Field of study Wood Technology **Speciality** - **Organizational unit** Faculty of Wood Technology **Study level** first cycle (engineering degree) **Study form** full-time studies **Education profile** General academic	**Didactic cycle** 2024/25 **Subject code** TDRTDS_D.38.05406.24 **Lecture languages** english **Mandatory** Elective subjects **Block** Major subjects **Disciplines** Forest science

Coordinator	Piotr Przybysz
Teacher	Piotr Przybysz

Period	**Examination**	**Number of ECTS points**
Semester 4	Pass with grade **Activities and hours** Lecture: 15	1

Goals

Code	Goal
C1	Introducing students to the classification of primary and secondary fibrous paper pulps
C2	Imparting knowledge about the production of primary and secondary fibrous paper pulps
C3	Conveying knowledge about the evaluation of the properties of fibrous paper pulps and their assessment methods

Entry requirements

Course in chemistry (preferably chemistry of wood).

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	The student knows and understands the technology involved in producing cellulose, lignocellulose pulps, and paper products. This includes an awareness of the processes from raw material selection through to the final product, encompassing various stages like pulping, bleaching, refining.	TD_K3_W01, TD_K3_W03	Written credit
Skills – Student can:			
U1	The student can choose appropriate wood raw materials and fibrous pulps to meet specific technological objectives and achieve desired properties in the final product. This is crucial for optimizing production processes, improving product quality, and ensuring sustainability in resource use.	TD_K3_U01, TD_K3_U02_inz, TD_K3_U03_inz	Written credit
Social competences – Student is ready to:			
K1	The student is ready to critically assess solutions regarding the selection and use of paper pulps. This involves evaluating the suitability of different types of pulps for various applications, understanding their impact on the quality and properties of the final product, and considering economic and environmental factors in pulp selection and use.	TD_K3_K01	Written credit

Study content

No.	Course content	Subject's learning outcomes	Activities
1.	Paper products and fibrous paper pulps and their classification. the scale of production of fibrous pulps and paper products in the world, EU, and Poland.	W1, U1	Lecture
2.	Process of producing fibrous paper pulps from wood by mechanical, chemical, and hybrid methods.	W1, U1	Lecture
3.	Processes of producing secondary (waste paper) fibrous paper pulps.	W1, U1, K1	Lecture
4.	Assessment of the properties of fibrous paper pulps and methods of measuring these properties.	U1, K1	Lecture

Course advanced

Activities	Methods of conducting classes
Lecture	Lecture, Problem lecture, E-learning - lecture part

Activities	Examination method	Percentage
Lecture	Written credit	100%

Activities	Credit conditions
Lecture	50+% points from the written test. Test consists of multi-choice questions and open questions.

Literature

Obligatory

1. Fengel D., Wegener G., 2003: Wood (Chemistry, Ultrastructure, Reactions), Walter de Gruyter, Berlin
2. Pedro Fardim 2016: Papermaking science and technology - Chemical Pulping Part 1, Fibre Chemistry and Technology, Paperi ja Puu Oy,
3. Panu Tikka 2016: Papermaking science and technology - Chemical Pulping Part 2, Recovery of Chemicals and Energy, Paperi ja Puu Oy,

Optional

1. Ulrich Höke, 2016: Papermaking science and technology - Recycled Fibre and Deinking, Paperi ja Puu Oy,
2. Seppo Kellomäki, 2016: Papermaking science and technology - Forest Resources and Sustainable Management, Paperi ja Puu Oy,
3. Tappi Journal
4. Wandelt P. 1996: Technologia celulozy i papieru Cz. I. Technologia mas włóknistych WSz i P. Warszawa
5. Prosiński S.,1984: Chemia Drewna, PWRiL, Warszawa

Calculation of ECTS points

Activity form	Activity hours*
Lecture	15
Self-study on the content covered in class	5
Preparation for the test	5
Student workload	**Hours** 25
Number of ECTS points	**ECTS** 1

* hour means 45 minutes

Effects

Code	Content
TD_K3_K01	Absolwent jest gotów do krytycznej oceny posiadanej wiedzy i odbieranych treści
TD_K3_U01	Absolwent potrafi wyszukiwać, zrozumieć, krytycznie analizować i twórczo wykorzystać potrzebne informacje pochodzące z różnych źródeł i w różnych formach właściwych dla technologii drewna
TD_K3_U02_inz	Absolwent potrafi dokonywać wstępnej oceny ekonomicznej proponowanych rozwiązań i podejmowanych działań inżynierskich
TD_K3_U03_inz	Absolwent potrafi przy formułowaniu i rozwiązywaniu zadań inżynierskich, dostrzegać ich aspekty systemowe i pozatechniczne, w tym aspekty etyczne
TD_K3_W01	Absolwent zna i rozumie podstawowe zagadnienia z zakresu biologii roślin włóknistych, chemii ogólnej i materiałowej, matematyki oraz fizyki z rozszerzoną mechaniką i termodynamiką dostosowane do kierunku technologii drewna
TD_K3_W03	Absolwent zna i rozumie zagadnienia z zakresu technologii, narzędzi i materiałów stosowanych przy rozwiązywaniu zadań inżynierskich z zakresu szeroko pojętego drzewnictwa