

Operation of equipments in the food industry (IVth Year of study, VIIIth Semester)

Credit value (ECTS) 5

Course category

Domain (Imposed)

Course holder:

Asist. univ. Dr. Vlad Nicolae ARSENOAIA

Discipline objectives (course and practical works)

The course aims to acquire students' knowledge of materials used in machine construction, organization of maintenance and repair, equipment maintenance technology, methods and means to prevent corrosion, organization of machine repair, lubrication of equipment and installations, wear and friction and system of lubrication.

The practical works aim to familiarize students with the work technique on identifying materials used in the construction of each machine, operation and maintenance of fluid delivery systems, systems for transporting and lifting solid products, machines for crushing solid products, sorting machines, calibration and sieves, plants for mixing solid and liquid products, plants for washing products, machines for separating heterogeneous mixtures, machines for drying agri-food products, machines for pressing products and installations for heat treatments.

Contents (syllabus)

Course (chapters/subchapters)
General notions related to the operation, maintenance and repair of equipment.
Materials used in the construction of machinery.
Organization of maintenance and repair activity: need for maintenance, organization of maintenance, repair of equipment, establishment of technological processes of refurbishment.
Installation maintenance technology: Factors influencing maintenance technology, methods for establishing the operating cycle, disinfection and cleaning of the machine, agents and related installations.
Methods and means for preventing corrosion.
Organizing the repair of the equipment: general considerations, the repair cycle, planning the repair works and their organization, establishing the volume of the repair works.
Lubrication of equipment and installations.
Wear and friction: types of wear, the importance of lubricating machines, the classification of lubricants, the choice of lubricants.
Lubrication systems: with consistent grease, with oil, automatic lubrication systems.

Practicum
Identification of materials used in the construction of machinery.
Operation and maintenance of fluid delivery systems: centrifugal pumps, axial pumps, volumetric pumps, rotary pumps.

Operation and maintenance of systems for transporting and lifting solid products: gravity conveyor, belt conveyors, elevators, scrapers, helical, pneumatic.
Operation and maintenance of machines for crushing solid products: installations for coarse crushing, installations for fine crushing.
Operation and maintenance of sorting, calibration and screening equipment.
Operation and maintenance of equipment for mixing solid and liquid products.
Operation and maintenance of products for washing products: belt washing machines, paddle washing machines, auger washing machines, rotary washing machines, flotation washing machines.
Operation of equipment for the separation of heterogeneous mixtures.
Operation and maintenance of equipment for drying agri-food products: factors influencing drying, drying methods, drying agents.
Operation and maintenance of equipment for pressing products: mechanical presses, hydraulic presses, pneumatic presses.
Operation and maintenance of heat treatment plants: pasteurization equipment, sterilization equipment.
Final colloquium of knowledge evaluation

References

1. **Banu C., ș.a.** – Manualul inginerului din industria alimentară, vol I și II , E.T., București 1999;
2. **Segal Brad** – Utilaje tehnologice din industria de prelucrare a produselor horticoale, Ed. Ceres, București 1982;
3. **Țenu I.** – Tehnologii, procedee, mașini și instalații pentru industrializarea produselor vegetale, Partea I: Tehnologii și procedee, Ed. Junimea, Iași 1997;
4. **Țenu I.** – Tehnologii, procedee, mașini și instalații pentru industrializarea produselor vegetale, Partea a-II-a: Curățarea, sortarea, condiționarea și spălarea, Ed. Junimea, Iași 1999;
5. **Țenu I.** – Operații și aparate în industria alimentară, vol.I, operații mecanice, hidrodinamice și aerodinamice, Ed. Ion Ionescu de la Brad Iași, 2008;
6. **Țenu I.** – Operații și aparate în industria alimentară, vol.II, operații cu transfer de căldură și masă, Ed. Ion Ionescu de la Brad Iași, 2014.

Evaluation

Evaluation form	Evaluation Methods	Percentage of the final grade
Exam	Written examination	80%
Appreciation of the activity during the semester	Oral assessment during the semester, verification tests and final laboratory colloquium.	20%

Contact

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