UNIVERSITY OF TUZLA
FACULTY OF TECHNOLOGY

Third Cycle Study Programme

DOCTORAL STUDY

TUZLA

DOCTORAL STUDY

Doctoral studies:
Chemical engineering
Engineering in environmental protection
Food engineering

QUALIFICATIONS AWARDED

Doctor of technical science in the field of chemical engineering
Doctor of technical science in the field of environmental protection
Doctor of technical science in the field of food engineering

DURATION OF STUDIES

All doctoral studies: 3 years (180 ECTS)

LIST OF COMPULSORY AND ELECTIVE COURSES

COMPULSORY COURSES

Compulsory course for all doctoral studies

Course label	Course	Contact hours/ECTS
OB 01	Planning and optimization of experimental research	20/10

Compulsory courses (Chemical engineering)

Course label	Courses	Contact hours/ECTS
HI 01	Selected numerical methods in engineering	20/10
HI 02	Process integration for environmental emission reduction	20/10
HI 03	Catalytic processes in chemical industry	20/10

Compulsory courses (Engineering in environmental protection)

Course label	Courses	Contact hours/ECTS
IZO 01	Environmental engineering	20/10
IZO 02	Waste and recycling	20/10
IZO 03	Environmentally sustainable energy sources	20/10

Compulsory courses (Food engineering)

Course label	Courses	Contact hours/ECTS
PI 01	Selected topics of food process engineering	20/10
PI 02	Technology of autochthonous food products	20/10
PI 03	Food microbiology	20/10

ELECTIVE COURSES

Elective courses (Chemical Engineering)

Course label	Courses	Contact hours/ECTS
HI 04	Selected methods of mathematical modelling of chemical and biochemical reactors	12/5
HI 05	Selected topics of reaction engineering	12/5
HI 06	Selected topics of chemical industry technologies	12/5
HI 07	Selected topics of industrial biotechnology	12/5
HI 08	Phase equilibrium in chemical technology	12/5
HI 09	Materials based on nanotechnologies	12/5
HI 010	Degradation and recycling of polymeric materials	12/5
HI 011	Selected topics of process systems engineering	12/5
HI 012	Synthesis and design of environmentally conscious processes	12/5
HI 013	Engineering management in process industry	12/5
HI 014	Combustion processes in industry and environmental impact	12/5
IZO	Technological waste management systems	12/5

Elective courses (Engineering in environment protection)

Course label	Courses	Contact hours/ECTS
IZO 04	Biological wastewater treatment processes	12/5
IZO 05	Microbiology with metabolism of wastewater microorganisms	12/5
IZO 06	Air pollution and purification of waste gases	12/5
IZO 07	Technological waste management systems	12/5
IZO 08	Environmental risk assessment	12/5
IZO 09	Accidental situations in environment and prevention processes	12/5
HI	Technological processes and environment	12/5
HI	Degradation and recycling of polymeric materials	12/5
HI	Synthesis and design of environmentally conscious processes	12/5
HI	Modelling of solid waste composting processes	12/5
HI	Combustion processes in industry and environmental impact	12/5
IH	Methods for determining of heavy metals in food, environment and chemical industry products	12/5

Elective courses (Food engineering)

Course label	Course	Contact hours/ECTS
PI 04	Rationalisation of energy consumption in processes of food industry	12/5
PI 05	Biologically active food ingredients	12/5
PI 06	Management of processes of changes of fresh fruit and vegetables	12/5
PI 07	Advances in technology carbohydrates	12/5
PI 08	New knowledge in technology of oils and fats	12/5
PI 09	Selected topics in technology of dairy products	12/5
PI 10	Sustainable technologies in food process engineering	12/5
PI 11	Production of food supplements	12/5
PI 12	Selected topics in food toxicology	12/5
PI 13	Quality systems in food production	12/5
PI 14	Modelling and optimisation in food engineering	12/5
HI	Selected topics of technologies of alcoholic and non-alcoholic drinks	12/5
IZO	Biological wastewater treatment processes	12/5

Elective courses (Engineering chemistry)

Course label	Course	Contact hours/ECTS
IH04	Methods for determination of heavy metals in food, environment and chemical industry products	12/5
IH05	Modern methods in the characterization of silicate materials	12/5
IH06	Electrochemical determination and speciation of trace elements in water systems: from modelling to in situ measurements	12/5
IH07	Biomedical implant materials	12/5
IH08	Heterocycles in biomolecules and industry	12/5
IH09	Advanced inorganic chemistry course	12/5
IH10	Applied photochemistry	12/5
IH11	Physical and chemical principles of polymer systems	12/5
IH12	Electrochemistry for new technologies	12/5
HI	Design of wastewater treatment processes	12/5
HI	Cement composites of targeted properties	12/5
HI	Kinetic models and parameter estimation	12/5
ZO	Environmental management systems	12/5
ZO	Biological wastewater treatment processes	12/5