

## Machines in the food industry (YEAR III, SEMESTER V)

**No. transferable credits 5**

### The Status of the discipline

Discipline of the field (mandatory)

### Holder discipline

PhD Professor Ioan ȚENU

### Course objectives (course and applications)

The course aims at acquisition by students of knowledge on work processes of the equipment used in the food industry, the identification of the various constructive types of machinery, equipment and installations in this area, as well as the evaluation of the constructive and functional parameters.

In the practical work they have in view the following objectives: knowledge and identification of the organs of machines, parts and assemblies of the machinery used in the technological lines of processing of agro-food products and the recognition of the main parts of the equipment and describe their operation.

Within hours of the project, students are introduced to design and to interpret a flowchart of specific processes of production.

### The content of the discipline (syllabus)

Course (Chapters/subchapters)
General considerations on the subject of discipline and principles on the structure of technological lines.
Technological lines, machines and installations for the cleaning and conditioning of fruits and vegetables
Machines and plants for the washing of packaging
Technological lines, machines and plants for the primary processing of horticultural products
Technological lines, machines and plants for the thermal processing of food products
Technological lines, machines and plants for processing grapes and making wine
Technological lines, machines and installations in the brewing industry
Technological lines, machines and installations for the processing of cereal seed and technical plants in order to preserve
Technological lines, machines and installations for the cleaning and seed conditioning grain for milling.

Practical work
Training NTS and PSI; theoretical Bases on the elaboration of schemes of technological process for the manufacture of food products ( <i>application for a technological line of processing of horticultural products</i> )
Washing machines horticultural products and packaging
Machines for primary processing of fruits and vegetables (removing the non-edible parts, shredding, shredding, etc.
Machinery and equipment for the heat treatment of food products (plant, scalding, pasteurization, sterilization, etc.)
Technological lines, machines and plants for processing grapes and making wine (Laboratory for the processing of grapes,filtration plant)

Line technology, machines and plants for the processing of cereal seed and technical plants for conservation purposes (machine for cleaning the seeds MCS-5/2,5, sorter, chaffer etc.)
Technological lines, machines and installations in the brewing industry (fact-finding visit to a brewery)
<b>Colloquium final verification of knowledge.</b>

Project themes
Design of technological lines for processing vegetables (canned peas and green beans, tomato paste, etc.).
Design of technological lines for the fruit processing (juices, concentrates, nectars, jams, honey etc.)
Design of technological lines for the processing of cereal seed and technical plants in order to preservation.
Design of technological line for primary processing of grapes.
Design of technological lines for manufacture of beer.
Design of technological lines for processing vegetables (canned peas and green beans, tomato paste, etc.).
Design of technological lines for the fruit processing (juices, concentrates, nectars, jams, honey etc.)
<b>Colloquium final verification of knowledge.</b>

## Bibliography

1. **Banu C., et al.** –The engineer's handbook in the food industry, vol I și II , E.T., București 1999;
2. **Gutulescu I.** – Technological processes in modern industry for the canning of vegetables, fruits, meat and fish, E. D. P., București 1986;
3. **Ibraz A., Babosa-Canovas V.G.** - *Unit operations in food engineering*. CRC Press, London, 2003;
4. **Ioancea L.** – Machinery and installations in food industry, Ed. Ceres, București 1988;
5. **McCabe W.L.** - *Unit operations of chemical engineering*. Seventh Edition, McGraw-Hill, New York, 2005;
6. **Petculescu E., et.al.** – Machinery and equipment in the food industry, E. D. P., Bucharest, 1987;
7. **Rasenescu A.** – Machinery for special ind. food, lit., Univ. “Dunărea de jos”, Galati 1985;
8. **Segal Brad** – Technological equipment for horticultural products processing industry , Ed. Ceres, Bucharest, 1982;
9. **Țenu I.** – Technologies, processes, machines and plants for the industrialization of plant products, Part I: Technologies and processes, Ed. Junimea, Iași, 1997;
10. **Țenu I.** – Technologies, processes, machines and plants for the industrialization of plant products, Part II: Cleaning, sorting, conditioning and washing, Ed. Junimea, Iași, 1999;
11. **Țenu I.** – Operations and devices in the food industry, vol.I, Mechanical operations, hydrodynamic, and aerodynamic, Ed. Ion Ionescu de la Brad Iași, 2008;
12. **Țenu I.** – Operations and devices in the food industry, vol.II, Operations of heat and mass transfer, Ed. Ion Ionescu de la Brad Iași, 2014.

## Final evaluation

Form of evaluation	Evaluation methods	Percentage from final grade
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Exam	Comprehensive examination, written and oral	60%
Assessment activity during the semester	Depending on the results obtained during the semester and at the end of verification of knowledge.	40%

**Contact person**

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## **Machines in the food industry (YEAR III, SEMESTER VI)**

**No. transferable credits 4**

### **The Status of the discipline**

Discipline of the field (mandatory)

### **Holder discipline**

**PhD Professor Ioan ȚENU**

### **Course objectives (course and applications)**

The course aims at acquisition by students of knowledge on work processes of the equipment used in the food industry, the identification of the various constructive types of machinery, equipment and installations in this area, as well as the evaluation of the constructive and functional parameters.

In the practical work they have in view the following objectives: knowledge and identification of the organs of machines, parts and assemblies of the machinery used in the technological lines of processing of agro-food products, recognition of the main parts of the equipment and to describe their operation.

Within hours of the project, students are introduced to design and to interpret a flowchart of specific processes of production.

### **The content of the discipline (syllabus)**

<b>Course (Chapters/subchapters)</b>
Technological lines, machines and plants for the milling industry.
Technological lines, machines and plants for the bakery industry.
Technological lines, machines and installations for the extraction of the oil.
Technological lines, machines and plants for the processing of sugar beet.
Technological lines, machines and installations for the industry of alcohol and beverage alcoholic.
Technological lines, machines and plants for the processing of milk and manufacture of cheese.
Technological lines, machines and plants for the slaughtering of animals and poultry.
Technological lines, machines and plants for the processing industry of meat.

<b>Practical work</b>
Machines and plants for the milling industry.
Machinery and installations for bakery.
Machines and installations for the extraction of the oil.
Machines and installations for the industry of alcohol and beverage alcoholic.
Machines and plants for the industrialization of milk.
Machines and installations for the slaughter.
Machines and plants for meat processing.
<b>Colloquium final verification of knowledge.</b>

<b>Project themes</b>
Design of technological line for milling wheat.
Design of technological line for the grinding of maize.

Design of technological lines for bakeries.
Design of technological lines for processing oilseeds.
Design of technological lines for processing of milk and manufacture of cheese.
Design of technological lines for slaughtering animals and birds.
Design of technological lines for the industrialization of the meat.
<b>Colloquium final verification of knowledge</b>

## Bibliografie

1. **Banu C., et al.** –The engineer's handbook in the food industry, vol I și II , E.T., București 1999;
2. **Gutulescu I.** – Technological processes in modern industry for the canning of vegetables, fruits, meat and fish, E. D. P., București 1986;
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12. **Țenu I.** – Operations and devices in the food industry, vol.II, Operations of heat and mass transfer, Ed. Ion Ionescu de la Brad Iași, 2014.

## Final evaluation

Form of evaluation	Evaluation methods	Percentage from final grade
Exam	Comprehensive examination, written and oral	70%
Assessment activity during the semester	Depending on the results obtained during the semester and at the end of verification of knowledge.	30%

## Contact person

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