



University of Hradec Králové
Faculty of Science

COURSE CATALOGUE



University of Hradec Králové
Faculty of Science

The Faculty of Science UHK (FoS UHK) was established in 2010. FoS UHK has over 600 students of biology, chemistry, informatics, mathematics, physics, toxicology and science teaching. The faculty is growing now more than ever, residing in the new modern university campus.

FoS UHK is the youngest faculty of the University of Hradec Králové which consists of **5 departments**:

- Department of Applied Cybernetics
- Department of Biology
- Department of Chemistry
- Department of Mathematics
- Department of Physics

We offer studies at all levels: Bachelor, Master and Ph.D.

INTERNATIONAL STUDENTS

International students can choose their courses taught in English from this Course catalogue as well as from other faculties of UHK, but there should be an overwhelming majority of courses from the Faculty of Science (at least 75 %). When seeking for scholarship students can make use of various international programs including our vast range of Erasmus+ partners and other cooperations.

MODERN FACILITIES

Faculty resides in modern campus that includes laboratories, library, buffets, locker rooms and student lounges. The campus is situated within walking distance of the city centre and other university buildings.

Modern university in the heart of Europe



ACCOMMODATION

All international students are provided with accommodation at the university dormitory. The accommodation costs approx. €120/month.



ABOUT THE UNIVERSITY OF HRADEC KRÁLOVÉ

The University of Hradec Králové is a public university (est. 1959) and provides high-quality education to almost 7,000 students. The UHK consists of 4 faculties: Faculty of Education, Faculty of Informatics and Management, Philosophical faculty and Faculty of Science. There

are several student organizations functioning at the UHK, including ESN Buddy System.

THE CITY OF HRADEC KRÁLOVÉ

Hradec Králové is located 100 km east from capital city, Prague. This city of 100,000 inhabitants is famous for its many parks and greenery as well as its historical and urban centre, social life and remarkable scenery at the confluence of Labe and Orlice rivers.

CONTACTS

For further information contact our International Office.

Please note that the course offer may change.

International Office

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+ 420 493332817



www.uhk.cz



Bachelor programs

BIOLOGY

Course title	Abbreviation*	Type**	Semester	ECTS credits
Anatomy and Morphology of Animals	KBI/BAMZI	L	W	3
Basic Ethology	KBI/BZAET	L	W	3
Basic Toxicology and Ecotoxicology	KBI/BZTOE	L+P	W	4
Basics of Cell Biology	KBI/BZABB	L+P	W	5
Evolutionary Biology	KBI/BEVBI	L	W	3
Basics of Geology	KBI/BZAGE	L+P	W	4
General Ecology	KBI/BOBEK	L+P	W	4
Human Anatomy	KBI/BANCL	L+P	W	4
Microbiology	KBI/BMIBI	L+P	W	4
Molecular Biology	KBI/BMOBI	L	W	3
Phylogeny and System of Non-vasculars	KBI/BFSSO	L+P	W	5
Phylogeny and System of Vascular Plants	KBI/BFSVR	L+P	W	5
Phylogeny and System of Chordates	KBI/BFSST	L+P	W	5
Plant Physiology	KBI/BFYRO	L+P	W	5
Principles of Terraristics	KBI/BZTER	S	W	3
Animal Ecology	KBI/BEKZI	L+P	S	4
Comparative Animal Physiology	KBI/BSRFZ	L+P	S	5
Genetics	KBI/BGENE	L+P	S	4
Botanical Outdoor Exercises	KBI/BBOTC	P	S	3
Geological Outdoor Exercises	KBI/BGETC	P	S	2
Zoological Outdoor Exercises	KBI/BZCVT	P	S	3
Phylogeny and System of Invertebrates	KBI/BFSBE	L+P	S	5
Plant Anatomy and Morphology	KBI/BAMRO	L+P	S	5
Plant Ecology	KBI/BEKRO	L+P	S	5

* more information can be found on:

https://stag.uhk.cz/portal/studium/prohlizeni.html?pc_lang=en

** Lecture (L), Seminar (S), Practice (P), Laboratory Practice (LP)

CHEMISTRY

Course title	Abbreviation*	Type**	Semester	ECTS credits
Analytical Chemistry 1	KCH/3ANA1	L+S	W	4
Bachelor Thesis 1 in Chemistry	KCH/3BAP1	LP	W	5
Chemical software and databases	KMA/3CSDA	P	W	3
General and Inorganic Chemistry 1	KCH/3OAN1	L+S	W	4
Fundamentals in Medicinal Chemistry	KCH/3FACH	L	W	6
Fundamentals in Molecular Modelling	KCH/3MOMO	L	W	4
Fundamentals in Toxicology and Pharmacology	KCH/3TOFA	L	W	5
History of Chemistry	KCH/3HICH	L	W	2
Laboratory Practice in Analytical Chemistry 1	KCH/3LAN1	LP	W	2
Laboratory Practice in Instrumental Methods	KCH/3LINS	LP	W	3
Laboratory Practice in Organic Chemistry 2	KCH/3LOR2	LP	W	2
Laboratory Practice in Physical Chemistry	KCH/3LFCH	LP	W	2
Laboratory Technique	KCH/3LABT	LP	W	3
Methods for Structural Study of Organic Compounds	KCH/3MSOS	S	W	3
Organic Chemistry 2	KCH/3ORG2	L+S	W	7
Physical Chemistry	KCH/3FYCH	L+S	W	6
Practice in Fundamentals of Molecular Modelling	KCH/3CMOM	P	W	3
Toxicology and Analysis of Food	KCH/3TOAP	L	W	2
Toxicology of Plant and Animal Toxins	KCH/3TRZJ	L	W	5
Analytical Chemistry 2	KCH/3ANA2	L+S	S	7
Bachelor Thesis 2 in Chemistry	KCH/3BAP2	LP	S	10
Biochemistry	KCH/3BICH	L	S	6
Bioorganic Chemistry	KCH/3BIOR	L	S	6
Chemical and Biological Terrorism	KCH/3CHBT	L	S	2
General and Inorganic Chemistry 2	KCH/3OAN2	L	S	6

Laboratory Practice in Analytical Chemistry 2	KCH/3LAN2	LP	S	2
Laboratory Practice in Biochemistry	KCH/3LBCH	LP	S	2
Laboratory Practice in Bioorganic Chemistry	KMA/3LBIO	LP	S	2
Laboratory Practice in Inorganic Chemistry	KCH/3LANC	LP	S	2
Laboratory Practice in Organic Chemistry 1	KCH/3LOR1	LP	S	2
Organic Chemistry 1	KCH/3ORG1	L+S	S	4
Reaction Mechanisms in Organic Chemistry	KCH/3REME	L+S	S	5
Toxicology of Inorganic and Organic Compounds	KCH/3TAOS	L	S	5

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MATHEMATICS

Course title	Abbreviation*	Type**	Semester	ECTS credits
Algebra 1	KMA/BALG1	L+S	W	6
Geometry 1	KMA/BGEO1	L+S	W	4
Geometry 3	KMA/BGEO3	L+S	W	3
Introduction to Mathematics	KMA/BUSTM	S	W	2
Introduction to Topology	KMA/BZTOP	L+S	W	2
Mathematical Analysis 1	KMA/BANL1	L+S	W	5
Mathematical Analysis 3	KMA/BANL3	L+S	W	3
Mathematical Software	KMA/BMASW	S	W	1
Algebra 2	KMA/BALG2	L+S	S	5
Algebra 3	KMA/BALG3	L+S	S	4
Discrete Mathematics	KMA/BZAKO	L+S	S	2
Fundamentals of Probability and Statistics	KMA/BKKPS	S	S	2

Geometry 2	KMA/BGEO2	L+S	S	4
Geometry 4	KMA/BGEO4	L+S	S	3
Introduction to Didactics of Mathematics	KMA/BUDIM	S	S	4
Mathematical Analysis 2	KMA/BANL2	L+S	S	4
Typography of Mathematics Texts	KMA/BSTEX	S	S	2

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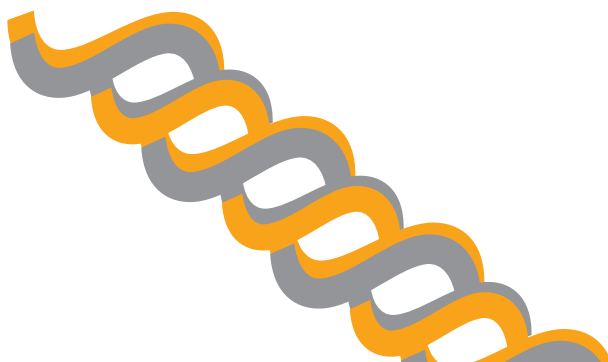
INFORMATICS

Course title	Abbreviation*	Type**	Semester	ECTS credits
Computer graphics	KKY/BPOGR	L+P	W	3
Cyber Security	KKY/BKYBE	L+P	W	3
Discrete Methods and Optimization	KKY/NDIMO	L+P	W	4
Programming of Robot Kits	KKY/NPRRS	P	W	2
Multimedia Systems	KKY/BMUSY	L+P	S	3
History of Computing Technology	KKY/NDEVT	L+P	S	4
Modeling and Simulation	KKY/NMOSI	L+P	S	4
Python Programming Language	KKY/NPJPY	L+P	S	4

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PHYSICS

Course title	Abbreviation*	Type**	Semester	ECTS credits
Automation and Measurement	KFY/3FAM	L+S	W	3
Biomedical Imaging Systems 1	KFY/3FBZS	L	W	2
Experiments in Modern Physics	KFY/3FEMF	L	W	3
Measurement of Physical Quantities	KFY/3FMFZ	S	W	3
Environmental and Health Monitoring Systems	KFY/3FMSSO	L+S	W	3
Physical Laboratory Practice 2	KFY/3FPR2	LP	W	4
Theoretical Mechanics 1	KFY/3FTM1	L+S	W	4
Fundamentals of Electronics	KFY/3FZEL	L+S	W	5
Physics - Particles and Fields	KFY/3FZFC	L+S	W	4
Physics - Mechanics	KFY/3FZFM	L+S	W	5
Physics - Electricity 2	KFY/3FZF2	L+S	W	5
Basics of Measuring Instruments	KFY/3FZMP	S	W	2
Biophysics	KFY/3FBIO	L+S	S	3
Physical Biomonitoring, Rad. Protection	KFY/3FBRO	L+S	S	3
Biomedical Imaging Systems 2	KFY/3FBZ2	L	S	2
Modeling and Simulation	KFY/3FMOS	L	S	4
Electronics Laboratory Practice	KFY/3FPE	LP	S	3
Physical Laboratory Practice 1	KFY/3FPR1	LP	S	3
Physical Laboratory Practice 3	KFY/3FPR3	LP	S	4
Theoretical Mechanics 2	KFY/3FTM2	L+S	S	3
Physics - Oscillations and Waves	KFY/3FZFK	L+S	S	4
Physics - Thermal	KFY/3FZFT	L+S	S	4
Physics - Electricity 1	KFY/3FZF1	L+S	S	3

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Master programs

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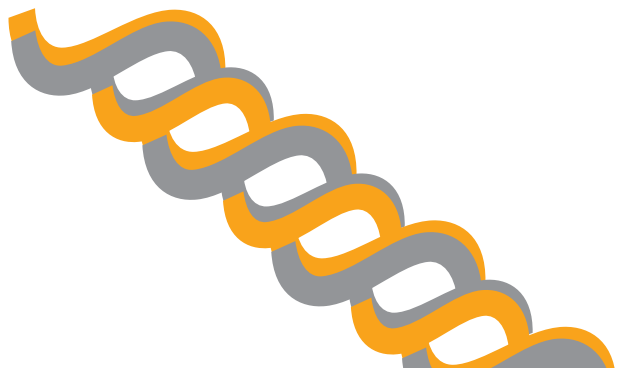
BIOLOGY

Course title	Abbreviation*	Type**	Semester	ECTS credits
Biomonitoring	KBI/NBIOM	L	W	4
Bryology and Lichenology	KBI/NBRLI	S	W	3
Developmental Biology	KBI/NDEBI	S	W	3
Entomology	KBI/NENTO	L+P	W	6
Mammaliology	KBI/NMAMA	L	W	3
Ornithology	KBI/NORNI	L	W	3
Parasitology	KBI/NPARA	L	W	3
Special Botanical Field Practice	KBI/NSBTC	P	W	3
Aquatic and Wetland Plants	KBI/NVMRO	P	W	4
Genomics and Proteomics	KBI/NGEPR	L	W	5
Methods of Molecular Biology	KBI/NMEMB	P	S	3
Ethology	KBI/NETOL	S	S	3
Food Safety	KBI/NBEPO	S	S	3
Forest Ecology	KBI/NEKLE	L+P	S	4
Genetically Modified Organisms	KBI/NGEMO	S	S	4
Natural Toxins	KBI/NPRTO	L	S	3
Phytogeography	KBI/NFYGE	S	S	4
Animal Morphology Practice	KBI/NCVMZ	P	S	3
Restoration Ecology	KBI/NEKOB	L	S	5
Zoological Methodology	KBI/NMEZP	P	S	3

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** Lecture (L), Seminar (S), Practice (P), Laboratory Practice (LP)



CHEMISTRY

Course title	Abbreviation*	Type**	Semester	ECTS credits
Advanced Inorganic and Bioinorganic Chemistry	KCH/2PANC	L	W	4
Advanced Medicinal Chemistry	KCH/2PFAC	L	W	5
Advanced Molecular Modelling	KCH/2PMOM	L	W	4
Advanced Organic Chemistry	KCH/2PORG	L+S	W	5
Advanced separation and spectral methods	KCH/2PSAS	L	W	5
Analysis of biomolecules 2	KCH/2ABI2	L	W	6
Applied Toxicology and Ecotoxicology	KCH/2APTE	L	W	5
Biochemical and Molecular Biology Methods	KCH/2BMBM	L	W	6
Bioinformatics and cheminformatics	KCH/2CHBI	L	W	6
Biostatistics	KCH/2BIOS	S	W	4
Chromatographic Methods	KCH/2CHRM	L	W	6
Diploma Thesis 1 in Chemistry	KCH/2DIP1	LP	W	10
Diploma Thesis 3 in Chemistry	KCH/2DIP3	LP	W	10
Heterocyclic Chemistry	KCH/2CHHE	L	W	2
Laboratory Practice in Advanced Biochemical Methods	KCH/2LBCH	LP	W	2
Laboratory Practice in Advanced Molecular Modelling	KCH/2CMOM	P	W	2
Laboratory Practice in Advanced Organic Chemistry	KCH/2LORG	LP	W	2
Laboratory Practice in Analysis of Biomolecules	KCH/2LABI	LP	W	2
Laboratory Practice in Biochemical and Molecular Biology Methods	KCH/2LBCH	LP	W	2
Laboratory Practice in NMR	KCH/2LNMR	LP	W	2
Laboratory Practice in Preparation of Synthetic Drugs	KCH/2LPSY	LP	W	2
Laboratory Practice in Sampling and Sample Preparation	KCH/2LOPV	LP	W	2
Molecular and Atomic Spectrometry	KCH/2MASP	L	W	6

Pathophysiology and Pathobiochemistry	KCH/2PAFB	L	W	3
Preparation of Synthetic Drugs	KCH/2PSYL	L	W	3
Toxicology of Nanoparticles	KCH/2TONA	L	W	3
Advanced Bioorganic Chemistry	KCH/2PBIO	L	S	6
Analysis of biomolecules 1	KCH/2ABI1	L	S	3
Diploma Thesis 2 in Chemistry	KCH/2DIP2	LP	S	10
Diploma Thesis 4 in Chemistry	KCH/2DIP4	LP	S	10
Ecotoxicological Bioassays	KCH/2EKOT	LP	S	2
Fundamentals of Biophysical Methods in Biochemistry	KCH/2ZBFM	L	S	2
Laboratory Practice in Advanced Bioorganic Chemistry	KCH/2LBIO	LP	S	2
Laboratory Practice in Spectral and Separation Methods	KCH/2LSSM	LP	S	2
Mass Spectroscopy	KCH/2HMSP	L	S	6
Stereochemistry	KCH/2STER	L	S	4
Toxicology of Natural and Bioactive Compounds	KCH/2TPBS	L	S	5

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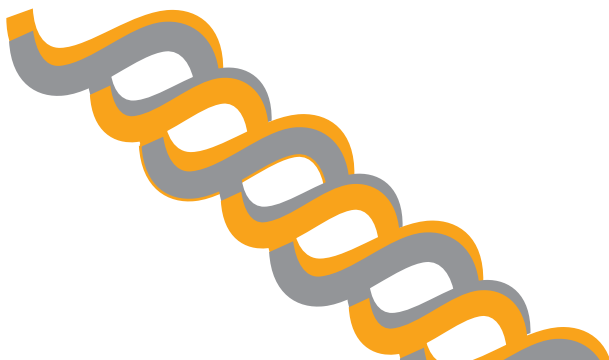
MATHEMATICS

Course title	Abbreviation*	Type**	Semester	ECTS credits
Applied Statistics	KMA/NASTA	P	W	3
Didactics of Mathematics 1	KMA/NDMA1	L+P	W	2
Didactics of Mathematics 3	KMA/NDMA3	L+P	W	4
Financial Mathematics	KMA/NFINM	P	W	2
Fundamentals of Difference Equations	KMA/NDIFR	L+P	W	2
Fundamentals of Probability	KMA/NPRAV	L+P	W	2
Graph Theory	KMA/NTEOG	L+P	W	3
History of Mathematics	KMA/NDEJM	L	W	2

Introduction to Algebraic Topology	KMA/NUATO	L	W	2
Introduction to Theory of Differential Equations	KMA/NUTDR	L+P	W	5
Mathematical Analysis-Selected Chapters	KMA/NVKAN	L	W	2
Matrix Algebra	KMA/NMATA	L	W	2
Differential geometry of curves and surfaces	KMA/NDIGE	L	W	2
Methods of Solving Mathematical Problems 1	KMA/NMER1	L	W	2
Symplectic geometry	KMA/NSYGE	L	W	2
Introduction to global analysis	KMA/NGLAN	P	S	2
Introduction to representation theory	KMA/NTERE	L	S	2
Didactics of Mathematics 2	KMA/NDMA2	L+P	S	2
Educational Software	KMA/NDISW	P	S	2
Introduction to Algebraic Geometry	KMA/NUAGE	P	S	2
Introduction to Measure Theory	KMA/NTEOM	P	S	2
Methods of Solving Mathematical Problems 2	KMA/NMER2	L	S	2
Selected Topics in Algebra	KMA/NUTEC	L	S	2
Set Theory	KMA/NTMNO	L	S	2
Solid Geometry Modelling	KMA/NTMOD	L	S	2

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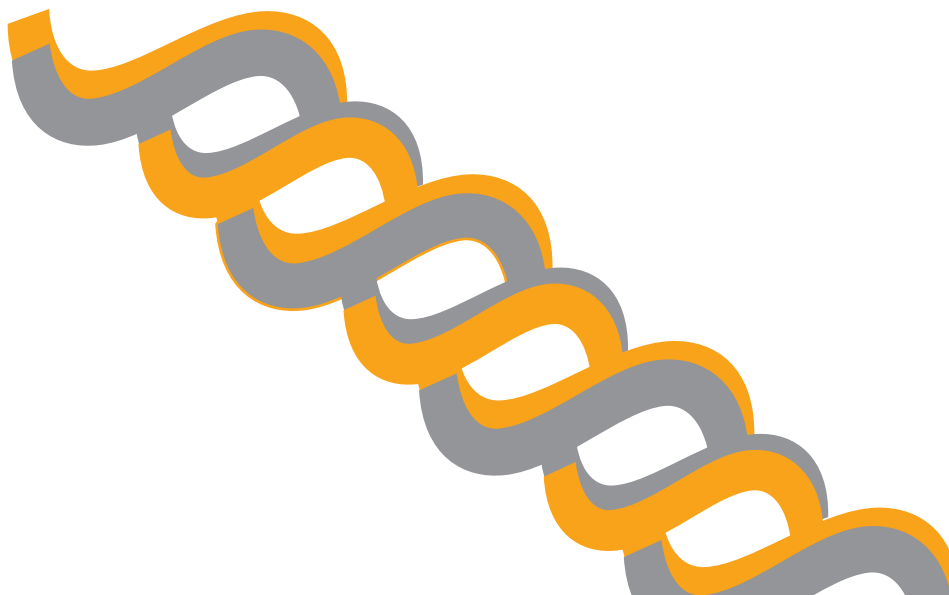
PHYSICS

Course title	Abbreviation*	Type**	Semester	ECTS credits
Astrophysics and Geophysics	KFY/NASTR	L	W	3
Condensed Matter Physics	KFY/NFPK	L+S	W	5
Fundamental Experiments and Historical Measurements	KFY/NFEHM	L+S	W	3
Laboratory Measurements and Modelling 1	KFY/NLMM1	LP	W	3
Physical Principles of Technology 1	KFY/NFZT	L+S	W	3
Theory of Relativity	KFY/NTR	L	W	3
Laboratory Measurements and Modelling 2	KFY/NLMM2	LP	S	3
Quantum Physics	KFY/NKF	L+S	S	5
Theory of Electromagnetic Field	KFY/NTEP	L+S	S	4

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Study in
modern building



Learn from
leading experts

Explore
historical city
centre



Relax in
beautiful parks



See you soon in
Hradec Králové!



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