

**Course Structure for Undergraduate Program**  
**Department of Life Science**  
**National Taiwan Normal University**

Adaptive to Class of	Common Courses Credit(s)	Required Credit(s)	Elective Credit(s)	Free Elective Credit(s)	Minimum Total Credits for Graduation
111	32.0	21.0	54.0	21.0	128.0

**I. General Course: 32.0 credits are required**

Course Name	Credit(s)
<b>1 Chinese</b> 4.0 credits are required	
1-1 Chinese Reading and Thinking	2.0
1-2 Chinese Writing and Expression	2.0
<b>2 English</b> 6.0 credits are required, Students who major in Department of English must take the course which course code are ENU0168 and ENU0169 with a passing score for instead	
2-1 English(I)	2.0
2-2 English(II)	2.0
2-3 English(III)	2.0
<b>3 General Education Courses</b> 18.0 credits are required	
<b>3-1 Liberal Arts Course</b> 8.0 credits are required	
3-1-1 Humanities and Arts 2.0 credits are required	
3-1-2 Social Sciences 2.0 credits are required	
3-1-3 Natural Sciences 2.0 credits are required	
3-1-4 Logic and Computing 2.0 credits are required	
<b>3-2 Cross-domain Exploration</b> 4.0 credits are required	
3-2-1 College Common Course	
3-2-2 Cross-domain Professional Discovery Course	
3-2-3 Introduction to University Studies	
<b>3-3 Self-Directed Learning</b> maximum credits are 4.0	
3-3-1 Inquiry Study	
3-3-2 MOOCs	
<b>4 Physical Education</b> 4.0 credits are required, 4 courses are least required	
<b>5 Service-Learning</b> 1 course is least required	
5-1 Basic Service-Learning	0.0

Note: The first alphabet "E" on the course name refers to the course in English as a medium of instruction

**II. Required Courses: 21.0 credits are required**

Course Code	Course Name	Credit(s)	Credit Unit		Note
			Lecture Hour	Lab/Practice Hour	
BIU0168	1 General Biology A (I)	3.0	3.0	0.0	
BIU0169	2 General Biology A (II)	3.0	3.0	0.0	
BIU0172	3 General Biology Laboratory A (I)	1.0	0.0	3.0	
BIU0173	4 General Biology Laboratory A (II)	1.0	0.0	3.0	
CMU0178	5 General Chemistry B	3.0	3.0	0.0	
CMU0131	6 General Chemistry Laboratory(I)	1.0	0.0	3.0	
BIU0143	7 Biochemistry	4.0	4.0	0.0	
BIU0044	8 Genetics	3.0	3.0	0.0	
BIU0144	9 Biochemistry Laboratory	2.0	0.0	4.0	

**III. Elective Courses: 54.0 credits are required**

Course Code	Course Name	Credit(s)	Credit Unit		Note
			Lecture Hour	Lab/Practice Hour	
	<b>1 Basic subjects</b> 3.0 credits are required, Choosing one course to be a required course				
BIU0008	1-1 Organic Chemistry	3.0	3.0	0.0	
PHU0253	1-2 Fundamental Physics	3.0	3.0	0.0	
MAU0182	1-3 Basic Calculus	3.0	3.0	0.0	
	<b>2 Advanced experiment</b> 2.0 credits are required, Choosing one course to be a required course				
BIU0159	2-1 laboratory Course for Cellular and Molecular Biology	2.0	0.0	4.0	
BIU0016	2-2 Animal Physiology Laboratory	2.0	0.0	4.0	
BIU0014	2-3 Plant Physiology Laboratory	2.0	0.0	4.0	
	<b>3 Ecology and Evolution</b> 3.0 credits are required, Choosing one course to be a required course				
BIU0086	3-1 Evolution	3.0	3.0	0.0	
BIU0046	3-2 E Ecology	3.0	3.0	0.0	
	<b>4 Cellular and Molecular</b> 3.0 credits are required, Choosing one course to be a required course				
BIU0025	4-1 Cell Biology	3.0	3.0	0.0	
BIU0145	4-2 Molecular Biology	3.0	3.0	0.0	
	<b>5 Physiology</b> 3.0 credits are required, Choosing one course to be a required course				

Course Code	Course Name	Credit(s)	Credit Unit		Note
			Lecture Hour	Lab/Practice Hour	
BIU0013	5-1 Plant Physiology	3.0	3.0	0.0	
BIU0015	5-2 Animal Physiology	3.0	3.0	0.0	
6 Seminar 2.0 credits are required, 2.0 credits are required, Choosing one course to be a required course					
BIU0178	6-1 E Seminar	2.0	2.0	0.0	
BIU0177	6-2 Research on Special Topics	2.0	2.0	0.0	
BIC0001	7 Neurobiology	3.0	3.0	0.0	
BIC0006	8 Biological Geography	3.0	3.0	0.0	
BIC0084	9 Animal Behaviour	3.0	3.0	0.0	
BIC0085	10 Marine Biology	2.0	2.0	0.0	
BIC0086	11 Ornithology	3.0	3.0	0.0	
BIC0087	12 Herpetology	2.0	2.0	0.0	
BIC0088	13 Recreation Ecology	3.0	3.0	0.0	
BIC0108	14 Marine Ecology	2.0	2.0	0.0	
BIC0111	15 Respiratory and Circulatory Physiology	2.0	2.0	0.0	
BIC0123	16 Developmental Biology	3.0	3.0	0.0	
BIC0170	17 E Forest Ecology	3.0	3.0	0.0	
BIC0175	18 Biological Invasions	3.0	3.0	0.0	
BIU0185	19 Biotechnology Laboratory	1.0	0.0	3.0	
BIC0177	20 Biotechnology	3.0	3.0	0.0	
BIC9041	21 Environmental Physiology	3.0	3.0	0.0	
BIC9042	22 Transgenic	2.0	2.0	0.0	
BIC7001	23 Special Topics on Intellectual Property	2.0	2.0	0.0	
BIC7002	24 Industrial Practice	3.0	3.0	0.0	
BIC7003	25 Molecular Evolution	3.0	3.0	0.0	
BIC7004	26 Translational Medicine — Novel Compounds and Chinese Herbal Medicines	2.0	2.0	0.0	
BIC7005	27 E Drug Development and Translational Medicine	2.0	2.0	0.0	
BIC7007	28 Population Genetics and Evolution	3.0	3.0	0.0	
BIC7009	29 Immunochemistry	3.0	3.0	0.0	
BIC7010	30 Neuroethology	3.0	3.0	0.0	
BIC7011	31 Developmental Neurobiology	3.0	3.0	0.0	
BIC7012	32 Principles of Phylogenetics	3.0	3.0	0.0	
BIC7013	33 Plant Ecology	3.0	3.0	0.0	
BIC7014	34 Conservation Genetics	3.0	3.0	0.0	
BIC7015	35 Comparative Animal Physiology	3.0	3.0	0.0	
BIC9006	36 Stem Cell Biology	3.0	3.0	0.0	
BIC9008	37 E Landscape Ecology	3.0	3.0	0.0	
BIC9009	38 Plant Genetic Engineering	3.0	3.0	0.0	
BIC9011	39 Bioindustry	2.0	2.0	0.0	
BIC9013	40 Program Language in Bioinformatics	3.0	3.0	0.0	
BIC9014	41 Algorithms in Bioinformatics	3.0	3.0	0.0	
BIC9015	42 Biological Microtechnique (including Lab.)	3.0	2.0	2.0	
BIC9021	43 E Wildlife Biology	3.0	3.0	0.0	
BIC9022	44 Endocrinology	3.0	3.0	0.0	
BIC9024	45 Principles of Systematic Biology	3.0	3.0	0.0	
BIC9025	46 Island Biogeography	3.0	3.0	0.0	
BIC9027	47 Concept and Experimental Learning of Plant Factory	2.0	1.0	2.0	
BIC9028	48 Translational Application of Stem Cell	1.0	1.0	0.0	
BIC9029	49 Translational Application of Stem Cell Experiment	1.0	0.0	3.0	
BIC9030	50 Biodiesel Biotechnology	1.0	1.0	0.0	
BIC9031	51 Biodiesel Biotechnology Experiment	1.0	0.0	3.0	
BIC9032	52 Cancer Biology	2.0	2.0	0.0	
BIC9033	53 Reactive Oxygen Species and Biological Medicine	1.0	1.0	0.0	
BIC9034	54 Methods for Reactive Oxygen Species Measurement	1.0	0.0	3.0	
BIC9035	55 Data Analysis for Ecology and Evolution in R Programming Language	3.0	3.0	0.0	
BIC9036	56 Ecological Plant Physiology	3.0	3.0	0.0	
BIC9037	57 Conservation Biology	3.0	3.0	0.0	
BIC9038	58 Disease Ecology	3.0	3.0	0.0	
BIC9062	59 Plant Cell and Tissue Culture	3.0	3.0	0.0	
BIC9040	60 Signal Transduction	3.0	3.0	0.0	
PHU0254	61 Fundamental Physics Laboratory	1.0	0.0	3.0	
BIU0009	62 Organic Chemistry Laboratory	1.0	0.0	3.0	
BIU0017	63 Plant Morphology	3.0	3.0	0.0	
BIU0018	64 Plant Morphology Laboratory	1.0	0.0	3.0	
BIU0019	65 E Invertebrate Zoology	3.0	3.0	0.0	
BIU0020	66 Invertebrate Zoology Laboratory	1.0	0.0	3.0	
BIU0021	67 Taxonomy of Seed-Plants	3.0	3.0	0.0	

Course Code	Course Name	Credit(s)	Credit Unit		Note
			Lecture Hour	Lab/Practice Hour	
BIU0022	68 Taxonomy of Seed Plants Laboratory	1.0	0.0	3.0	
BIU0023	69 Vertebrate Zoology	3.0	3.0	0.0	
BIU0024	70 Vertebrate Zoology Laboratory	1.0	0.0	3.0	
BIU0031	71 Microbiology	3.0	3.0	0.0	
BIU0037	72 Entomology	2.0	2.0	0.0	
BIU0038	73 Entomology Laboratory	1.0	0.0	3.0	
BIU0039	74 Human Physiology	3.0	3.0	0.0	
BIU0041	75 Parasitology	3.0	3.0	0.0	
BIU0088	76 Introduction to Conservation Biology	2.0	2.0	0.0	
BIU0096	77 Comparative Anatomy	2.0	2.0	0.0	
BIU0097	78 Comparative Anatomy Laboratory	1.0	0.0	3.0	
BIC9050	79 Plant Anatomy with Experiment	3.0	2.0	2.0	
BIU0148	80 Immunology	3.0	3.0	0.0	
BIC9044	81 Virology	2.0	2.0	0.0	
BIU0155	82 Introduction to Bioinformatics	3.0	3.0	0.0	
BIU0158	83 Field ecology	3.0	3.0	0.0	
BIU0175	84 Introduction to Research on Ecology and Evolutionary Biology	2.0	2.0	0.0	
BIU0176	85 Introduction to Research on Physiology, Cellular and Molecular Biology	2.0	2.0	0.0	
BIU0179	86 Advance Research on Special Topics	3.0	3.0	0.0	
BIU0180	87 Advanced Seminars	2.0	2.0	0.0	
BIU0181	88 Principles of Animal Taxonomy	2.0	2.0	0.0	
BIC9057	89 E Histology	2.0	2.0	0.0	
BIU0182	90 Ichthyology	3.0	3.0	0.0	
BIC9045	91 Inquiry and Practice in Biology	2.0	2.0	0.0	
BIU0184	92 Microbiology Laboratory	1.0	0.0	3.0	
BIC9046	93 Curriculum Design for Scientific Inquiry and Practices	2.0	2.0	0.0	
BIC9047	94 Cross-Domain Learning Chinese Medicine and Health	2.0	2.0	0.0	
BIC9049	95 Overview of Biomedical Development and Commercialization	2.0	2.0	0.0	
BIC9048	96 The Application of Biotechnological Advances on Complement for Clinical Practice	2.0	2.0	0.0	
BIC9051	97 Mammalogy	2.0	2.0	0.0	
BIC9053	98 Biomethology of Cancer Research	3.0	3.0	0.0	
BIC9052	99 The Latest Modern Issues in Biomedical Research and Technology	2.0	2.0	0.0	
BIU0187	100 Introduction to Research on Physiology	2.0	2.0	0.0	
BIU0186	101 Introduction to Research on Cellular and Molecular Biology	2.0	2.0	0.0	
BIC9054	102 Ecophysiology	3.0	3.0	0.0	
BIC9055	103 Evolution of Insects	3.0	3.0	0.0	
BIU0188	104 Introduction of Pharmacology	2.0	2.0	0.0	
BIC9058	105 Basic and Applied Bone Biology	2.0	2.0	0.0	
BIC9056	106 E Introduction in Virology	2.0	2.0	0.0	
BIU0092	107 Biometry	3.0	3.0	0.0	
BIC9061	108 E Oncology Journal Reading and Discussion	2.0	2.0	0.0	
BIC9059	109 Plant Pathology	3.0	3.0	0.0	
BIC9060	110 Pteridology	3.0	3.0	0.0	

#### IV. Free Elective Credits: 21.0 credits are required

It can be counted over 44 credits elective course, over 18 credits general education course, another school and department course, and abandoned teacher education programs course.