

List of required and elective courses and modules with class hours and ECTS credits

1. GENERAL INFORMATION ON THE STUDY PROGRAMME			
1.1. Name of the study programme	Biology and Chemistry Education		
1.2. Provider of the study programme	Faculty of Science, University of Zagreb (hereinafter: PMF)		
1.3. Partner institutions			
1.4. Type of study programme	Vocational study programme <input type="checkbox"/>	University study programme <input checked="" type="checkbox"/>	
1.5. Level of study programme	Undergraduate <input checked="" type="checkbox"/>	Graduate <input type="checkbox"/>	Integrated <input type="checkbox"/>
1.6. Delivery mode	Traditional <input checked="" type="checkbox"/>	Mixed (traditional + online) <input type="checkbox"/>	Online in entirety <input type="checkbox"/>
1.6.1. Is it a?	<input checked="" type="checkbox"/> single major <input type="checkbox"/> double major <input type="checkbox"/> interdisciplinary study programme <input type="checkbox"/> multidisciplinary study programme <input type="checkbox"/> developing programme <input type="checkbox"/> joint study programme		
1.7. Academic/vocational degree awarded on completion of the study programme	Bachelor in Biology and Chemistry Education (univ. bacc. educ. biol. et chem.)		
1.8. Scientific/artistic field/area of the proposed study programme	Natural science / biology and chemistry		

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LIST OF REQUIRED COURSES										
Year of study: 1. year										
Semester: 1. semester										
MODULE	COURSE	COURSE TEACHER	1. semester	L	S	E	e-learning	ECTS	Required/ elective	
	Cell biology	D. Pavoković		30	0	30	0	5	required	
	ELECTIVE COURSE – BIOLOGY			15-30	0	30	0	8-10	required	
	General chemistry 1	D. Mrvoš-Sermek		30	15	0	0	4	required	
	General chemistry laboratory 1	D. Mrvoš-Sermek		0	0	45	0	3	required	
	Mathematics 1	D. Ilišević, M. Hanzer		30	0	30	0	4	required	
	Physics 1	D. Paar		30	0	30	0	4	required	
	Physical education 1*	K. Fučkar Reichel, J. Vulić		0	0	30	0		required	

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LIST OF ELECTIVE COURSES - BIOLOGY										
Year of study: 1. year										
Semester: 1. semester										
MODULE	COURSE	COURSE TEACHER	1. semester	L	S	E	e-learning	ECTS	Required/ elective	
	Fundamentals of human anatomy and histology	R. Gračan, D. Sirovina		30	0	30	0	5	elective	
	Animal structure and function	G. Klobučar, I. Maguire		30	0	30	0	5	elective	
	Plant structure and function	G. Rusak, I. Šola, D. Hruševar		30	0	30	0	5	elective	
	Protista and fungi	P. Žutinić, R. Matoničkin Kepčija, M. Ježić		15	0	30	0	3	elective	

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LIST OF REQUIRED COURSES									
Year of study: 1. year									
Semester: 2. semester									
MODULE	COURSE	COURSE TEACHER	2. semester	L	S	E	e-learning	ECTS	Required/ elective
	Genetics	M. Pavlica		30	0	15	0	5	required
	ELECTIVE COURSE – BIOLOGY			45-60	0	60	0	8-10	required
	General chemistry 2	D. Mrvoš-Sermek		30	15	0	0	4	required
	General chemistry laboratory 2	D. Mrvoš-Sermek		0	0	45	0	3	required
	Mathematics 2	D. Ilišević, M. Hanzer		30	0	30	0	4	required
	Physics 2	D. Paar		30	0	30	0	4	required
	ELECTIVE COURSE – TEACHING AND LEARNING			15-30	0-15	0	0	2	required
	Physical education 2*	K. Fučkar Reichel, J. Vulić		0	0	30	0		required

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LIST OF ELECTIVE COURSES - BIOLOGY									
Year of study: 1. year									
Semester: 2. semester									
MODULE	COURSE	COURSE TEACHER	1. semester	L	S	E	e-learning	ECTS	Required/ elective
	Fundamentals of human anatomy and histology	R. Gračan, D. Sirovina		30	0	30	0	5	elective
	Animal structure and function	G. Klobučar, I. Maguire		30	0	30	0	5	elective
	Plant structure and function	G. Rusak, I. Šola, D. Hruševar		30	0	30	0	5	elective
	Protista and fungi	P. Žutinić, R. Matoničkin Kepčija, M. Ježić		15	0	30	0	3	elective

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LIST OF ELECTIVE COURSES - TEACHING AND LEARNING									
Year of study: 1. year									
Semester: 2. semester									
MODULE	COURSE	COURSE TEACHER	2. semester	L	S	E	e-learning	ECTS	Required/ elective
	Abuse and risk behavior prevention	T. Ljubin Golub		15	15	0	0	2	elective
	Educational communication	N. Maras		15	15	0	0	2	elective
	Extracurricular activities in biology	D. Sirovina		15	15	0	0	2	elective
	Connecting biological knowledge	I. Radanović, M. Sertić Perić		15	15	0	0	2	elective
	Stress management	T. Ljubin Golub		30	0	0	0	2	elective

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LIST OF REQUIRED COURSES									
Year of study: 2. year									
Semester: 3. semester									
MODULE	COURSE	COURSE TEACHER	3. semester	L	S	E	e-learning	ECTS	Required/elective
	Invertebrates	R. Matoničkin Kepčija		30	0	30	0	4	required
	Fundamentals of microbiology	M. Čurković Perica, M. Šeruga Musić		30	0	30	0	4	required
	ELECTIVE COURSES - BIOLOGY			15	0-15	0-15	0	2	required
	Analytical chemistry	T. Jednačak		45	15	0	0	5	required
	Organic chemistry 1	I. Biljan		45	15	0	0	5	required
	Physical chemistry 1	J. Požar		30	15	0	0	4	required
	Basic analytical chemistry laboratory	T. Jednačak		0	0	45	0	3	required
	Basics of general and developmental psychology	T. Ljubin Golub, D. Rován		30	15	0	0	3	required
	Physical education 3*	K. Fučkar Reichel, J. Vulić		0	0	30	0		required

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LIST OF ELECTIVE COURSES - BIOLOGY									
Year of study: 2. year									
Semester: 3. semester									
MODULE	COURSE	COURSE TEACHER	3. semester	L	S	E	e-learning	ECTS	Required/elective
	Introduction to human sexuality	A. Štulhofer		15	15	0	0	2	elective
	Sustainable development in science teaching	M. Sertić Perić		15	15	0	0	2	elective
	Ecology of birds in biology classes	Z. Marčić		15	0	15	0	2	elective
	School vivarium	I. Ternjejić		15	15	0	0	2	elective

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LIST OF REQUIRED COURSES										
Year of study: 2. year										
Semester: 4. semester										
MODULE	COURSE	COURSE TEACHER	4. semester	L	S	E	e-learning	ECTS	Required/elective	
	Fundamentals of evolution and ecology	G. Kovačević, I. Ternjej, S. Essert		30	0	30	0	3	required	
	Basic biology teaching skills	I. Radanović, M. Sertić Perić, D. Sirovina		30	30	30	0	5	required	
	Field course 1	P. Žutinić, R. Matoničkin Kepčija, M. Ježić		0	0	120	0	4	required	
	Physical chemistry 2	T. Begović		60	30	0	0	7	required	
	ELECTIVE PHYSICAL CHEMISTRY LABORATORY			0	0	30	0	2	required	
	Organic chemistry 2	V. Petrović Peroković		45	15	0	0	5	required	
	Educational psychology	T. Ljubin Golub, D. Rován		30	0	30	0	4	required	
	Physical education 4*	K. Fučkar Reichel, J. Vulić		0	0	30	0		required	

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LIST OF ELECTIVE COURSES – PHYSICAL CHEMISTRY LABORATORY										
Year of study: 2. year										
Semester: 4. semester										
MODULE	COURSE	COURSE TEACHER	4. semester	L	S	E	e-learning	ECTS	Required/elective	
	Basic physical chemistry laboratory 1	D. Kovačević		0	0	30	0	2	elective	
	Basic physical chemistry laboratory 2	T. Begović		0	0	30	0	2	elective	

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LIST OF REQUIRED COURSES										
Year of study: 3. year										
Semester: 5. semester										
MODULE	COURSE	COURSE TEACHER	5. semester	L	S	E	e-learning	ECTS	Required/ elective	
	Plant physiology	S. Radić Brkanac		30	0	30	0	5	required	
	Human physiology	V. Benković, D. Đikić		30	0	30	0	5	required	
	Health care	V. Benković, D. Đikić		15	15	0	0	2	required	
	Biochemistry of biological macromolecules	J. Rokov Plavec		45	15	0	0	5	required	
	Inorganic chemistry	Ž. Soldin		45	15	0	0	5	required	
	Basic organic chemistry laboratory	I. Biljan		0	0	45	0	3	required	
	Basic biochemistry laboratory	M. Dulić, M. Močibob		0	0	30	0	2	required	
	ELECTIVE COURSES - CHEMISTRY			15-30	0-30	0	0	3	required	

LIST OF ELECTIVE COURSES - CHEMISTRY										
Year of study: 3. year										
Semester: 5. semester										
MODULE	COURSE	COURSE TEACHER	5. semester	L	S	E	e-learning	ECTS	Required/ elective	
	Environmental chemistry	T. Begović		30	15	0	0	3	elective	
	History and philosophy of chemistry	V. Stilić		30	0	0	0	3	elective	
	Practical analytical chemistry	I. Juranović Cindrić		15	30	0	0	3	elective	
	Chemical analysis of the environment	N. Galić, P. Novak, S. Rončević		30	15	0	0	3	elective	

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LIST OF REQUIRED COURSES									
Year of study: 3. year									
Semester: 6. semester									
MODULE	COURSE	COURSE TEACHER	5. semester	L	S	E	e-learning	ECTS	Required /elective
	Vertebrates	P. Mustafić		30	0	30	0	4	required
	Plantae	Z. Liber		30	0	30	0	4	required
	Field course 2	Z. Liber, P. Mustafić		0	0	120	0	4	required
	Teaching science in Nature classes	I. Radanović, D. Mrvoš-Sermek, M. Planinić		30	15	30	0	4	required
	Fundamentals of metabolism	A. Maršavelski		30	15	0	0	4	required
	ELECTIVE INORGANIC CHEMISTRY LABORATORY			0	0	45	0	3	required
	Basic laboratory in inorganic chemistry	M. Rubčić, Ž. Soldin		0	0	45	0	3	required
	Introduction to methodology of teaching chemistry	N. Judaš		30	15	0	0	4	required
	Final thesis							3	required

LIST OF ELECTIVE COURSES – INORGANIC CHEMISTRY LABORATORY									
Year of study: 3. year									
Semester: 6. semester									
MODULE	COURSE	COURSE TEACHER	4. semester	L	S	E	e-learning	ECTS	Required/ elective
	Basic inorganic chemistry laboratory 1	M. Rubčić, Ž. Soldin		0	0	45	0	3	elective
	Basic inorganic chemistry laboratory 2	M. Rubčić, Ž. Soldin		0	0	45	0	3	elective