



Joint EU/CoE Project
Strategic Development of Higher Education and Qualification Standards

REPORT

From the second meeting of the working
group on

“Agriculture and Food Processing”

Held in Sarajevo on 25 April 2014

Presentation outline

- **Presentation of the study programmes analysed**
- Recommendations by the International Union of Food Science and Technology (IUFOST) for the programme of study in food technology
- Analysis of subjects in the food technology programmes of study
- General structure of subjects in the programmes of study
 - **Mandatory subjects**
 - **Elective subjects**
 - **Practical work**
 - **Final thesis**
- Harmonisation of the food technology study programmes with IUFOST recommendations in terms of ECTS and analysis of ECTS ranges for identical or similar subjects
- **Grouping subjects which are identical or similar** at most of the programmes analysed

Institution	Full name	Present(+)/Absent (-)
University of Bihać	Dr.sc. Zemira Delalić, prof.	-
	Dr.sc. Suzana Jahić, ast.prof.	+
University of Banja Luka	Dr. sc. Delić Duška	+
	Mr. sc. Vučić Goran	+
University of Tuzla	Dr.sc. Elvis Ahmetović, assoc. prof.	+
	Dr.sc. Milica Vilušić, assoc. prof.	+
University of Sarajevo	Dr. Milenko Blesić, assoc. prof.	+
	Dr. Hamid Čustović, prof.	+
	Prof. dr. Đikić Mirha (substitute)	+
University of Zenica	Dr. sc. Salih Tandir, prof.	-
	Dr.sc. Hajrudin Skender, ast. Prof.	+
University Džemal Bijedić	Assoc. prof.dr.Hanadija Omanović	+
	Dr. sc. Semira Sefo, ast.prof.	+
University of East Sarajevo	Dr. Grujica Vico, ast. Prof.	-
	Milan Vukić	-
University of Mostar	Dr. sc. Anita Ivanković	-
	Dr. sc. Adrijana Majić	-

Meeting attended by: 10/16

Study programmes analysed

Titles of programmes and universities

University of Tuzla, Faculty of Technology, Food technology undergraduate programme (4 years)

University of Sarajevo, Faculty of Agriculture and Food Sciences, Food technology undergraduate programme (3 years)

University of Bihać, Faculty of Bio-technology, Food technology undergraduate programme (4 years)

University of Banja Luka, Faculty of Technology, Bio-technology and food processing, production branch, undergraduate programme (4 years)

University of East Sarajevo, Faculty of Tehcnology in Zvornik, Chemical Engineering and Technology Department, food engineering branch - module



INTERNATIONAL UNION of FOOD SCIENCE AND TECHNOLOGY

- The International Union of Food Science and Technology (IUFOST), a country-membership organisation is the global voice of food science and technology.
- It is a voluntary, non-profit federation of national food science organisations linking the world's food scientists and technologists.

<http://www.iufost.org/about-iufost>

Baza za usporedbu studijskih programa

IUFoST klasifikacija



IUFoST

INTERNATIONAL UNION of FOOD SCIENCE AND TECHNOLOGY

Food science/technology studies

- Fundamental science
- Food chemistry and analysis and nutrition
- Food safety and microbiology and environment
- Food engineering and technology
- Food management and business

<http://www.iufost.org/sites/default/files/docs/IUF.FS&T.Curricula.guidelines.pdf>

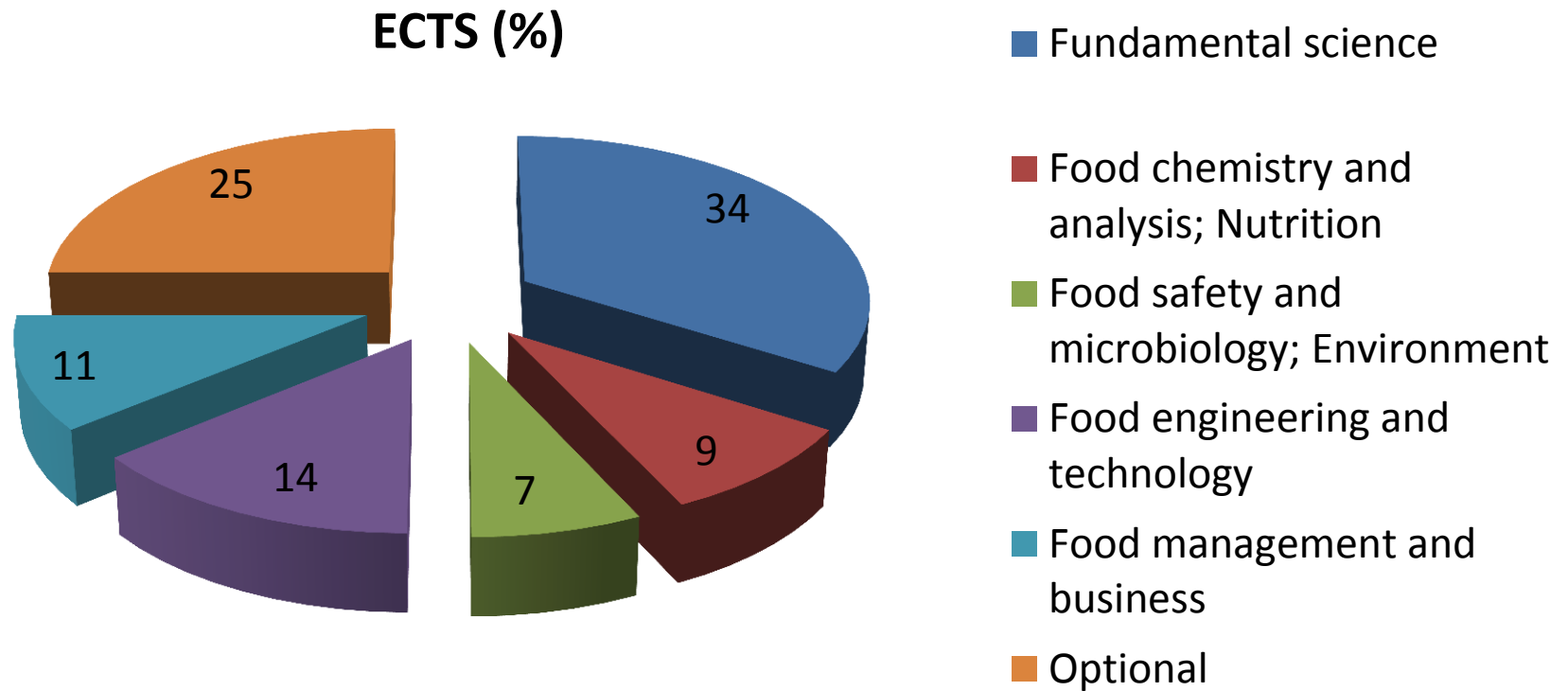


Food Studies = 4 years Discipline	% Credits	Credits ECTS	% Total
Fundamental science			
1. Mathematics	22	18	34%
2. Computer science	7.3	6	
3. Physics	14.6	12	
4. Chemistry	22	18	
5. Biology	14.6	12	
6. Elements of material sciences	3.6	3	
7. Languages	11	9	
8. Communication skills	4.9	4	
TOTAL	100	82	
Food chemistry and analysis, and nutrition			
1. Food chemistry and biochemistry	36.4	8	9%
2. Food physics	13.6	3	
3. Food analysis	36.4	8	
4. Nutrition	13.6	3	
TOTAL	100	22	
Food safety and microbiology and environment			
1. Food microbiology	29.4	5	7%
2. Quality assurance	17.6	3	
3. Industrial microbiology	17.6	3	
4. Food toxicology	17.6	3	
5. Environment	17.6	3	
TOTAL	100	17	

Food safety and microbiology and environment			
1. Food microbiology	29.4	5	
2. Quality assurance	17.6	3	
3. Industrial microbiology	17.6	3	7%
4. Food toxicology	17.6	3	
5. Environment	17.6	3	
TOTAL	100	17	
Food engineering and technology			
1. Food manufacturing technology	24.1	7	
2. Food process engineering	55.1		
2.1 Transport processes		6	
2.2 Separation processes		4	
2.3 Reaction engineering		3	
2.4 Modeling and simulation		3	
3. Food plant design	20.7		
3.1 Food process control		3	
3.2 Utilities		3	
TOTAL	100	29	14%
Food management and business			
1. Economics	33.3	9	
2. Operations management	22.2	6	
3. Accounting	22.2	6	
4. Food marketing	22.2	6	11%
TOTAL	100	27	
Integrated Project		3	
Optional (25%)*		60	25%
TOTAL		240	100%

- additional courses may be used to provide greater emphases in specific areas (i.e., nutrition, safety, etc.) specific commodities (i.e., dairy, vegetables, etc.) or to provide broader liberal arts education

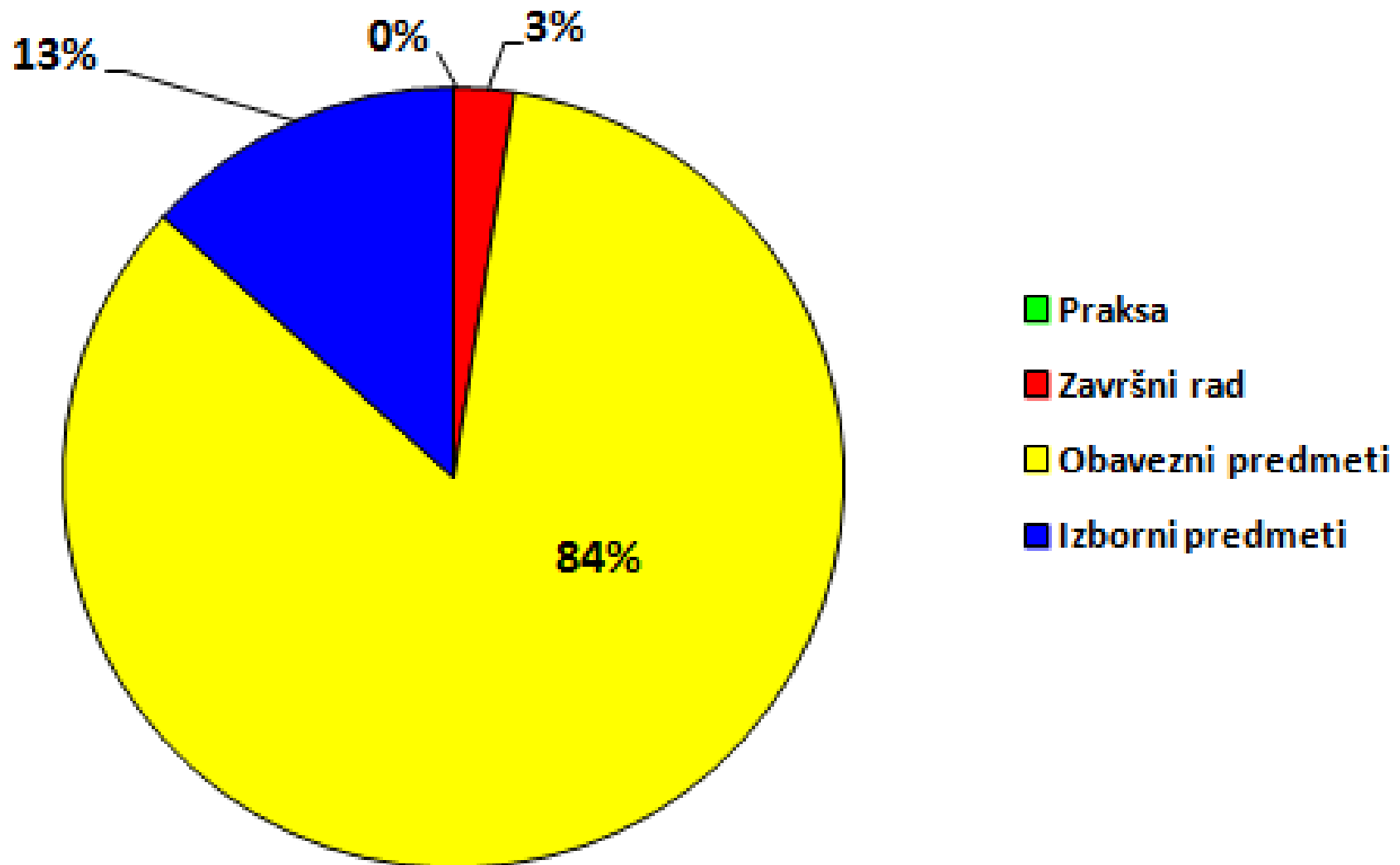
Preporuke IUFoST



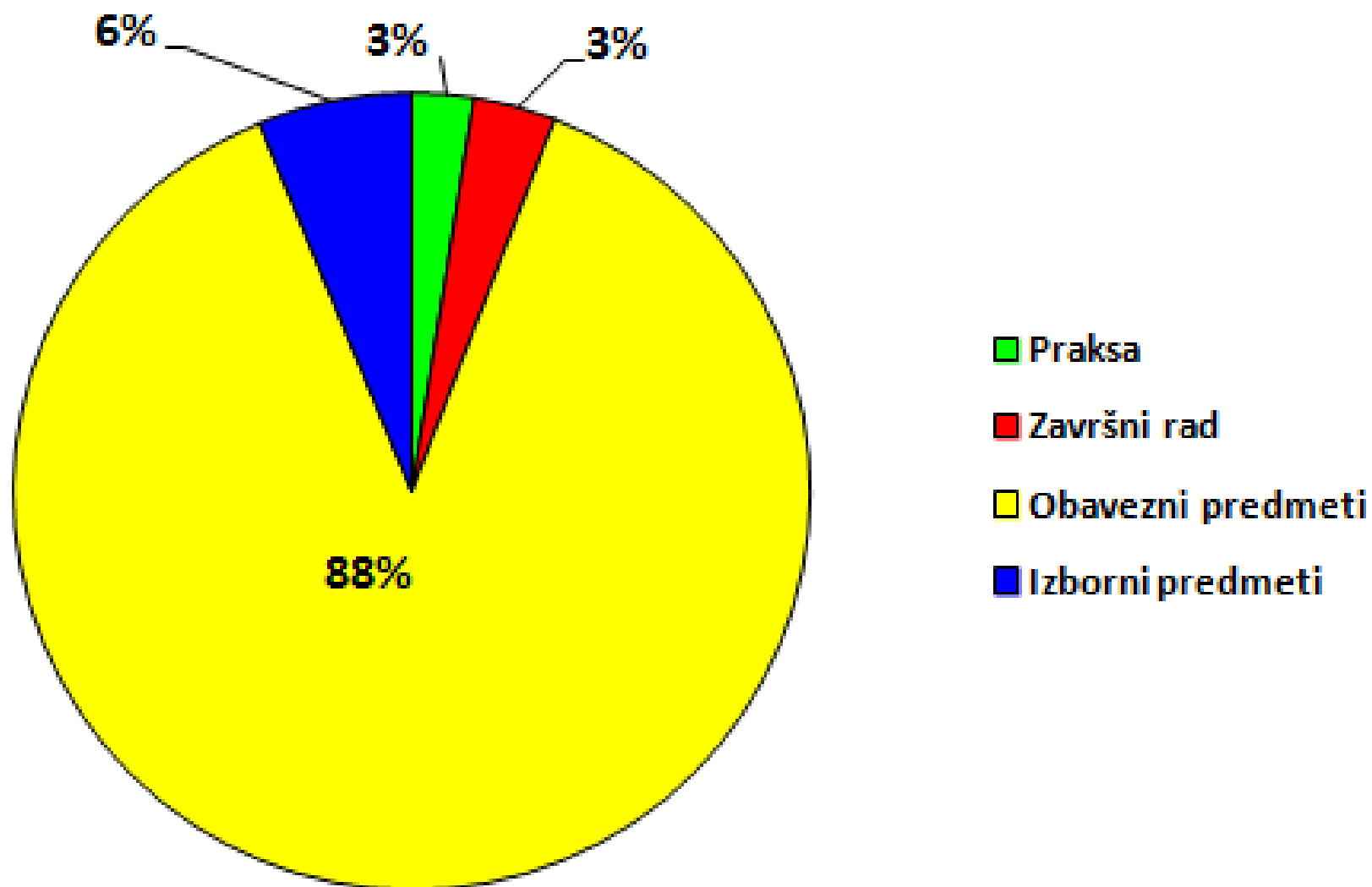
Study programmes in Food Technology (1st cycle)

General structure

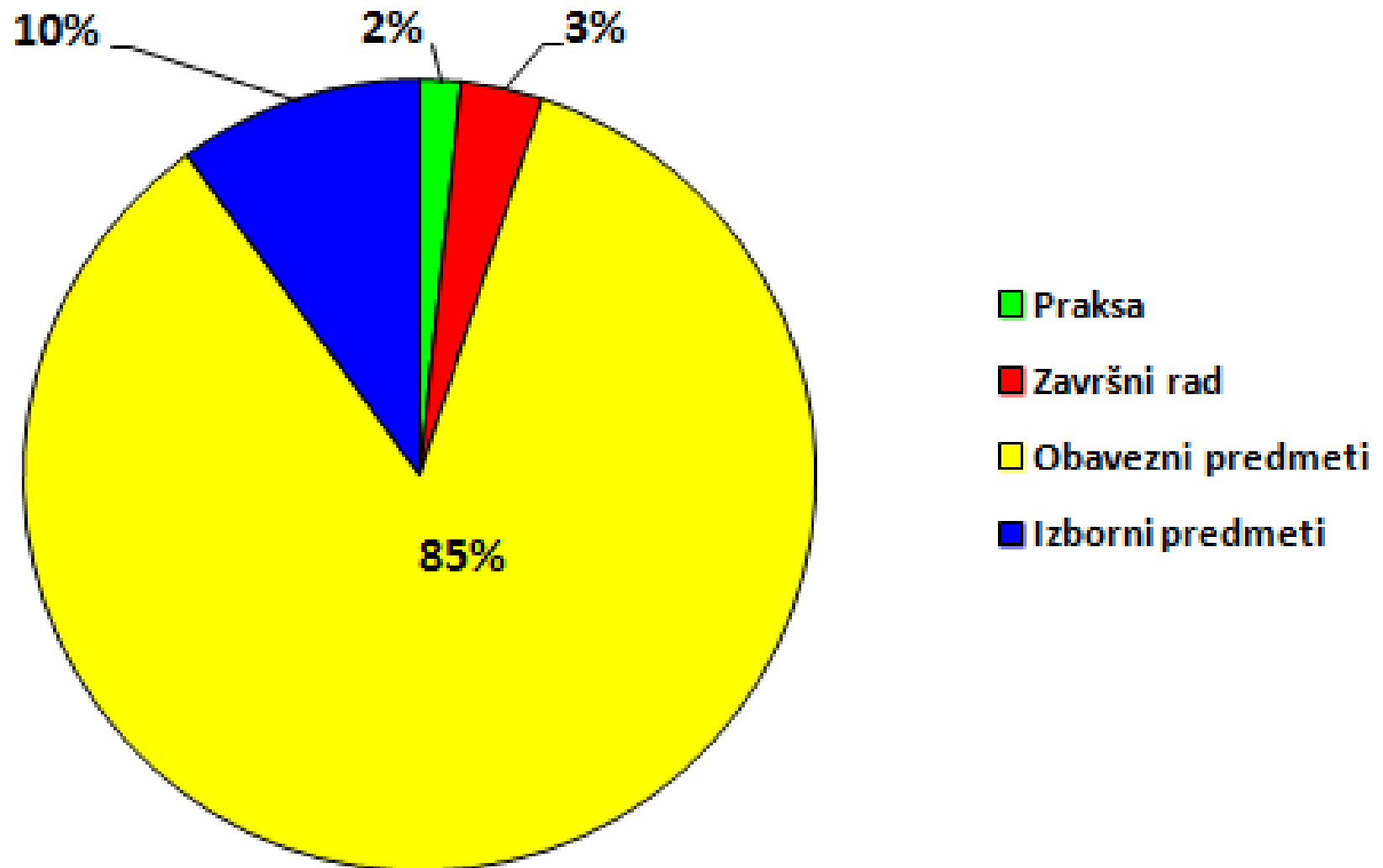
UNBL - Tehnološki fakultet Banja Luka
Biotehnološko prehrambeni (smjer Proizvodni) - 240 ECTS



UNIS - Tehnološki fakultet Zvornik
Hemijsko inženjerstvo i tehnologija (Izborni modul:
Prehrambeno inženjerstvo) - 240 ECTS

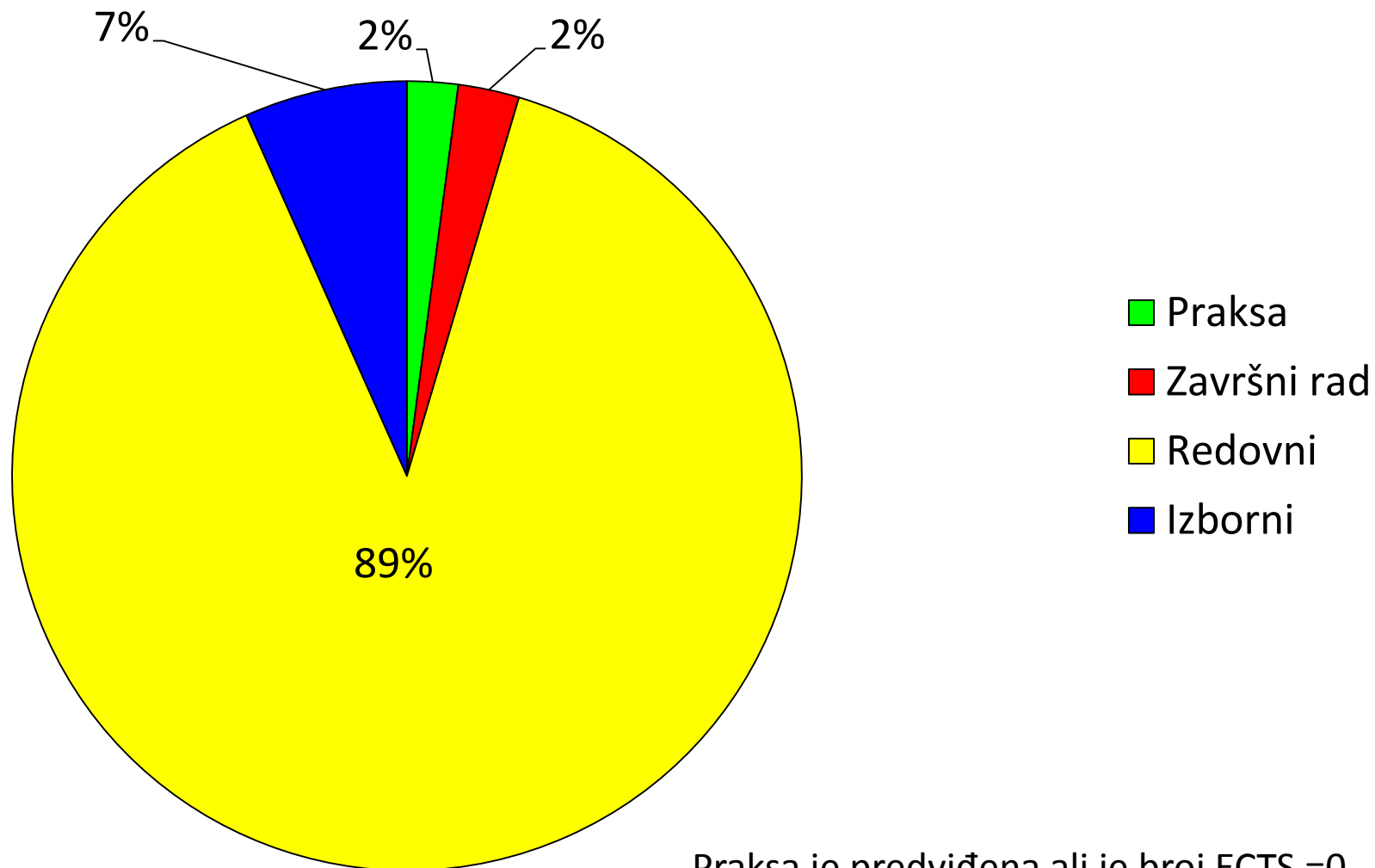


UNSA - Poljoprivredno-prehrambeni fakultet Sarajevo
Prehrambene tehnologije - 180 ECTS



UNTZ - Tehnološki fakultet Tuzla

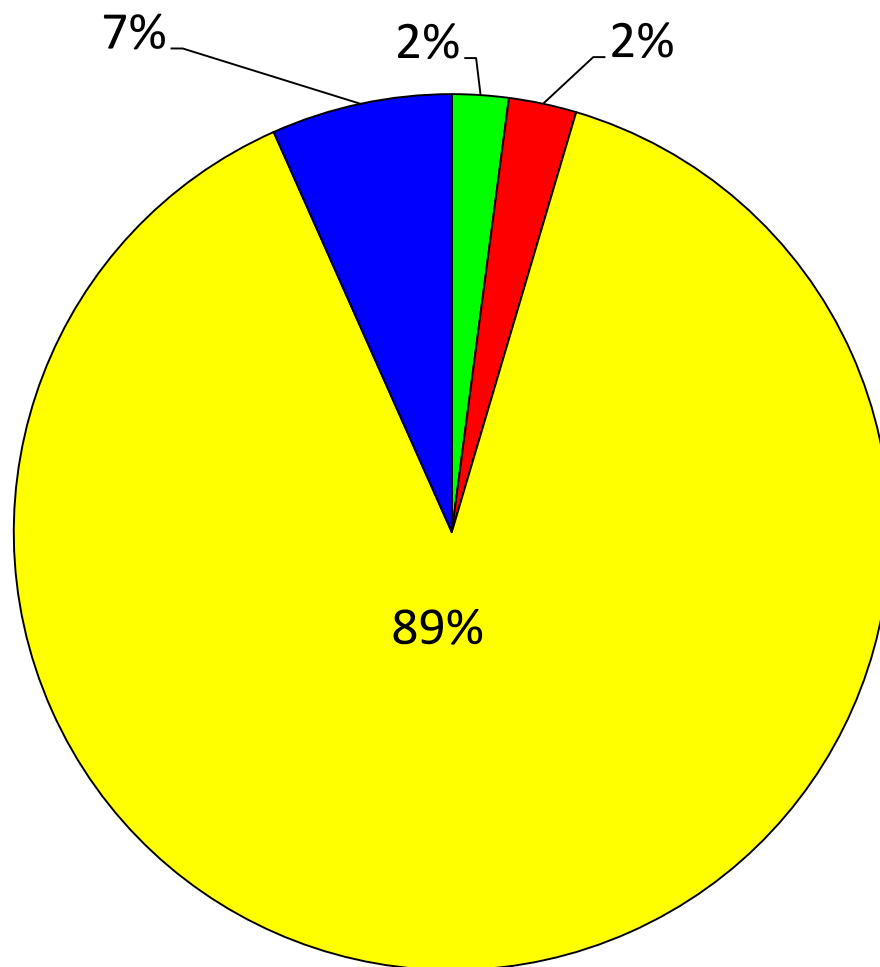
Prehrambena tehnologija - 240 ECTS



Praksa je predviđena ali je broj ECTS =0

UNBI - Biotehnički fakultet Bihać

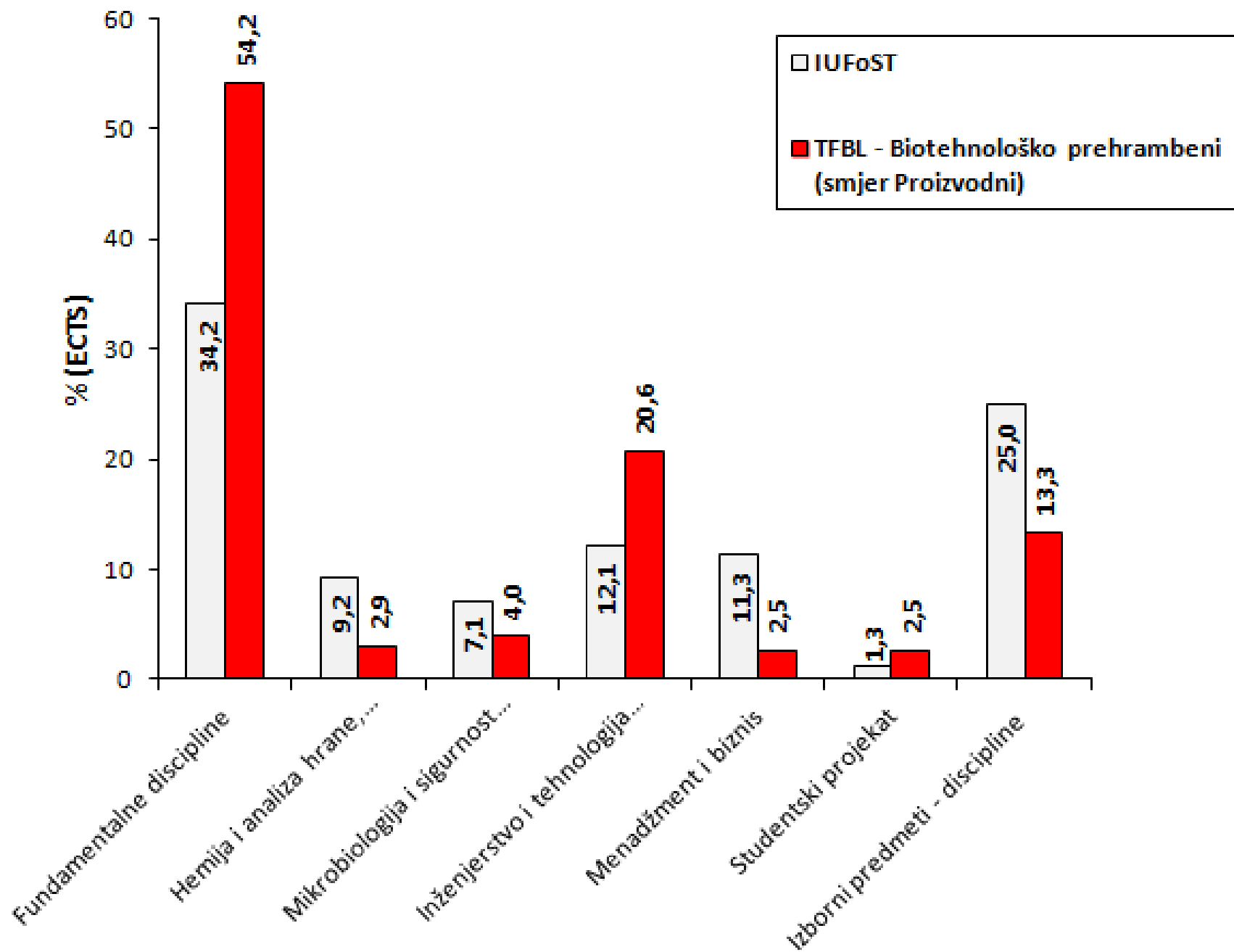
Prehrambena tehnologija - 240 ECTS

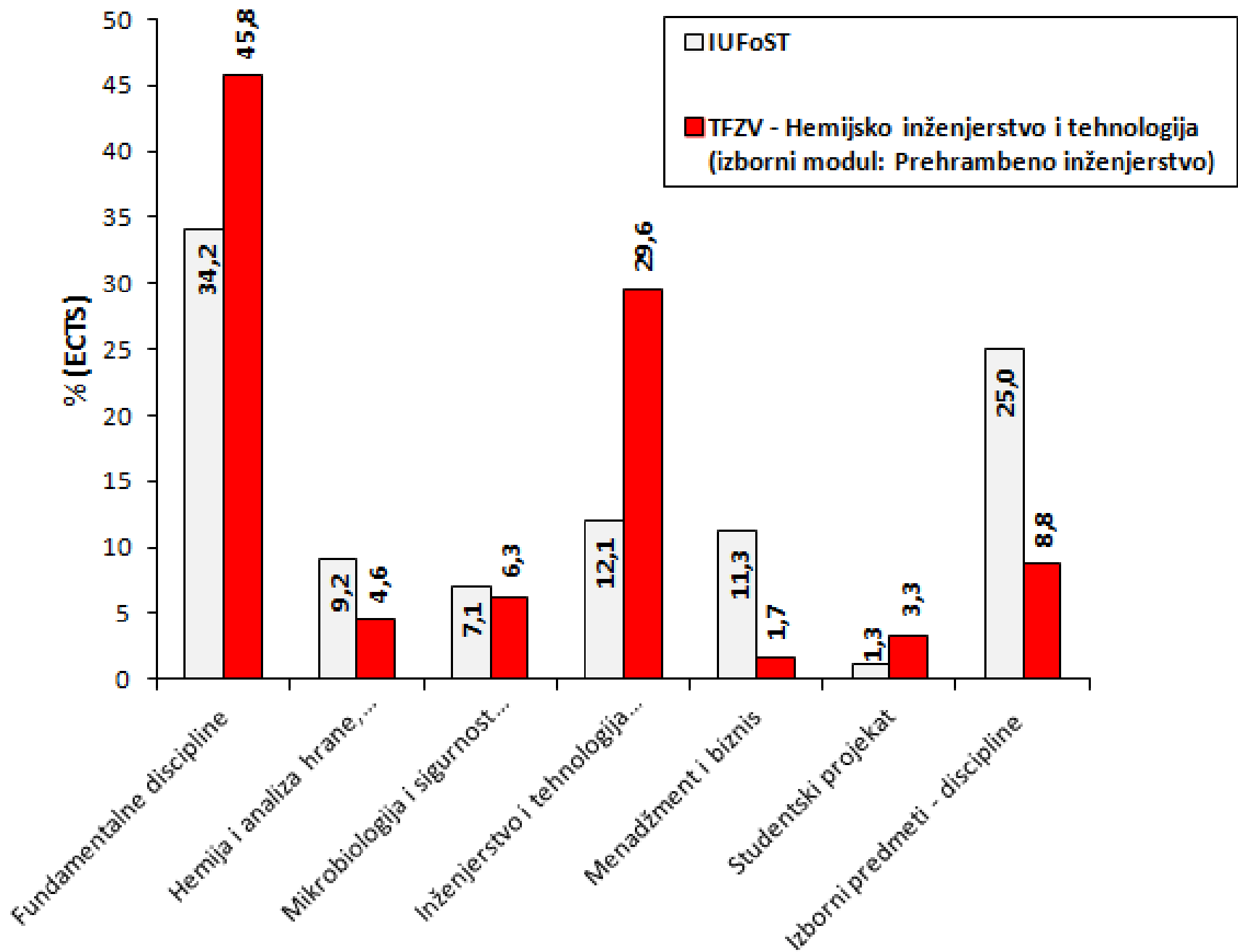


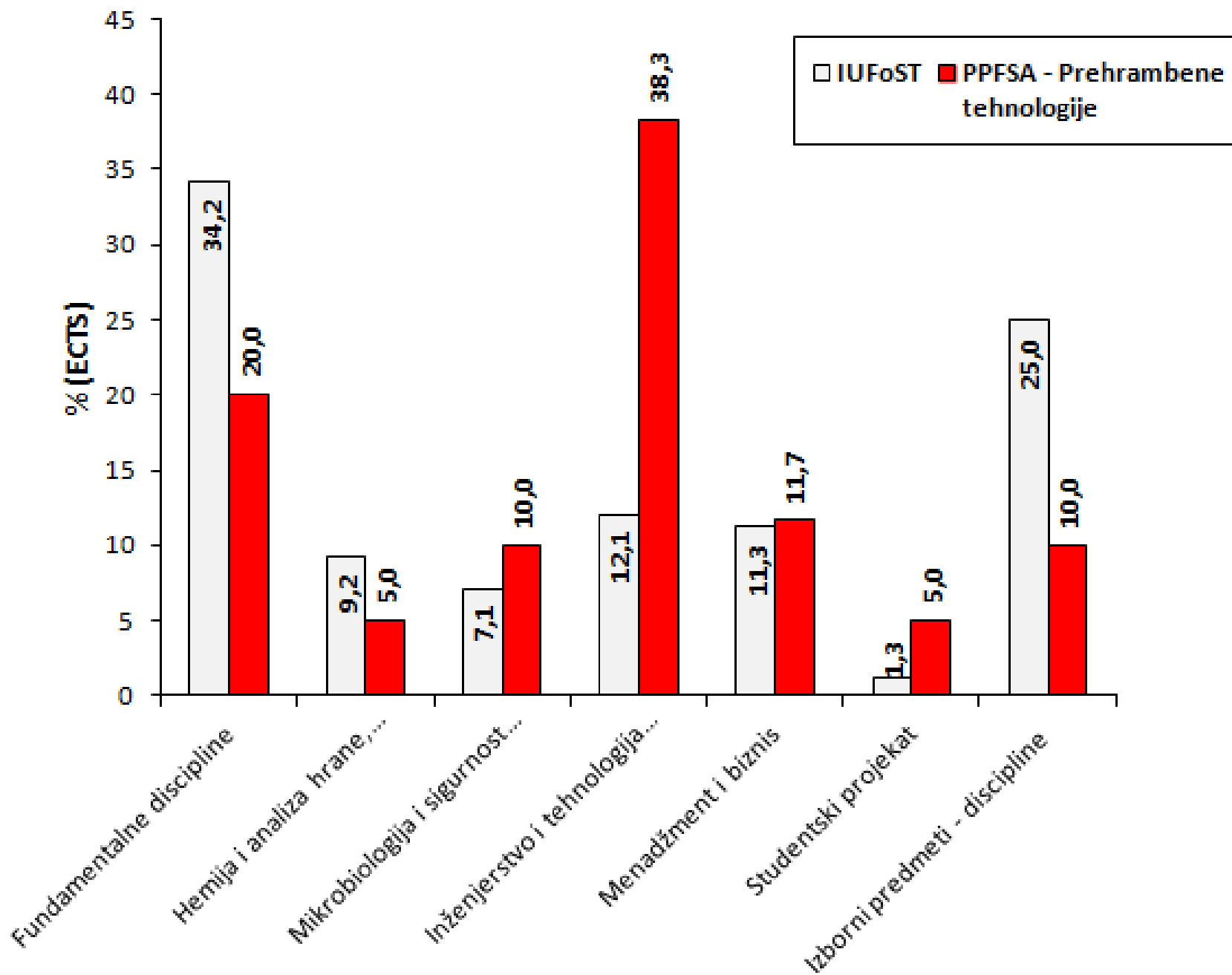
- Praksa
- Završni rad
- Redovni
- Izborni

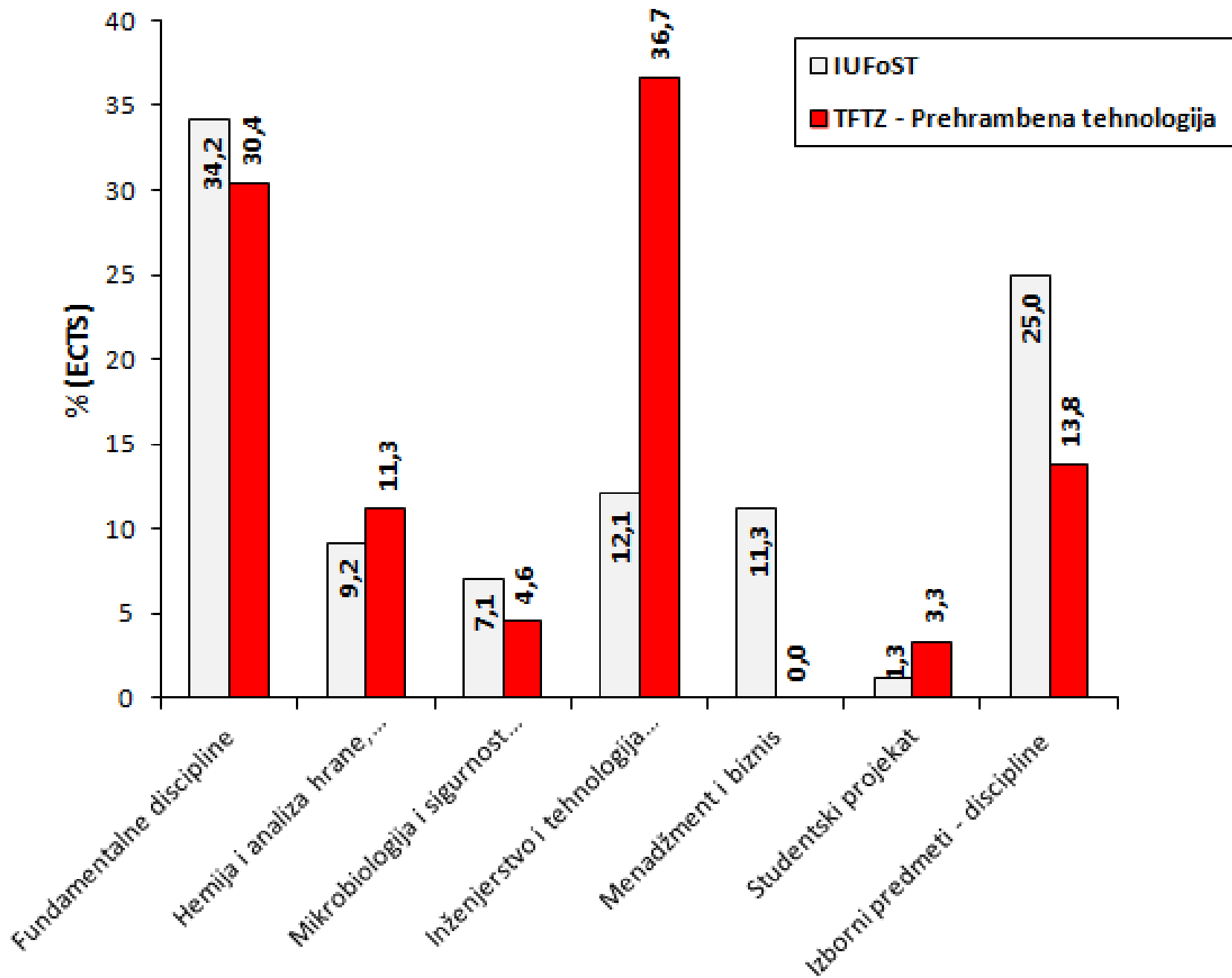
Study programmes in Food Technology (1st cycle)

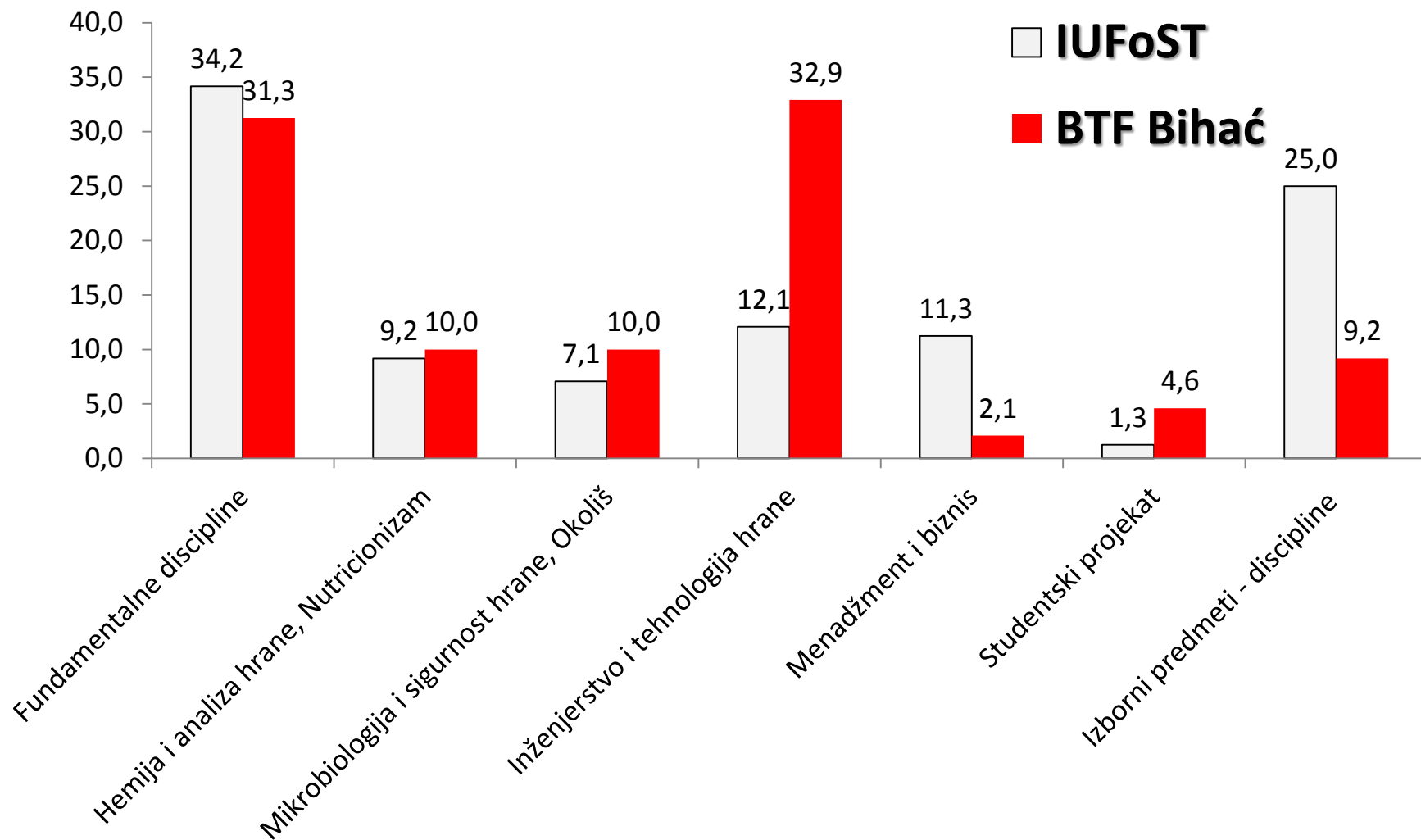
- Harmonisation with IUFoST recommendations



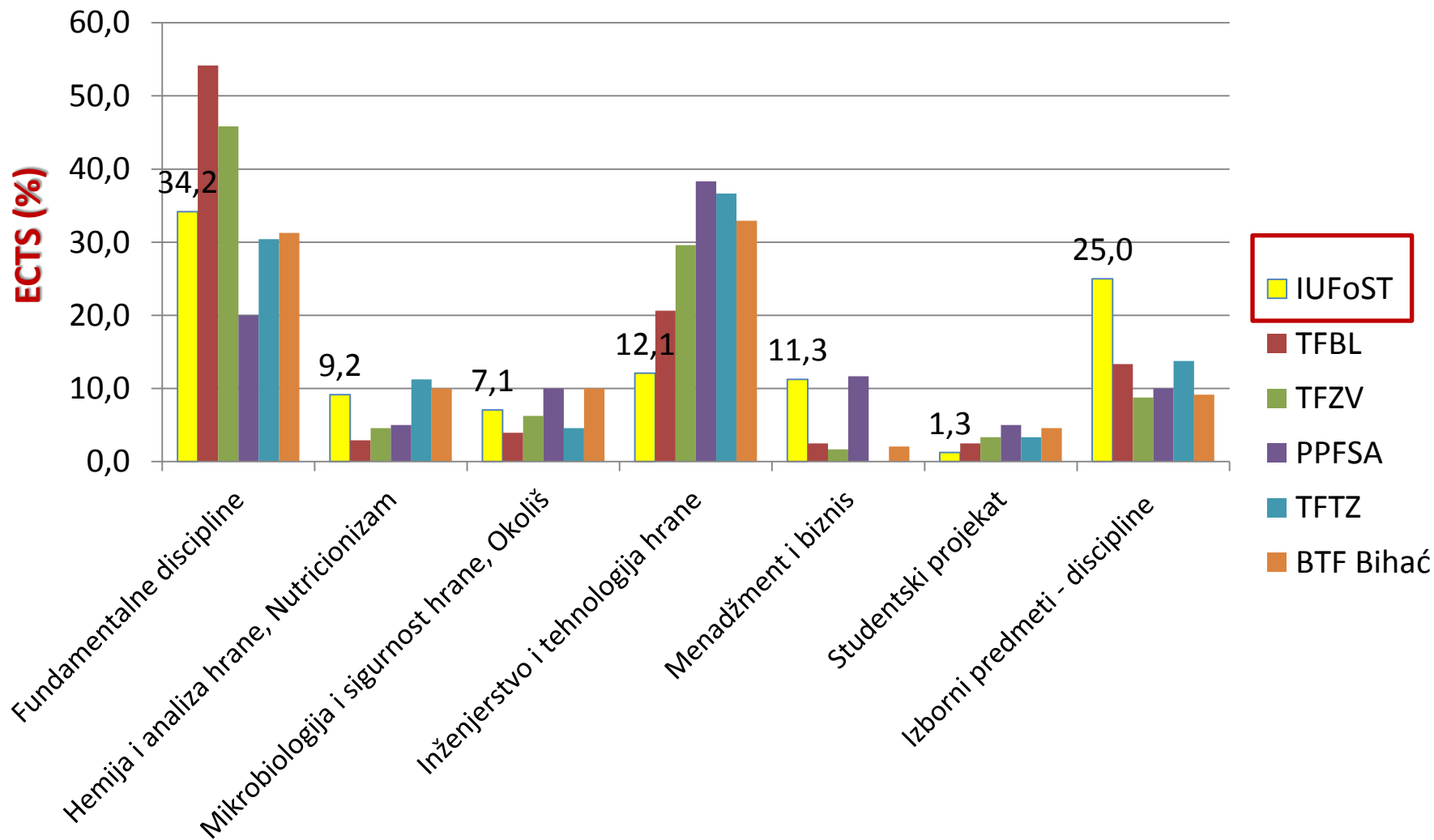








Harmonisation of programmes of study of individual faculties with IUFoST recommendations



1. Fundamental sciences

Subject title	ECTS	Area	Field	Brnch	Aux.Code	Oblig./Elect.	Faculty	
Matemathics II	7		1.	1.1.		Mat	Obligatory	TF Banja Luka
Matemathics	6		1.	1.1.		Mat	Obligatory	PPF Sarajevo
Matemathics I	6		1.	1.1.		Mat	Obligatory	BTF Bihać
Matemathics I	6		1.	1.1.		Mat	Obligatory	TF Tuzla
Matemathics I	6		1.	1.1.		Mat	Obligatory	TF Zvornik
Matemathics I	8		1.	1.1.		Mat	Obligatory	TF Banja Luka
Matemathics II	6		1.	1.1.		Mat	Obligatory	BTF Bihać
Matemathics II	6		1.	1.1.		Mat	Obligatory	TF Tuzla
Physics I	5		1.	1.3.		Fiz	Obligatory	TF Tuzla
Physics II	6		1.	1.3.		Fiz	Obligatory	TF Tuzla
Technical physics	6		1.	1.3.		Fiz	Obligatory	BTF Bihać
Technical physics	6		1.	1.3.		Fiz	Obligatory	PPF Sarajevo
Technical physics I	6		1.	1.3.		Fiz	Obligatory	TF Zvornik
Technical physics I	8		1.	1.3.		Fiz	Obligatory	TF Banja Luka
Technical physics II	6		1.	1.3.		Fiz	Obligatory	TF Zvornik
Technical physics II	7		1.	1.3.		Fiz	Obligatory	TF Banja Luka

1. Fundamental sciences

Subject title	ECTS	Area	Field	Brnch	Aux. Code	Oblig./Elect.	Faculty
IT	3	1.	1.2.		Infor	Obligatory	BTF Bihać
Introduction to computinga	5	1.	1.2.		Infor	Obligatory	TF Zvornik
Applied computing systems	4,5	1.	1.2.		Infor	Obligatory	TF Banja Luka
Computing in engineering	5	1.	1.2.		Infor	Obligatory	TF Zvornik
Inorganic chemistry	7	1.	1.1.		Hem	Obligatory	TF Banja Luka
General chemistry	8	1.	1.1.		Hem	Obligatory	TF Banja Luka
Inorganic chemistry	7	1.	1.4.		Hem	Obligatory	TF Zvornik
General and inorganic chemistry	8	1.	1.4.		Hem	Obligatory	TF Tuzla
General chemistry	6	1.	1.4.		Hem	Obligatory	BTF Bihać
General chemistry	7	1.	1.4.		Hem	Obligatory	TF Zvornik
Chemistry I	6	1.	1.4.		Hem	Obligatory	PPF Sarajevo
Chemistry II	6	1.	1.4.		Hem	Obligatory	PPF Sarajevo

1. Fundamental sciences

Subject title	ECTS	Area	Field	Brnch	Aux.Code	Oblig../Elect.	Faculty
Analytical chemistry	6	1.	1.4.		Hem	Obligatory	BTF Bihać
Analytical chemistry	6	1.	1.4.		Hem	Obligatory	TF Zvornik
Analytical chemistry	8	1.	1.4.		hem	Obligatory	TF Tuzla
Analytical chemistry I	7	1.	1.4.		Hem	Obligatory	TF Banja Luka
Analytical chemistry II	7	1.	1.4.		Hem	Obligatory	TF Banja Luka

							PPF
Physical chemistry	6	1.	1.4.		Hem	Obligatory	Sarajevo
	7						TF Banja Luka
Physical chemistry I		1.	1.4.		Hem	Obligatory	Luka
Physical chemistry I	7	1.	1.4.		Hem	Obligatory	TF Zvornik
Physical chemistry II	7	1.	1.4.		Hem	Obligatory	TF Zvornik
Physical chemistry with coloid chemistrym	8						TF Banja Luka
		1.	1.4.		Hem	Obligatory	Luka
Physical chemistry	7	1.	1.4.		Hem	Obligatory	BTF Bihać
Physical chemistry	8	1.	1.4.		Hem	Obligatory	TF Tuzla

1. Fundamental sciences

Subject title	ECTS	Area	Field	Brnch	Aux.Code	Oblig../Elect.	Faculty
Organic chemistry	7	1.	1.4.		Hem	Obligatory	BTF Bihać
Organic chemistry	7	1.	1.4.		Hem	Obligatory	TF Tuzla
Organic chemistry	7	1.	1.4.		Hem	Obligatory	TF Zvornik
Organic chemistry I	7	1.	1.4.		Hem	Obligatory	TF Banja Luka
Organic chemistry II	8	1.	1.4.		Hem	Obligatory	TF Banja Luka

Biochemistry	6	1.	1.5.		Biol-Bioh	Obligatory	TF Zvornik
Biochemistry	7	1.	1.5.		Biol-Bioh	Obligatory	BTF Bihać
Biochemistry I	6	1.	1.5.		Biol-Bioh	Obligatory	TF Banja Luka
BiochemistryII	7	1.	1.5.		Biol-Bioh	Obligatory	TF Banja Luka

General biochemistry	5	1.	1.5.		Biol-Bioh	Obligatory	TF Tuzla
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1. Fundamental sciences

Subject title	ECTS	Area	Field	Brnch	Aux.Code	Oblig./Elect.	Faculty
General microbiology	3	1.	1.5.		Biol-Mkrbl	Obligatory	PPF Sarajevo
General microbiology	6	1.	1.5.		Biol-Mkrbl	Obligatory	TF Tuzla
General microbiology	6	1.	1.5.		Biol-Mkrbl	Obligatory	TF Banja Luka
General microbiology	7	1.	1.5.		Biol-Mkrbl	Obligatory	BTF Bihać
English language	2	1.	1.7.		Jezik	Obligatory	BTF Bihać
Foreign language I	2	1.	1.7.		Jezik	Obligatory	TF Zvornik
Foreign language II	2	1.	1.7.		Jezik	Obligatory	TF Zvornik
Foreign language III	2	1.	1.7.		Jezik	Obligatory	TF Zvornik
Foreign language IV	2	1.	1.7.		Jezik	Obligatory	TF Zvornik
Technical English	3	1.	1.7.		Jezik	Obligatory	TF Tuzla

2. Food chemistry, analysis and nutrition

Subject title	ECTS	Area	Field	Brnch	Aux.Code	Oblig../Elect.	Faculty
Food analysis	4	2.	2.3.		Analiza hr.	Obligatory	TF Tuzla
Material analysis	7	2.	2.3.		Analiza hr.	Obligatory	TF Banja Luka
Instrumental methods	5	2.	2.3.		Analiza hr.	Obligatory	TF Zvornik
Instrumental methods	6	2.	2.3.		Analiza hr.	Obligatory	TF Tuzla
Instrumental methods of analysis	5	2.	2.3.		Analiza hr.	Obligatory	BTF Bihać
Food science	4	2.	2.4.		Nutr	Obligatory	TF Tuzla
Nutrition science I	3	2.	2.4.		Nutr	Obligatory	PPF Sarajevo
Nutrition science	7	2.	2.4.		Nutr	Obligatory	BTF Bihać
Nutritive features and analysis of food items	6	2.	2.4.		Analiza hr.	Obligatory	TF Zvornik
Food quality assurance	3	3.	3.2.		Kontr. kval	Obligatory	BTF Bihać
Quality standards and control of food items	6	3.	3.2.		Kontr. kval	Obligatory	PPF Sarajevo
Food quality and safety management	5	3.	3.2.		Kontr. kval	Obligatory	TF Zvornik
Quality management in the food industry	4	3.	3.2.		Kontr. kval	Obligatory	TF Tuzla

3. Food safety and microbiology; Environment

Subject title	ECTS	Area	Field	Brnch	Aux.Code	Oblig../Elect.	Faculty
Food microbiology	4	3.	3.1.		Mkrb hrane	Obligatory	TF Banja Luka
Food microbiology	7	3.	3.1.		Mkrb hrane	Obligatory	TF Tuzla
Food microbiology	6	3.	3.3.		Mkrb hrane	Obligatory	PPF Sarajevo
Ecology	6	3.	3.5.		Ekologija	Obligatory	BTF Bihać
Introduction to environmental protection	5	3.	3.5.		Ekologija	Obligatory	TF Zvornik
Water and sewage processing technology	6	3.	3.5.		Ekologija	Obligatory	BTF Bihać
Environmental protection in food industry	3	3.	3.5.		Ekologija	Obligatory	PPF Sarajevo

4. Food engineering and technology

Subject title	ECTS	Area	Field	Brnch	Aux.Code	Oblig../Elect.	Faculty
Raw materials knowledge and control I	6	4.	4.1.	4.1.1.	Sirovine	Obligatory	PPF Sarajevo
Raw materials knowledge and control II	3	4.	4.1.	4.1.1.	Sirovine	Obligatory	PPF Sarajevo
Materials of animal origin	5	4.	4.1.	4.1.1.	Sirovine	Obligatory	BTF Bihać
Materials of animal origin	5	4.	4.1.	4.1.1.	Sirovine	Obligatory	TF Tuzla
Materials of animal origin	5	4.	4.1.	4.1.1.	Sirovine	Obligatory	BTF Bihać
Materials of animal origin	6	4.	4.1.	4.1.1.	Sirovine	Obligatory	TF Tuzla
Milk technology	6	4.	4.1.		T-Mlijeko	Obligatory	PPF Sarajevo
Milk and dairy technology	5	4.	4.1.		T-Mlijeko	Obligatory	TF Tuzla
Milk and dairy technology	6	4.	4.1.		T-Mlijeko	Obligatory	BTF Bihać
Food technology of materials of animal origin li	6	4.	4.1.		T-Mlijeko	Obligatory	TF Banja Luka

4. Food engineering and technology

Subject title	ECTS	Area	Field	Brnch	Aux.Code	Oblig./Elect.	Faculty
Fish and meat technology	5	4.	4.1.		T-Meso	Obligatory	TF Tuzla
Fish and meat technology	6	4.	4.1.		T-Meso	Obligatory	BTF Bihać
Fish, meat and eggs technology	6	4.	4.1.		T-Meso	Obligatory	PPF Sarajevo
Food technology of materials of animal origin I	7	4.	4.1.		T-Meso	Obligatory	TF Banja Luka
Fruit and vegetables technology	5	4.	4.1.		T-ViP	Obligatory	TF Tuzla
Fruit and vegetables technology	6	4.	4.1.		T-ViP	Obligatory	BTF Bihać
Food technology of materials of plant origin I	7	4.	4.1.		T-ViP	Obligatory	TF Banja Luka

4. Food engineering and technology

Subject title	ECTS	Area	Field	Brnch	Aux.Code	Oblig./Elect.	Faculty
Engineering thermodynamics	6	4.	4.2.	4.2.1.	Termodin	Obligatory	BTF Bihać
Engineering thermodynamics	6	4.	4.2.	4.2.1.	Termodin	Obligatory	TF Zvornik
Thermodynamics	6	4.	4.2.	4.2.1.	Termodin	Obligatory	TF Tuzla
Technical thermodynamics	4,5	4.	4.2.	4.2.1.	Termodin	Obligatory	TF Banja Luka
Thermodynamics and cooling technology	6	4.	4.2.	4.2.1.	Termodin	Obligatory	PPF Sarajevo
Technological operations	7	4.	4.2.		Tehn. oper	Obligatory	TF Banja Luka
Technological operations In the food industry	6	4.	4.2.		Tehn. oper	Obligatory	PPF Sarajevo
Technological operations In food technology	5	4.	4.2.		Tehn. oper	Obligatory	TF Banja Luka
Heat and diffusion operations	7	4.	4.2.	4.2.1.	Tehn. oper	Obligatory	TF Tuzla
Heat and diffusion process engineering	7	4.	4.2.	4.2.1.	Termodin	Obligatory	TF Zvornik
Mechanical process engineering	7	4.	4.2.		Inžinj-Proces	Obligatory	TF Zvornik

4. Food engineering and technology

Subject title	ECTS	Area	Field	Brnch	Aux.Code	Oblig./Elect.	Faculty
Process and plant design	7	4.	4.3.		Tehn projekt	Obligatory	TF Zvornik
Technology design	5	4.	4.3.		Tehn projekt	Obligatory	BTF Bihać
Technology design with introduction to construction	6	4.	4.3.		Tehn projekt	Obligatory	TF Tuzla
Practical work in the industry	6	6.			Praksa	Obligatory	TF Zvornik
Practical work	0	6.			Praksa	Obligatory	TF Banja Luka
Practical work	0	6.			Praksa	Obligatory	TF Tuzla
Practical work	3	6.			Praksa	Obligatory	PPF Sarajevo
Practical work	5	6.			Praksa	Obligatory	BTF Bihać
Practical work	6	6.			Praksa	Obligatory	TF Zvornik
Graduation thesis	6	6.			Završni rad	Obligatory	TF Banja Luka
Graduation thesis	8	6.			Završni rad	Obligatory	TF Zvornik
Final thesis - bachelor	6	6.			Završni rad	Obligatory	PPF Sarajevo
Final thesis	6	6.			Završni rad	Obligatory	BTF Bihać
Final thesis	10	6.			Završni rad	Obligatory	TF Tuzla

Conclusions

- The programmes of study analysed here include a certain level of harmonisation in terms of subjects within individual groups analysed (Fundamental sciences; Food chemistry and nutrition; Food safety and microbiology; Environment; Food engineering and technology)
- A comparison of programmes of study with the IUFoST recommendations shows that there is room for improvement in terms of quality and harmonisation of the food technology programmes analysed within this project

Thank you for your attention

