Offered courses by Faculty of Engineering for ISSMA 2022 program.

The faculty is a technical faculty with 50 years of educational and R&D experience, an appealing choice for potential students in BSc and MSc programs, highly qualified and acknowledged faculty, a perfect balance of theoretical and practical training based on extensive industrial relations. In accordance with today's needs – is the one of the most important bases of engineering education at the University of Szeged and in the Southern Great Plain Region with its highly qualified experts in possession of academic degrees, and with modernly equipped training rooms and laboratories. The Faculty trains at the BSc and MSc levels in numerous fields of engineering sciences both in Hungarian and in English: Food Engineer (BSc), Mechanical Engineer in Agriculture and Food Industry (BSc), Mechanical Engineering (BSc, MSc), Mechatronical Engineer (BSc, MSc), Engineering manager (BSc, MSc);Food Science and Technology Engineering (MSc), Food Safety and Quality Engineering (MSc).

Future of food 4 ECTS	• Aim: Foresight activities, forward-looking research, futurologist activities and many other forms of research and expert consultations, such as brainstorming sessions of multidisciplinary scientists aim to provide information on the trends which will determine our future. Industry trends, consumer trends, innovations influencing the way we produce, process and prepare our foods, the way we will choose what we eat, not to mention in what form, are topics of interest for all. • Subjects: Will we eat meat substitutes, meat analogue foods with meat denominations, or lab-grown meat, or insects instead in order to provide proteins in our diet? Will cellular agriculture provide our future food? Will we have moved beyond the current protein craze within the next decade? Will consumers choose only 'healthy foods' or foods perceived as healthy or will they follow healthy and sustainable diets for ethical or other reasons? Will an embedded device storing all our health related personal data help us to select food? Will our gut microbiome be fed by tailored foods? Will personalized nutrition help us to optimize our health and longevity? Will the great diet roller coaster ... Will artificial intelligence change the food system? Will digitalization, robotics, blockchain, artificial intelligence, deep learning support the food transition? Will we go digital? Will air be the hottest new ingredient? Will 'dark kitchens' rise? How will urbanization and technology change the way we eat? How will we be eating 10 years from now?
Food safety 4 ECTS	• Aim of the course is to introduce basics of food safety. How can be produce food for human consumption taking the strict food safety background, which is authorized worldwide? • Subjects: Definitions: definition of food, food safety. Food safety in the EU: EC regulation 178/2002. Principles of the general food law. EFSA and RASFF. HACCP. Risk assessment, management and communication.

	Principles of HACCP. „From farm to fork" concept: Agriculture: food safety aspects of crop cultivation and husbandry. Food safety aspects of food processing. GMP, GHP, new technologies. Distribution of foods. Food retail. Food safety aspects for the catering industry and for home made foods. Hygiene: Cleaning and disinfection in the food industry. Hygiene at home.
Packaging technology (food) 4 ECTS	• Aim of the course is to detail knowledge and understanding of modern technologies for packaging (food), materials systems and technologies. How can also plan a well designed packaging? • Subjects: Preservation of foods. Food ruin (rancidity, browning, bacterial and fungi problems). Functions of food packaging. Packaging as a marketing tool. Demands and requirements (by law, consumer demands, logistics tasks). Labelling (text, bar codes, QR) Packaging materials and its behavior: Glass packaging. Paper packaging. Plastic packaging. Metal packaging. Textile packaging. Biodegradable materials. Bottle and jar packaging lines for liquid foods. Pouch packaging machine for solid and viscous liquid foods. Powder and granulated foods packaging. Solid, semi liquid and liquid foods in cans. Edible packaging as an emerging technology.
Meat and meat technology 4 ECTS	• Aim of the course is to introduce most important parts of meat products technology. Meat and meat products are consumed worldwide. Modernization of technologies is essential for the production of quality product. Traditional and modern methods are introduced to students once in the course. • Subjects: Physical, chemical, microbiological and histological characteristics of meat, conversion of muscle to meat, preservation methods; meat refrigeration and freezing technologies, meat processing technologies; curing, smoking, emulsification, fermentation, canning, restructured meat products, meat packaging technology, quality control analysis in meat and meat products.
Environmental economy 4 ECTS	• The aim of the course is to give general knowledge of natural resources, market failure of natural resources, environmental problems, environmental systems, technical description of environmental technologies and possible solutions, water and wastewater treatment processes, waste management, waste to energy concept, biomass utilization, renewable energy sources. • Subjects: Overview of Environmental Problems and Economy. Basics of Environmental Management. Renewable Energy Sources. Waste and By-products Streams in Food Processing Technologies. By-product Utilization in Food Industry. Controlled biological treatments and processes for bio-waste handling and utilization. Overview of Waste to Energy (W2E) Concept. Environmental Pollutants (source, types). Basics

	of Wastewater Treatment Technologies. Novel Processes in Food Industry Wastewater Purification. Basics of Air Purification Methods.
Elements of marketing 4 ECTS	• Aim of the course is to learn more about marketing and advertising. Students have exercises how to use marketing tools in practice. • Subjects: Introduction to marketing and advertising: Jobs and responsibilities, Corporate identity, logos, Branding Finding the customer: Market research, Customer profiles, Data collection, A telephone survey Planning a marketing strategy: The marketing plan, The four Ps, Pricing and positioning strategies Creating ads: The AIDA model for advertising, Working with an ad agency, Advertising channels, Rate sheets Marketing tools: Distribution channels, Types of discount, Types of retailer, Telemarketing, Direct marketing Presenting your public face: Public relations, Websites as a marketing tool, Sponsoring, Effective press releases Marketing through trade fairs: Giveaways, Organizing events, Attending a trade fair.
Workshop training in microbiology laboratory 4 ECTS	• The aim of the course is to introduce the microbiological methods, which is necessary to use during the food production and these results of inspection decide the suitability of food for human consumption. In addition, the students can try the different conventional and rapid tests. • Subjects: microbiological examination of food and hygiene (pathogens and spoilage microbes with conventional – MPN methods, pour plate methods, spread plate methods - and rapid tests; air, water and surface hygiene; rapid test for allergens and mycotoxins).
Logistics 4 ECTS	• Aim of the course is to introduce the logistics, basic definitions and terminology. Some practical aspects are also part of the subject. • Subjects: Introduction to logistics: Setting the scene; Job in logistics; Regular activities Logistics services: Logistics acronyms; Product ranges; providers; Value-added services; Inventory management and procurement: Inventory management; Continuous replenishment; Job advertisements Modes of transport: Transport and handling equipment; Container types, Types of goods Planning and arranging transport: Transport options, Measurements, Quotations Shipping goods: Marking, Loading, Advice of shipment, Shipping instructions Warehousing and storage: Handling equipment, Warehouse areas, Warehousing today Documentation and finance: Documents in foreign trade, Import instructions, Payment methods. Logistics in agro-food business.
Human factors in agri-food sector 4 ECTS	• Aim of the course is to introduce the human resource management. Some practical aspects are also part of the Course. • Subjects: What is HRM? Basics of the HRM. Understanding the logic of the management of the human resources. Challenges and new aspects of the topic. E.g. focusing on engineering aspects, managing the elderly workforce at the BMW car manufacturer, creativity management and its

	connections to engineering dimensions, complexity management affecting the HRM.
Quality control 4 ECTS	• Aim of the course is to introduce the main points of quality control, which belongs to different business sectors too. • Subjects: Understanding and Interpreting Quality: The Meaning of Quality – Concepts, Dimensions and Standards of Quality; The Evolution of Quality Management; Quality Management Systems: Approaches and Principles; Improving Quality: Quality Control Tools and Techniques; Economic Aspect of Quality; Quality Control in the Food Industry; Complex food quality; Quality and value creation; Students' presentations – Students should prepare and deliver presentation about topics that are related to quality control; Teamwork – working in groups to solve problems related to quality control and elaborating case studies; Research Paper Studies – Technical papers will be assigned to the class, and Students are required to study these papers and write summary reports.