Information management
(Master, II-nd year of study, III-rd semester)

Credit value (ECTS) 6

Course category
Enhancement discipline
Discipline Code: M.MAPA.A.206

Course holder:
PhD. Prof. George UNGUREANU

Discipline objectives (course and applications)

The course aims to optimize processes and develop computerized information systems that efficiently support decision-making in public catering units, agrotourism structures, consultancy, research, and management within the agri-food sector.

Applied informatics in public catering and tourism combines digital methods with specialized knowledge to address challenges related to planning, controlling, and managing activities, while complying with food safety standards, quality requirements, and the specific characteristics of the sector.

The course prepares students for integration into the Information Society and the Knowledge-Based Economy (KBE), developing competencies needed for designing and implementing business development strategies in public catering and agrotourism, with emphasis on efficiency, sustainability, and innovation.

Skills and tools developed:

Use of advanced software for management and decision-making analysis (SPSS, SmartPLS, expert systems), adapted to the specific needs of public catering and rural tourism;

Application of data collection, investigation, and interpretation methods in planning and developing agri-food and tourism businesses;

Enhancing managers' ability to integrate production factors, technological and informational resources into competitive development strategies;

Supporting economic and managerial decisions based on validated digital models aligned with market requirements and European standards.

Within the knowledge-based economy, information becomes the central resource: primary data are processed and transformed into useful information that supports strategic decisions; these decisions are then translated into actions through decision systems, thus closing the complete cycle of information and decision management in public catering and agrotourism.

Contents (syllabus)

Course (chapters/subchapters)
Chapter I. Information Society and Knowledge-Based Economy (KBE) Definition and importance – information as the core resource of modern management. Applicability in MAPA – client, supply, stock, and service quality data transformed into strategic decision tools. **Chapter II. Management Information Systems** Role and functionality – coordinating activities such as supply, production, serving, sales, promotion, and human resources.

Chapter III. Farm Management Information Systems (FMIS)
Definition and evolution – initially designed for agriculture, now applied to public catering and agrotourism.
Use in MAPA – product traceability, cost management, seasonal menu planning, supplier relations.
Advantages – ensuring freshness and authenticity, key elements for culinary and tourism branding.

Chapter IV. Precision Agriculture and Internet of Things (IoT)
Basic concepts – integration of smart sensors, drones, and digital networks.
Application in public catering – verifying ingredient origin, monitoring quality, preventing food waste.

Chapter V. Advanced Software for Management and Decision-Making
GIS (Geographic Information Systems) – identifying optimal locations for guesthouses, tourism routes, and product distribution.
CAD/CAM – designing modern kitchens, optimizing technological flows, ensuring compliance with hygiene standards.

Chapter VI. Integrated Information Systems
Components – financial management, human resources, supply, sales, logistics.
Practical application – online reservations, automated billing, stock management, and customer loyalty.

Chapter VII. Decision Support Systems (DSS)
Role – simulation of alternative scenarios to support decisions.
Examples in MAPA – launching a new menu, expanding accommodation capacity, negotiating supplier contracts.

Chapter VIII. Expert Systems in Management
Definition – AI-based programs reproducing expert reasoning.
Application in public catering and agrotourism – recommending optimal menu combinations, forecasting demand, monitoring service quality.

Chapter IX. Information Management in Projects
Use – planning, monitoring, and controlling projects.
Examples – modernizing a catering unit, expanding an agrotourism complex, diversifying services.
Benefits – transparency, efficiency, and scientific foundation of decisions.

Chapter X. SQL Databases and Their Applications in MAPA
Definition – relational databases for managing complex information.
Practical use – tracking stocks, customer orders, reservations, and financial reports.
Advantages – traceability, managerial control, basis for quick and accurate decisions.

Seminar
1. **Domain-Specific Languages (DSL) in Information Systems for Public Catering and Agrotourism**

DSLs enable the translation of concepts and processes (supply, recipe management, technological flow, reservations, traceability) into clear and user-friendly software architecture.

2. Cloud Computing Integration + Geospatial Data Analysis + Predictive Models

A unified cloud system supports resource monitoring in catering and tourism. GIS data and predictive models (e.g., product seasonality) aid decision-making in menu planning, local sourcing, and tourism package design.

3. Cybersecurity in MAPA Digital Systems

IoT-connected catering and tourism units are vulnerable to cyberattacks. Protecting client data, online bookings, and financial transactions requires strong cybersecurity strategies: encryption, multi-factor authentication, and continuous monitoring.

4. Structural Equation Modeling (PLS-SEM) in MAPA

Using SmartPLS, PLS-SEM can analyze consumer behavior, adoption of agrotourism services, customer satisfaction, and managerial decision-making in public catering.

5. Smart Sensors and Big Data Analytics

Smart sensors and Big Data provide food traceability and guarantee quality in restaurants and guesthouses. Real-time monitoring of resources and production reinforces the farm-to-table concept, increasing authenticity and appeal of MAPA services.

References

1. Trends in Farm Information Management Systems. Burleigh Dodds Science Publishing, 2024.
2. Groeneveld, D. et al. A domain-specific language framework for farm management information systems in precision agriculture. Precision Agriculture, 2021.
3. Smart Sensors and Smart Data for Precision Agriculture – articol de sinteză recent (2024) despre integrarea senzorilor IoT în agricultură.
4. Agricultural Informatics: An Overview of Integration of Techniques and Technologies – versiune recentă pentru conexiunea informatică & agricultură.
5. An Application of Partial Least Squares Structural Equation Modeling (PLS-SEM)" aplicat deciziei în agricultură.

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; colloquium.	40%

Contact

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