SZKOŁA GŁÓWNA GOSPODARSTWA WIEJSKIEGO

Dust collection system for wood industry

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.320K.05407.24 **Lecture languages** english **Mandatory** Elective subjects **Block** Major subjects **Disciplines** Forest science

Coordinator	Radosław Auriga
Teacher	Radosław Auriga

Period Semester 6	**Examination** Pass with grade **Activities and hours** Laboratory exercises: 15	**Number of ECTS points** 1

Goals

Code	Goal
C1	Aim of this course is to familiarize students with knowledge of dedust systems and devices used in wood industry

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	student has a general knowledge of dedust systems used in various branches of the wood industry	TD_K3_W03	Written credit, Project
W2	student has basic knowledge about life cycle of dedust systems and machines	TD_K3_W04_inz	Written credit
Skills – Student can:			
U1	design a simple dedust installation	TD_K3_U05_inz	Written credit, Project
U2	perform a critical analysis of the functionality of existind dust removal systems	TD_K3_U06_inz	Project
Social competences – Student is ready to:			
K1	critically evaluate the designed solutions	TD_K3_K01	Project

Study content

No.	Course content	Subject's learning outcomes	Activities
1.	Pneumatic conveyors. Parameters of the pneumatic dust removal installation. Energy consumption of the dust removal process. Elements of the construction of a pneumatic dedust installation. Calculation of flow resistance of individual elements and entire installations. Fans - division, structure, purpose, selection. Dust collectors - general division. Settlement chambers - construction, purpose, principle of operation, examples of applications. Cyclones - division and purpose. Filter dedusting. Methods of regeneration of filter partitions. Division of dry filter dust collectors. Cylindrical filters, cyclofilters and cylindrical-chamber filters - structure, principle of operation, purpose. Silos and tanks of wood particles - construction and purpose. Emptying methods - scrapers. Fire protection and extinguishing systems that protect and reduce the effects of explosions in pipelines, filters and silos.	W1, W2, U1, U2, K1	Laboratory exercises

Course advanced

Activities	Methods of conducting classes
Laboratory exercises	Lecture, Discussion, Presentation

Activities	Examination method	Percentage
Laboratory exercises	Project	50%
Laboratory exercises	Written credit	50%

Activities	Credit conditions
Laboratory exercises	project of dust removal instalation

Literature

Obligatory

1. Wood-based panels - an introduction for specialists. London 2010. Brunel University Press.

Calculation of ECTS points

Activity form	Activity hours*
Laboratory exercises	15
Self-study on the content covered in class	5
Preparing the project	10
Student workload	**Hours** 30
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_U05_inz	Absolwent potrafi projektować, zgodnie z zadaną specyfikacją, oraz wykonywać typowe dla kierunku studiów proste urządzenia, obiekty, systemy lub realizować procesy, używając odpowiednio dobranych metod, technik, narzędzi i materiałów
TD_K3_U06_inz	Absolwent potrafi dokonać krytycznej analizy sposobu funkcjonowania i ocenić istniejące rozwiązania techniczne, w szczególności urządzenia, systemy i procesy w zakresie technologii drewna, z uwzględnieniem aspektów systemowych i pozatechnicznych, w tym aspektów etycznych
TD_K3_W03	Absolwent zna i rozumie zagadnienia z zakresu technologii, narzędzi i materiałów stosowanych przy rozwiązywaniu zadań inżynierskich z zakresu szeroko pojętego drzewnictwa
TD_K3_W04_inz	Absolwent zna i rozumie podstawowe zagadnienia dotyczące procesów zachodzących w cyklu życia urządzeń, obiektów i systemów technicznych stosowanych w przemyśle drzewnym