

Department of Natural Science Education University course structure and Teaching subject list 2023 Academic Year (Undergraduate Program)					
Course English name	Course Chinese name	Credits	Weekly Student Class Hours	Grade Semesters	Note
Graduation Credit Requirements : Compulsory 27 credits + Elective 43 credits + Flexibility Course 30 credits, Total 100 credits.					
◎Courses required by the department : 27 credits					
Calculus (I)	微積分(一)	3	3 Class Hours	1st grade Fall SEM	
General Chemistry (I)	普通化學(一)	3	3 Class Hours	1st grade Fall SEM	
General Chemistry Experiment (I)	普通化學實驗(一)	0.5	1 Class Hour	1st grade Fall SEM	
General Physics (I)	普通物理學(一)	3	3 Class Hours	1st grade Fall SEM	
General Physics Experiment (I)	普通物理學實驗(一)	0.5	1 Class Hour	1st grade Fall SEM	
General Biology (I)	普通生物學(一)	3	3 Class Hours	1st grade Fall SEM	
General Biology Experiment (I)	普通生物學實驗(一)	0.5	1 Class Hour	1st grade Fall SEM	
General Chemistry (II)	普通化學(二)	3	3 Class Hours	1st grade Spring SEM	
General Chemistry Experiment (II)	普通化學實驗(二)	0.5	1 Class Hour	1st grade Spring SEM	
General Physics (II)	普通物理學(二)	3	3 Class Hours	1st grade Spring SEM	
General Physics Experiment (II)	普通物理學實驗(二)	0.5	1 Class Hour	1st grade Spring SEM	
General Biology (II)	普通生物學(二)	3	3 Class Hours	1st grade Spring SEM	
General Biology Experiment (II)	普通生物學實驗(二)	0.5	1 Class Hour	1st grade Spring SEM	
Introduction to Earth Science (including Practicum)	地球科學導論(含實習)	3	3 Class Hours	1st grade Spring SEM	
◎Elective courses of the department : 43 credits (Students in this department must take at least one specialty module to meet the graduation qualifications. If they complete the required credits specified by the specialty module, they can obtain a specialty certificate)					
◎Other Graduation requirements : 30 credits (Students of this department can take intensive courses of each subject among elective courses, and can also take multi-credit courses by each department, cross-department courses or education courses or foreign language general education courses offered)					
Global Change	全球環境變遷	2	2 Class Hours	1st grade Fall SEM	
Plant Morphology	植物形態學	3	3 Class Hours	1st grade Spring SEM	Biology Specialty Modular Course
Calculus (II)	微積分(二)	3	3 Class Hours	1st grade Spring SEM	Physics Advanced Course
Computer Application in Science	電腦在科學上的應用	3	3 Class Hours	1st grade Spring SEM	
Introduction to Environmental Safety and Sanitation	安全衛生導論	2	2 Class Hours	1st grade Spring SEM	
Physical Mathematics (I)	物理數學(一)	3	3 Class Hours	2nd grade Fall SEM	Physics Specialty Modular Course
Thermal Physics	熱物理	3	3 Class Hours	2nd grade Fall SEM	Physics Specialty Modular Course
Physiology (I)	生理學(一)	3	3 Class Hours	2nd grade Fall SEM	Biology Specialty Modular Course
Biochemistry	生物化學	3	3 Class Hours	2nd grade Fall SEM	Biology Specialty Modular Course
Physical Chemistry (I)	物理化學(一)	3	3 Class Hours	2nd grade Fall SEM	Chemistry Specialty Modular Course
Organic Chemistry (I)	有機化學(一)	3	3 Class Hours	2nd grade Fall SEM	Chemistry & Natural Science Specialty Modular Course
Geology (including Practicum) (I)	普通地質學(含實習)(一)	3	3 Class Hours	2nd grade Fall SEM	Earth Science & Natural Science Specialty Modular Course
Introduction to Astronomy (including Practicum) (I)	天文學導論(含實習)(一)	3	3 Class Hours	2nd grade Fall SEM	Earth Science & Natural Science Specialty Modular Course
Differential Equation	微分方程	3	3 Class Hours	2nd grade Fall SEM	Physics Advanced Course
Histology	組織學	3	3 Class Hours	2nd grade Fall SEM	Biology Advanced Course
Mycology	菌類學	3	3 Class Hours	2nd grade Fall SEM	Biology Advanced Course

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Food Chemistry	食品化學	3	3 Class Hours	2nd grade Fall SEM	Chemistry Advanced Course
3D modeling Application to Science	3D建模在科學上的應用	3	3 Class Hours	2nd grade Fall SEM	
Science Education for Exceptional Children	特殊兒童之科學教育	2	2 Class Hours	2nd grade Fall SEM	
Electromagnetism (I)	電磁學(一)	3	3 Class Hours	2nd grade Spring SEM	Physics Specialty Modular Course
Thermodynamics	熱力學	3	3 Class Hours	2nd grade Spring SEM	Physics Specialty Modular Course
Animal Behavior	動物行為學	3	3 Class Hours	2nd grade Spring SEM	Biology Specialty Modular Course
Biotaxonomy	生物分類學	3	3 Class Hours	2nd grade Spring SEM	Biology Specialty Modular Course
Physical Chemistry (II)	物理化學(二)	3	3 Class Hours	2nd grade Spring SEM	Chemistry Specialty Modular Course
Organic Chemistry (II)	有機化學(二)	3	3 Class Hours	2nd grade Spring SEM	Chemistry Specialty Modular Course
Introduction to Astronomy (including Practicum) (II)	天文學導論(含實習)(二)	3	3 Class Hours	2nd grade Spring SEM	Earth Science Specialty Module Course
Introduction to Geophysics	地球物理導論	3	3 Class Hours	2nd grade Spring SEM	Earth Science Specialty Module Course
Physical Mathematics (II)	物理數學(二)	3	3 Class Hours	2nd grade Spring SEM	Physics Advanced Course
Mechanics (I)	力學(一)	3	3 Class Hours	2nd grade Spring SEM	Physics Advanced Course
Microbiology	微生物學	3	3 Class Hours	2nd grade Spring SEM	Biology Advanced Course
Physiology (II)	生理學(二)	3	3 Class Hours	2nd grade Spring SEM	Biology Advanced Course
Geology (including Practicum) (II)	普通地質學(含實習)(二)	3	3 Class Hours	2nd grade Spring SEM	Earth Science Advanced Course
Technology Creation and Teaching Practice	科技創作與教學實務	2	2 Class Hours	2nd grade Spring SEM	
History of Science	科學史	2	2 Class Hours	2nd grade Spring SEM	
Modern Physics (I)	近代物理(一)	3	3 Class Hours	3rd grade Fall SEM	Physics & Natural Science Specialty Modular Course
Electromagnetism (II)	電磁學(二)	3	3 Class Hours	3rd grade Fall SEM	Physics Specialty Modular Course
Analytical Chemistry	分析化學	3	3 Class Hours	3rd grade Fall SEM	Chemistry & Natural Science Specialty Modular Course
Mathematics for Chemistry	化學數學	3	3 Class Hours	3rd grade Fall SEM	Chemistry Specialty Modular Course
Entomology	昆蟲學	3	3 Class Hours	3rd grade Fall SEM	Natural Science Specialty Modular Course
Introduction to Oceanography	海洋學導論	3	3 Class Hours	3rd grade Fall SEM	Earth Science Specialty Module Course
Mechanics (II)	力學(二)	3	3 Class Hours	3rd grade Fall SEM	Physics Advanced Course
Introduction to Material Science	材料科學導論	3	3 Class Hours	3rd grade Fall SEM	Physics Advanced Course
Quantum Physics (I)	量子物理(一)	3	3 Class Hours	3rd grade Fall SEM	Physics Advanced Course
Cellular Biology	細胞生物學	3	3 Class Hours	3rd grade Fall SEM	Biology Advanced Course
Study of Local-Based Biology	鄉土生物研究	3	3 Class Hours	3rd grade Fall SEM	Biology Advanced Course
Biostatistics	生物統計學	2	2 Class Hours	3rd grade Fall SEM	Biology Advanced Course
Experiments in Biochemistry	生物化學實驗	1	2 Class Hours	3rd grade Fall SEM	Biology Advanced Course
Chemical Thermodynamics	化學熱力學	3	3 Class Hours	3rd grade Fall SEM	Chemistry Advanced Course
Earth Materials	地球物質	3	3 Class Hours	3rd grade Fall SEM	Earth Science Advanced Course
Environmental Science (I)	環境科學(一)	3	3 Class Hours	3rd grade Fall SEM	
Infusing Game into the Teaching of Science	遊戲融入自然科學領域的教學	3	3 Class Hours	3rd grade Fall SEM	
Seminar	書報討論	2	2 Class Hours	3rd grade Fall SEM	

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Modern Physics (II)	近代物理(二)	3	3 Class Hours	3rd grade Spring SEM	Physics Specialty Modular Course
Optics (I)	光學(一)	3	3 Class Hours	3rd grade Spring SEM	Physics & Natural Science Specialty Modular Course
Genetics	遺傳學	3	3 Class Hours	3rd grade Spring SEM	Biology Specialty Modular Course
Molecular Biology	分子生物學	3	3 Class Hours	3rd grade Spring SEM	Biology Specialty Modular Course
Inorganic Chemistry	無機化學	3	3 Class Hours	3rd grade Spring SEM	Chemistry Specialty Modular Course
Principles of Instrumental Analysis	儀器分析	3	3 Class Hours	3rd grade Spring SEM	Chemistry Specialty Modular Course
Fundamental Biological Oceanography	生物海洋學概論	3	3 Class Hours	3rd grade Spring SEM	Earth Science Specialty Module Course
Introduction to Meteorology	大氣科學導論	3	3 Class Hours	3rd grade Spring SEM	Earth Science Specialty Module Course
Quantum Physics (II)	量子物理(二)	3	3 Class Hours	3rd grade Spring SEM	Physics Advanced Course
Introduction to Optoelectrical Physics	光電物理導論	3	3 Class Hours	3rd grade Spring SEM	Physics Advanced Course
Topic in Physics	物理專題研究	2	2 Class Hours	3rd grade Spring SEM	Physics Advanced Course
Biodiversity	生物多樣性	2	2 Class Hours	3rd grade Spring SEM	Biology Advanced Course
Protein Biochemistry and Technology	蛋白質生化學與技術	2	2 Class Hours	3rd grade Spring SEM	Biology Advanced Course
Topic in Biology	生物專題研究	2	2 Class Hours	3rd grade Spring SEM	Biology Advanced Course
Polymer Chemistry	高分子化學	3	3 Class Hours	3rd grade Spring SEM	Chemistry Advanced Course
Chemical Kinetics	化學動力學	2	2 Class Hours	3rd grade Spring SEM	Chemistry Advanced Course
Topic in Chemistry	化學專題研究	2	2 Class Hours	3rd grade Spring SEM	Chemistry Advanced Course
Sedimentology and Stratigraphy	沉積與地層學	3	3 Class Hours	3rd grade Spring SEM	Earth Science Advanced Course
Teaching Materials and Methods of Science in Elementary School	國民小學自然科學領域教材教法	2	2 Class Hours	3rd grade Spring SEM	This course is compulsory for students taking the education program
Introduction to Science Education	科學教育導論	2	2 Class Hours	3rd grade Spring SEM	This course is compulsory for students taking the education program
Science-Based Integrated Curriculum	自然科課程統整的實施與評量	2	2 Class Hours	3rd grade Spring SEM	This course is compulsory for students taking the education program
Topics in Natural Science (I)	自然科專題研究(一)	2	2 Class Hours	3rd grade Spring SEM	
Study of Elementary Science Curriculum	國小自然科課程研究	2	2 Class Hours	3rd grade Spring SEM	
Environmental Science (II)	環境科學(二)	3	3 Class Hours	3rd grade Spring SEM	
Ecology	生態學	3	3 Class Hours	4th grade Fall SEM	Biology & Natural Science Specialty Modular Course
Earth Resources	地球資源	3	3 Class Hours	4th grade Fall SEM	Earth Science Specialty Module Course
Solid State Physics (I)	固態物理(一)	3	3 Class Hours	4th grade Fall SEM	Physics Advanced Course
Optics (II)	光學(二)	3	3 Class Hours	4th grade Fall SEM	Physics Advanced Course
Chemical Research Techniques	化學研究技術	2	2 Class Hours	4th grade Fall SEM	Chemistry Advanced Course
Advanced Inorganic Chemistry	高等無機化學	3	3 Class Hours	4th grade Fall SEM	Chemistry Advanced Course
Biotechnology	生物技術	2	2 Class Hours	4th grade Fall SEM	Biology Advanced Course
Paleontology and Earth History	古生物與地球歷史	3	3 Class Hours	4th grade Fall SEM	Earth Science Advanced Course
Study of Elementary Science Experiments (I)	國小自然科學實驗研究(一)	2	3 Class Hours	4th grade Fall SEM	This course is compulsory for students taking the education program
Design and Application of Science Fair	科學展覽設計與展示	2	2 Class Hours	4th grade Fall SEM	This course is compulsory for students taking the education program

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History of Physics	物理發展史	2	2 Class Hours	4th grade Fall SEM	
Topics in Natural Science (II)	自然科專題研究(二)	2	2 Class Hours	4th grade Fall SEM	
Study of Science Education	科學教育研究	2	2 Class Hours	4th grade Fall SEM	
Specialized practice	專業實習	2	2 Class Hours	4th grade Fall SEM	
Environmental Education	環境教育	2	2 Class Hours	4th grade Fall SEM	
Solid State Physics (II)	固態物理(二)	3	3 Class Hours	4th grade Spring SEM	Physics Advanced Course
Applied Chemistry	應用化學	3	3 Class Hours	4th grade Spring SEM	Chemistry Advanced Course
Quantum Chemistry	量子化學	3	3 Class Hours	4th grade Spring SEM	Chemistry Advanced Course
Conservation Biology	保育生物學	2	2 Class Hours	4th grade Spring SEM	Biology Advanced Course
Geochemistry	地球化學	3	3 Class Hours	4th grade Spring SEM	Earth Science Advanced Course
Study of Elementary Science Experiments (II)	國小自然科學實驗研究(二)	2	3 Class Hours	4th grade Spring SEM	This course is compulsory for students taking the education program
Multiple Credit Programs	多元學分學程課程		Multi-credit course electives shall be handled in accordance with the relevant regulations of the school's credit course		
Cross-department, cross- school or transnational courses	跨系、跨校或跨國課程		Cross-campus and school electives shall be handled in accordance with the relevant regulations of the school.		