OPTIMISATION AND DESIGN OF TECHNOLOGICAL PROCESSES (YEAR IV, SEMESTER VIII)

Credit value (ECTS) 4

Course category
Domain (Imposed)

Course holder:
Assoc. Prof. PhD. George Ungureanu

Discipline objectives (course and practical works)

The optimization and design of technological processes includes theoretical and practical investigations aimed at modernizing the technological flow of food production, improving their quality, optimizing processes and methods for obtaining semi-finished products and finished products, developing new products and technologies.

The general objectives of this course are the use of economic - mathematical methods in order to make profitable the processing and marketing of agricultural and fishery products, increase the competitiveness and added value of products on the market and minimize production costs. The use of analysis methods is in order to evaluate the performance of the organization and to increase the efficiency and effectiveness of activities in agri-food enterprises.

The optimization and design of technological processes has a wide range of models and usual methods for a rigorous management, which allows the Economist must know how to make correct and rigorous reasoning because only in this way we will ensure that he is able to understand new models, to apply effectively in solving concrete problems raised by economic practice. This gives him the opportunity to penetrate deep into the essence of phenomena, to synthesize and make abstractions and possibly to bring corrections to models or to build new models.

Ability to interpret and prepare a project for the strategic development of a public catering and tourism unit, in the medium and long term, using a series of modern analysis methods and techniques such as: SWOT matrix, TOWS, QSPM, SPACE , PORTER model etc.

Familiarization with the concept of economic modeling; increasing the skills of evaluating the managerial strategy in relation to the internal and external environment; increasing the ability to select alternative strategies.

The model of consumer behavior analysis starts from the definition of the objective function. The major objective function of any rational individual is to satisfy the maximum possible needs, in other words, to maximize the useful effects by minimizing the efforts. In the case of the rational consumer, this translates into maximizing the total satisfaction that people hope to obtain by consuming various material goods or services.

The current economic environment is constantly changing, and unpredictable situations are most numerous. Therefore, in the conditions of the market economy, there is a need more than ever to have rules that would allow a better substantiation of the decision. A correct economic decision can only be made when it is formed on the basis of a scientifically argued and practically verified mathematical model.

Through its content, the course transmits to the students of this specialization, future managers within the organizational structures, the main fund of knowledge in Optimization and design of technological processes in production processing which is an accessible tool in solving various economic processes with analytical models and simulation models.

The content of the course is in line with the similarities of the profile specializations in EU countries.

Contents (syllabus)

Course (chapters/subchapters)
Design and optimization of technological processes, Methods. Concepts. classifications
Numerical simulation. Generating random numbers
Optimization of technological processes and technological operations of food manufacturing
Models for optimizing production technologies in order to obtain a new product
Optimization and efficiency of product standardization and coding
Stochastic simulation with Monte Carlo technique to increase labor productivity
Design market phenomena and reducing the cost per product
Sensitivity study of optimal solutions
Modeling the manufacturing structure of an organization
Simulation of continuous systems with Forrester techniques
Design competitive situations for increase efficiency
Design multicriteria decision-making processes
Economic-mathematical and simulation models for the use and allocation of resources (material, human, financial and time) within a unit on public food and agrotourism.

Practicum
Chapter 1. simulation technique applications in the catering trade Definitions and concepts useful in describing simulation The description of the simulation model Classification of simulation models Advantages and the drawbacks of using simulation Types of Simulation
Chapter 2. simulation technique - applications in the catering trade Monte Carlo simulation to calculate labor productivity product Random numbers / pseudo Steps to Work Applications of simulation technology
Chapter 3. Engineering simulation and statistical decision theory - the product .... Methods for rationalizing decisions under conditions of indeterminacy (uncertainty and risk) Method decision trees Stochastic decision tree method
Chapter 4. Simulation technique used in risk analysis Sensitivity analysis
Chapter 5. Study the market behavior of competitive products - analytical models and simulation

References

1. C. Rusu, V. leaf - Industrial Management, 2006.
2. George Ungureanu. Production processing management and conservation. Ed. Alfa. 2008.
3. Yolanda Eminescu - "Legal Issues on technology transfer", Ed. Academy, Bucharest, 1990.
4. Yolanda Eminescu - "Legal Issues on technology transfer", Ed. Academy, Bucharest, 1979. ISBN 978 973 8432 91 8
5. George Ungureanu. Management. Publisher Terra Nostra. 2017 ISBN 978 973 8432 91 8.
6. George Ungureanu. Production processing management and conservation. Alfa Publishing. 2008. ISBN (10) 973 8953 53 7

Evaluation

Evaluation form	Evaluation Methods	Percentage of the final grade
Exam	Oral examination	60%
Appreciation of the activity during the semester	Oral assessment during the semester, verification tests and final laboratory colloquium.	40%

Contact

Associated Professor Phd. George Ungureanu
Faculty of Agriculture - USAMV
Mihail Sadoveanu nr. 3 Iaşi, 700 490, Romania
Telephone: 0040 232 407517, fax: 0040 232 219175 E-mail: ungurgeo@uaiasi.ro