

## The University of Hong Kong – Faculty of Science Course List 2020/21

### Important Notes:

1. Please note that the available course list is for reference only. The approval of courses is at the discretion of respective faculty. Actual enrolment is subject to the availability of courses, quota and class schedule.  
[The information could be changed without prior notice.]
  
2. Some courses may have special enrollment requirements (e.g. prerequisite). Please contact science@hku.hk if additional course information is required.

Course Level	Course Code	Course Title	Credits
UG	APAI1001	Artificial intelligence: foundation, philosophy and ethics	6
UG	BIOC1600	Perspectives in biochemistry	6
UG	BIOC2600	Basic biochemistry	6
UG	BIOC3601	Basic metabolism	6
UG	BIOC3604	Essential techniques in biochemistry and molecular biology	6
UG	BIOC3605	Sequence bioinformatics	6
UG	BIOC3606	Molecular medicine	6
UG	BIOC4610	Advanced biochemistry	6
UG	BIOC4612	Molecular biology of the gene	6
UG	BIOC4613	Advanced techniques in biochemistry & molecular biology	6
UG	BIOL1110	From molecules to cells	6
UG	BIOL1201	Introduction to food and nutrition	6
UG	BIOL1309	Evolutionary diversity	6
UG	BIOL2101	Principles of food chemistry	6
UG	BIOL2102	Biostatistics	6
UG	BIOL2103	Biological sciences laboratory course	6
UG	BIOL2220	Principles of biochemistry	6
UG	BIOL2306	Ecology and evolution	6
UG	BIOL2408	Green earth-plants and mankind	6
UG	BIOL2409	Biotechnology industry and entrepreneurship	6

Course Level	Course Code	Course Title	Credits
UG	BIOL3101	Animal behaviour	6
UG	BIOL3105	Animal physiology and environmental adaptation	6
UG	BIOL3109	Environmental microbiology	6
UG	BIOL3201	Food chemistry	6
UG	BIOL3202	Nutritional biochemistry	6
UG	BIOL3203	Food microbiology	6
UG	BIOL3204	Nutrition and the life cycle	6
UG	BIOL3205	Human physiology	6
UG	BIOL3207	Principles of toxicology	6
UG	BIOL3209	Food and nutrient analysis	6
UG	BIOL3211	Nutrigenomics	6
UG	BIOL3216	Food waste management	6
UG	BIOL3217	Food, environment and health	6
UG	BIOL3218	Food hygiene and quality control	6
UG	BIOL3301	Marine biology	6
UG	BIOL3302	Systematics and phylogenetics	6
UG	BIOL3303	Conservation biology	6
UG	BIOL3318	Experimental intertidal ecology	6
UG	BIOL3319	Tropical terrestrial ecology	6
UG	BIOL3328	Nearshore marine and estuarine ecology	6
UG	BIOL3401	Molecular biology	6
UG	BIOL3402	Cell biology and cell technology	6
UG	BIOL3403	Immunology	6
UG	BIOL3404	Protein structure and function	6
UG	BIOL3406	Reproduction and reproductive biotechnology	6
UG	BIOL3408	Genetics	6
UG	BIOL3419	Insect ecology: the little things that run the world	6
UG	BIOL3503	Endocrinology: human physiology II	6
UG	BIOL3506	Evolutionary biology	6
UG	BIOL3508	Microbial physiology and biotechnology	6
UG	BIOL3606	Diet and disease	6
UG	BIOL3608	Food commodities	6

Course Level	Course Code	Course Title	Credits
UG	BIOL4201	Public health nutrition	6
UG	BIOL4202	Nutrition and sports performance	6
UG	BIOL4205	Food technology	6
UG	BIOL4209	Functional foods	6
UG	BIOL4302	Environmental impact assessment	6
UG	BIOL4401	Medical microbiology and applied immunology	6
UG	BIOL4409	General virology	6
UG	BIOL4411	Plant and food biotechnology	6
UG	BIOL4415	Healthcare biotechnology	6
UG	BIOL4416	Stem cells and regenerative biology	6
UG	BIOL4417	'Omics' and systems biology	6
UG	BIOL4505	Oyster aquaculture	6
UG	CHEM1041	Foundations of chemistry	6
UG	CHEM1042	General chemistry I	6
UG	CHEM1043	General chemistry II	6
UG	CHEM1044	Mathematics in chemistry	6
UG	CHEM2241	Analytical chemistry I	6
UG	CHEM2341	Inorganic chemistry I	6
UG	CHEM2441	Organic chemistry I	6
UG	CHEM2442	Fundamentals of organic chemistry	6
UG	CHEM2541	Introductory physical chemistry	6
UG	CHEM3141	Environmental chemistry	6
UG	CHEM3142	Chemical process industries and analysis	6
UG	CHEM3143	Introduction to materials chemistry	6
UG	CHEM3241	Analytical chemistry II: chemical instrumentation	6
UG	CHEM3242	Food and water analysis	6
UG	CHEM3243	Introductory instrumental chemical analysis	6
UG	CHEM3341	Inorganic chemistry II	6
UG	CHEM3342	Bioinorganic chemistry	6
UG	CHEM3441	Organic chemistry II	6
UG	CHEM3442	Organic chemistry of biomolecules	6
UG	CHEM3443	Organic chemistry laboratory	6

Course Level	Course Code	Course Title	Credits
UG	CHEM3541	Physical chemistry: Introduction to quantum chemistry	6
UG	CHEM3542	Physical chemistry: statistical thermodynamics and kinetics theory	6
UG	CHEM3999	Directed studies in chemistry	6
UG	CHEM4142	Symmetry, group theory and applications	6
UG	CHEM4143	Interfacial science and technology	6
UG	CHEM4144	Advanced materials	6
UG	CHEM4145	Medicinal chemistry	6
UG	CHEM4147	Supramolecular chemistry	6
UG	CHEM4148	Frontiers in Modern Chemical Science	6
UG	CHEM4241	Modern chemical instrumentation and applications	6
UG	CHEM4242	Analytical chemistry	6
UG	CHEM4341	Advanced inorganic chemistry	6
UG	CHEM4342	Organometallic chemistry	6
UG	CHEM4441	Advanced organic chemistry	6
UG	CHEM4443	Integrated organic synthesis	6
UG	CHEM4444	Chemical biology	6
UG	CHEM4542	Computational chemistry	6
UG	CHEM4543	Advanced physical chemistry	6
UG	CHEM4999	Chemistry project	12
UG	EASC1020	Introduction to climate science	6
UG	EASC1401	Blue Planet	6
UG	EASC1402	Principles of geology	6
UG	EASC1403	Geological heritage of Hong Kong	6
UG	EASC1406	Introduction to the earth-life system	6
UG	EASC1407	Dinosaur Ecosystems	6
UG	EASC2401	Fluid/solid interactions in earth processes	6
UG	EASC2402	Field and laboratory methods	6
UG	EASC2404	Introduction to atmosphere and hydrosphere	6
UG	EASC2406	Geochemistry	6
UG	EASC2407	Mineralogy	6
UG	EASC2408	Planetary geology	6
UG	EASC2409	Regional field studies	6

Course Level	Course Code	Course Title	Credits
UG	EASC2410	Data analysis and modeling in earth sciences	6
UG	EASC3020	Global change: anthropogenic impacts	6
UG	EASC3402	Petrology	6
UG	EASC3403	Sedimentary environments	6
UG	EASC3404	Structural geology	6
UG	EASC3405	Environmental remote sensing	6
UG	EASC3408	Geophysics	6
UG	EASC3409	Igneous and metamorphic petrogenesis	6
UG	EASC3410	Hydrogeology	6
UG	EASC3412	Earth resources	6
UG	EASC3413	Engineering geology	6
UG	EASC3414	Soil and rock mechanics	6
UG	EASC3415	Meteorology	6
UG	EASC3417	Earth through time	6
UG	EASC3418	Coasts and coastal change	6
UG	EASC4403	Biogeochemical cycles	6
UG	EASC4406	Earth dynamics & global tectonics	6
UG	EASC4407	Regional geology	6
UG	ENTR2001	Professional and leadership development	6
UG	ENTR3001	Science-based innovation development	6
UG	ENTR3002	Customer analysis and strategic marketing	6
UG	ENVS1301	Environmental life science	6
UG	ENVS1401	Introduction to environmental science	6
UG	ENVS2001	Methods in environmental science	6
UG	ENVS2002	Environmental data analysis	6
UG	ENVS3004	Environment, society and economics	6
UG	ENVS3010	Sustainable energy and environment	6
UG	ENVS3020	Global change ecology	6
UG	ENVS3022	Environmental science field course	6
UG	ENVS3042	Pollution	6
UG	ENVS3202	Plant physiology and climate change	6
UG	ENVS3313	Environmental oceanography	6

Course Level	Course Code	Course Title	Credits
UG	ENVS3402	Qualitative data, social science methods and decision-making in environmental science	6
UG	MATH1009	Basic mathematics for business and economics	6
UG	MATH1011	University mathematics I	6
UG	MATH1013	University mathematics II	6
UG	MATH1821	Mathematical methods for actuarial science I	6
UG	MATH1851	Calculus and ordinary differential equations	6
UG	MATH1853	Linear algebra, probability and statistics	6
UG	MATH2012	Fundamental concepts of mathematics	6
UG	MATH2014	Multivariable calculus and linear algebra	6
UG	MATH2101	Linear algebra I	6
UG	MATH2102	Linear algebra II	6
UG	MATH2211	Multivariable calculus	6
UG	MATH2241	Introduction to mathematical analysis	6
UG	MATH2822	Mathematical methods for actuarial science II	6
UG	MATH3002	Mathematics seminar	6
UG	MATH3301	Algebra I	6
UG	MATH3304	Introduction to number theory	6
UG	MATH3401	Analysis I	6
UG	MATH3403	Functions of a complex variable	6
UG	MATH3405	Differential equations	6
UG	MATH3408	Computational methods and differential equations with applications	6
UG	MATH3600	Discrete mathematics	6
UG	MATH3601	Numerical analysis	6
UG	MATH3603	Probability theory	6
UG	MATH3901	Operations research I	6
UG	MATH3904	Introduction to optimization	6
UG	MATH3906	Financial calculus	6
UG	MATH3911	Game theory and strategy	6
UG	MATH4302	Algebra II	6
UG	MATH4402	Analysis II	6
UG	MATH4404	Functional analysis	6
UG	MATH4406	Introduction to partial differential equations	6

Course Level	Course Code	Course Title	Credits
UG	MATH4501	Geometry	6
UG	MATH4511	Introduction to differentiable manifolds	6
UG	MATH4602	Scientific computing	6
UG	MATH7101	Intermediate complex analysis	6
UG	MATH7202	Complex manifolds	6
UG	MATH7502	Topics in applied discrete mathematics	6
UG	MATH7503	Topics in mathematical programming and optimization	6
UG	MATH7505	Real analysis	6
UG	PHYS1055	How things work	6
UG	PHYS1056	Weather, climate and climate change	6
UG	PHYS1150	Problem solving in physics	6
UG	PHYS1240	Physics by inquiry	6
UG	PHYS1250	Fundamental physics	6
UG	PHYS1650	Nature of the universe	6
UG	PHYS2055	Introductory relativity	6
UG	PHYS2150	Methods in physics I	6
UG	PHYS2155	Methods in physics II	6
UG	PHYS2160	Introductory computational physics	6
UG	PHYS2250	Introductory mechanics	6
UG	PHYS2255	Introductory electricity and magnetism	6
UG	PHYS2261	Introductory heat and thermodynamics	6
UG	PHYS2265	Introductory quantum physics	6
UG	PHYS2650	Modern astronomy	6
UG	PHYS3150	Theoretical physics	6
UG	PHYS3151	Machine learning in physics	6
UG	PHYS3350	Classical mechanics	6
UG	PHYS3351	Quantum mechanics	6
UG	PHYS3450	Electromagnetism	6
UG	PHYS3550	Statistical mechanics & thermodynamics	6
UG	PHYS3650	Observational astronomy	6
UG	PHYS3653	Astrophysics	6
UG	PHYS3660	Astronomy laboratory	6

Course Level	Course Code	Course Title	Credits
UG	PHYS3750	Laser and spectroscopy	6
UG	PHYS3760	Physics laboratory	6
UG	PHYS3850	Physical Optics	6
UG	PHYS4151	Data analysis and modeling in physics	6
UG	PHYS4351	Advanced quantum mechanics	6
UG	PHYS4450	Advanced electromagnetism	6
UG	PHYS4550	Advanced statistical mechanics	6
UG	PHYS4551	Solid state physics	6
UG	PHYS4650	Stellar physics	6
UG	PHYS4653	Cosmology	6
UG	PHYS4654	General relativity	6
UG	PHYS4655	Interstellar medium	6
UG	PHYS4850	Particle physics	6
UG	PHYS7351	Graduate quantum mechanics	6
UG	PHYS7450	Graduate electromagnetism	6
UG	PHYS7550	Graduate statistical mechanics	6
UG	PHYS7750	Nanophysics	6
UG	SCNC1111	Scientific method and reasoning	6
UG	SCNC1112	Fundamentals of modern science	6
UG	SCNC3111	Frontiers of science honours seminar course	6
UG	STAT1005	Essential skills for undergraduates: foundations of data science	6
UG	STAT1015	Introduction to data science	6
UG	STAT1600	Statistics: ideas and concepts	6
UG	STAT1602	Business statistics	6
UG	STAT1603	Introductory statistics	6
UG	STAT2601	Probability and statistics I	6
UG	STAT2602	Probability and statistics II	6
UG	STAT2604	Introduction to R programming and elementary data analysis	6
UG	STAT2605	Demographic and socio-economic statistics	6
UG	STAT2901	Probability and statistics: foundations of actuarial science	6
UG	STAT2902	Financial mathematics	6
UG	STAT3600	Linear statistical analysis	6

Course Level	Course Code	Course Title	Credits
UG	STAT3602	Statistical inference	6
UG	STAT3603	Stochastic processes	6
UG	STAT3604	Design and analysis of experiments	6
UG	STAT3606	Business logistics	6
UG	STAT3608	Statistical genetics	6
UG	STAT3609	The statistics of investment risk	6
UG	STAT3610	Risk management and insurance	6
UG	STAT3612	Statistical machine learning	6
UG	STAT3613	Marketing engineering	6
UG	STAT3615	Practical mathematics for investment	6
UG	STAT3617	Sample survey methods	6
UG	STAT3618	Derivatives and risk management	6
UG	STAT3620	Modern nonparametric statistics	6
UG	STAT3621	Statistical data analysis	6
UG	STAT3622	Data visualization	6
UG	STAT3655	Survival analysis	6
UG	STAT3901	Life contingencies I	6
UG	STAT3902	Statistical models	6
UG	STAT3903	Stochastic models	6
UG	STAT3904	Corporate finance for actuarial science	6
UG	STAT3905	Introduction to financial derivatives	6
UG	STAT3906	Risk theory I	6
UG	STAT3907	Linear models and forecasting	6
UG	STAT3908	Credibility theory and loss distributions	6
UG	STAT3909	Life contingencies II	6
UG	STAT3910	Financial economics I	6
UG	STAT3911	Financial economics II	6
UG	STAT3951	Further topics in contingencies	6
UG	STAT3953	Fundamentals of actuarial practice	6
UG	STAT3956	Pension funds and pension mathematics	6
UG	STAT4601	Time-series analysis	6
UG	STAT4602	Multivariate data analysis	6

<b>Course Level</b>	<b>Course Code</b>	<b>Course Title</b>	<b>Credits</b>
UG	STAT4603	Current topics in risk management	6
UG	STAT4607	Credit risk analysis	6
UG	STAT4608	Market risk analysis	6
UG	STAT4609	Big data analytics	6
UG	STAT4902	Selected topics in actuarial science	6
UG	STAT4903	Actuarial techniques for general insurance	6
UG	STAT4904	Statistical learning for risk modelling	6
UG	STAT7609	Research methods in statistics	6
UG	STAT7610	Advanced probability	6
UG	STAT7611	Computational statistics	6
UG	STAT7614	Advanced statistical modelling	6
UG	STAT7615	Advanced quantitative risk management and finance	6