

**NEW integrated undergraduate and graduate university study programme
Biology and Chemistry Education**

COURSE STATUS	COURSE CODE	COURSE NAME	TOTAL HOURS				ECTS
			L	S	E	F	
I semester							
required	171096	Cell Biology	2	0	3	0	6
	171096	General Zoology	2	0	2	0	4
	171098	General Chemistry	2	1	0	0	4
	171099	General Chemistry Laboratory 1	0	0	3	0	3
	171100	Mathematics 1	2	1	0	0	4
	171101	Physics 1	2	2	0	0	5
	171102	Psychology of Learning and Teaching	2	2	0	0	4
	38079	Physical training and health education 1*	0	0	2	0	
Required courses total:			12	6	8	0	30

*Obligatory course in accordance to the Statute of the University of Zagreb, it doesn't contribute to total hours or ECTS credits

COURSE STATUS	COURSE CODE	COURSE NAME	TOTAL HOURS				ECTS
			L	S	E	F	
II semester							
required	171103	Genetics	2	0	2	0	5
	171104	Fundamentals of Histology and Embryology	2	0	2	0	4
	171105	Morphology and Anatomy of Plants	2	0	2	0	4
	171106	General Chemistry	2	1	0	0	4
	171107	General Chemistry Laboratory 2	0	0	3	0	3
	171108	Mathematics 2	2	2	0	0	5
	171109	Physics 2	2	2	0	0	5
	38080	Physical training and health education 2*	0	0	2	0	
Required courses total:			12	5	9	0	30

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COURSE STATUS	COURSE CODE	COURSE NAME	TOTAL HOURS				ECTS
			L	S	E	F	
III semester							
required	183951	Algae and Fungi	2	0	2	0	4
	183952	Analytical Chemistry 1	2	1	0	0	4
	183953	Basic Analytical Chemistry Laboratory	0	0	3	0	3
	183954	Physical Chemistry 1	3	2	0	0	6
	183955	Organic Chemistry 1	3	1	0	0	5
	183956	Pedagogy	2	2	0	0	5
	40849	Physical training and health education 3*	0	0	2	0	
	Required courses total:			12	6	5	0
elective		Elective courses – Teaching 1					
	170112	Introduction to Human Sexuality	2	2	0	0	4
	47321	Spoken and written expression of teachers	2	2	0	0	4
	183963	Argumentation and Public Speaking	1	1	0	0	4
	75090	Extracullicular activities in biology	1	2	0	0	3
		Elective course from other study programs**					3
	Elective courses total:			0-2	1-2	0-1	0

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** If all of the prerequisite requirements are completed it is possible to choose Elective course – teaching from other study programs at the Faculty of Science as well as courses related to work in school (Faculty of Philosophy, Faculty of Teacher Education, Centre for Croatian Studies, Faculty of Education and Rehabilitation Sciences).

COURSE STATUS	COURSE CODE	COURSE NAME	TOTAL HOURS				ECTS
			L	S	E	F	
IV semester							
required	183957	Fundamentals of Evolution	2	1	1	0	5
	183958	Fundamentals of Microbiology	2	0	2	0	4
	183959	Analytical Chemistry 2	2	1	0	0	4
	183960	Physical Chemistry 2	4	2	0	0	7
	183961	Basic Physical Chemistry Laboratory	0	0	2	0	2
	183962	Organic Chemistry 2	3	1	0	0	5
	40850	Physical training and health education 4*	0	0	2	0	

		Required courses total:	13	5	5	0	27
elective		Elective courses – Teaching 2					
	47318	First aid	2	0	2	0	4
	47320	Rhetorics and culture of speech of teachers	2	0	2	0	4
	63749	Communication in teaching	2	2	0	0	4
	83842	Bird ecology in biology teaching	1	1	1	0	4
	185747	Teaching biology outside the classroom	1	0	2	0	3
		Elective course from other study programs**					3
		Elective courses total:	1-2	0-2	0-2	0	3-4

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COURSE STATUS	COURSE CODE	COURSE NAME	TOTAL HOURS				ECTS
			L	S	E	F	
V semester							
required	196119	Fundamentals of Ecology	3	0	2	0	6
	196120	Invertebrates	2	0	2	0	4
	196121	Inorganic Chemistry 1	2	1	0	0	4
	196122	Biochemistry 1	3	1	0	0	5
	196123	Basic Biochemistry Laboratory	0	0	2	0	2
	196124	Basic Organic Chemistry Laboratory	0	0	3	0	3
	196125	Didactics	2	2	0	0	5
		Required courses total:	12	4	9	0	29

COURSE STATUS	COURSE CODE	COURSE NAME	TOTAL HOURS				ECTS
			L	S	E	F	
VI semester							
required	196126	Vertebrates	2	0	2	0	4
	196127	Fundamentals of Human Anatomy	1	0	1	0	3
	196128	Molecular Biology and Biotechnology	1	1	0	0	3
	196129	Phylogeny and Systematics of Plants	2	0	2	0	4
	196130	Inorganic Chemistry 2	2	1	0	0	4
	196131	Biochemistry 2	2	1	0	0	3
	196132	Basic Inorganic Chemistry Laboratory	0	0	3	0	3
	196133	Field Course in Biodiversity of Invertebrates and Protists	0	0	0	8	4
Required courses total:			10	3	8	8	28
elective	Elective courses – Biology 1:						
	196134	Vegetation of Croatia	2	0	0	0	3
	196135	Hominid Evolution	1	1	0	0	3
	196136	Research Assignments in Biology Teaching	1	1	0	0	3
	196137	Experience-based Learning in Microbiology Teaching	1	1	0	0	3
	Elective courses total:			1-2	0-1	0-1	0

COURSE STATUS	COURSE CODE	COURSE NAME	TOTAL HOURS				ECTS
			L	S	E	F	
VII semester							
required		Plant Physiology	2	0	2	0	5
		Biogeography	2	0	0	0	3
		Advanced Laboratory of Chemistry	0	0	4	0	4
		Statistics	2	2	0	0	5
		Human Physiology	2	0	3	0	7
	Required courses total:			8	2	9	0
elective	Elective courses – Chemistry 1						

	Mineralogy	2	1	0	0	3
	Environmental Chemistry	2	1	0	0	3
	Selected Topics in Chemistry	2	1	0	0	3
	History and philosophy of chemistry	2	0	0	0	3
	Applied analytical chemistry	1	2	0	0	4
	Rates and equilibria of chemical reactions	1	2	0	0	4
	Structure and Dynamics of Molecular systems	1	2	0	0	4
	Elective courses total:	1-2	0-2	0	0	3-4

COURSE STATUS	COURSE CODE	COURSE NAME	TOTAL HOURS				ECTS
			L	S	E	F	
VIII semester							
required		Methodology of Chemistry Teaching 1	2	2	0	0	6
		Methodology of Chemistry Teaching - Laboratory course 1	0	0	4	0	5
		Basic skills of teaching biology	1	0	1	0	3
		Health Education	1	1	0	0	3
		Field Course in Botany and Vertebrates	0	0	0	8	4
		Required courses total:	4	3	5	8	21
elective		Elective course – Biology 2:					
		Horticulture and School Gardens	1	1	1	0	4
		Croatian Flora	2	1	0	0	4
		Algae and Student Projects	2	1	0	0	4
		Marine Biology in Biology Teaching	1	1	1	0	4
		Malacology and Astacology in Teaching Biology	2	1	0	0	4
		Additional chapters in microbiology	2	1	0	0	4
		Immunity, Diseases and Global Health	2	1	0	0	4
		Entomology in Teaching Biology	1	0	2	0	4
		Workshops in Cell Biology and Genetics	0	0	3	0	4
	Elective course – Chemistry 2						

		Modern biochemical research and its applications	1	2	0	0	4
		Basic physical organic chemistry	2	1	0	0	4
		Fundamentals of natural product chemistry	1	1	1	0	4
		Fundamentals of crystal chemistry and solid state chemistry	1	1	1	0	4
		Organometallic Compounds and their Application in Catalysis	1	2	0	0	4
		Integrated chemistry 1	2	1	0	0	5
		Elective course Biology/Chemistry *					4
		Elective courses total:	2-6	2-6	0-6	0	12

* courses offered as Elective course - Biology 2 and Elective course Chemistry 2

COURSE STATUS	COURSE CODE	COURSE NAME	TOTAL HOURS				ECTS
			L	S	E	F	
IX semester							
required		Teaching Methods in Biology	2	3	2	0	8
		Methodology of Chemistry Teaching 2	2	2	0	0	6
		Methodology of Chemistry Teaching - Laboratory Course 2	0	0	4	0	5
		Diploma thesis with seminar work	0	2	0	0	7
		Required courses total:	4	7	6	0	26
elective		Elective courses Biology/Chemistry/Teaching:					
		Plants in the Phytotherapy	2	0	1	0	4
		Practical Work in Teaching Botany	1	0	2	0	4
		Protection of Nature	2	1	0	0	4
		Applied Ecotoxicology in Teaching	1	1	1	0	4
		Experimental Plant Physiology in Teaching	0	1	2	0	4
		Environment and Health	1	1	1	0	4
		Experiments in Animal Biology	1	1	1	0	4
		Projects for advancement of education	1	2	0	0	4
		Research in Ecology for students	1	1	1	0	4
		Applied analytical chemistry	1	2	0	0	4
	Rates and equilibria of chemical reactions	1	2	0	0	4	

		Structure and Dynamics of Molecular systems	1	2	0	0	4
		Integrated chemistry 2	2	1	0	0	5
		Argumentation and Public Speaking	1	1	0	0	4
		Sustainable development in teaching natural sciences	2	2	0	0	4
		School Vivarium	1	1	1	0	4
		Methodics of working with special needs students	2	2	0	0	4
		Elective courses total:	0-2	0-2	0-2	0	4

COURSE STATUS	COURSE CODE	COURSE NAME	TOTAL HOURS				ECTS
			L	S	E	F	
X semester							
required		Teaching Practice in Biology	0	1	5	0	6
		Methodology of Chemistry Teaching (Pedagogical Practice)	0	1	3	0	4
		Field Course in Ecology	0	0	0	8	4
		Diploma thesis with seminar work	0	0	6	0	16
		Required courses total:	0	8	8	8	30