

Food Science MSc

General Food Engineering Skills

A.) Food enzymology

1. Enzyme in food industry: definition, sources, nature, market
2. General characteristics of enzyme molecule: structure, active centre, roles of amino acids
3. Enzymes in food application
4. Main steps in enzymes fermentation process
5. Structures and properties of starch. Amylolytic enzymes
6. Enzymic process in the starch industry
7. Complex technology for downstream of corn, production of isosugars
8. Pectin and pectolytic enzymes
9. Enzymes in dairy products
10. Trends in development of biocatalysts

B) Measurement Theory, Design of Experiments, Process Control in Food Industry

1. Error assessment, Propagation of uncertainty
2. Design of experiments, two level full and fractional factorial plans, properties, assessment
3. Correlation analysis (Pearson and Spearman correlation, cross- and auto-correlation, regression analysis, residuum-analysis)
4. Mechanical properties of foods (traditional and dynamic methods)
5. Machine vision systems (setup, algorithms for characterization of color, shape and pattern, applications)
6. Pneumatic and electro-pneumatic control systems (properties, directional valves, operation of cylinders)
7. Hydraulic and electrohydraulic control systems (properties, directional valves, operation of cylinders)
8. Programmable Logic Controllers (PLC) (setup, configuration, functional elements, programming, applications)
9. Closed Loop Control systems (setup, elements and signals, types, performance of continuous/OnOff controls, stability, tuning, control with PLC)
10. Actuators of electronic, mechanic, pneumatic or hydraulic output (properties, applications)

C) Food economy

1. The marketing and marketing concept
2. Porter's model of competitiveness
3. Application of Porter's diamond model to analysis of food industry of your country
4. Cost analysis in food industry
5. Entreprise strategies and innovation management
6. Introduction of new products and their acceptance
7. New product planning and testing to market introduction