

**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
113	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	

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 E 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				
BIU0013	5-1 Plant Physiology	3.0	3.0	0.0	
BIU0015	5-2 Animal Physiology	3.0	3.0	0.0	

Course Code	Course Name	Credit(s)	Credit Unit		Note
			Lecture Hour	Lab/Practice Hour	
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	
BIC7004	25 Translational Medicine — Novel Compounds and Chinese Herbal Medicines	2.0	2.0	0.0	
BIC7005	26 E Drug Development and Translational Medicine	2.0	2.0	0.0	
BIC7007	27 Population Genetics and Evolution	3.0	3.0	0.0	
BIC7009	28 Immunochemistry	3.0	3.0	0.0	
BIC7010	29 Neuroethology	3.0	3.0	0.0	
BIC7012	30 Principles of Phylogenetics	3.0	3.0	0.0	
BIC7015	31 Comparative Animal Physiology	3.0	3.0	0.0	
BIC9006	32 Stem Cell Biology	3.0	3.0	0.0	
BIC9008	33 E Landscape Ecology	3.0	3.0	0.0	
BIC9009	34 Plant Genetic Engineering	3.0	3.0	0.0	
BIC9011	35 Bioindustry	2.0	2.0	0.0	
BIC9013	36 Program Language in Bioinformatics	3.0	3.0	0.0	
BIC9014	37 Algorithms in Bioinformatics	3.0	3.0	0.0	
BIC9015	38 Biological Microtechnique (including Lab.)	3.0	2.0	2.0	
BIC9021	39 E Wildlife Biology	3.0	3.0	0.0	
BIC9022	40 Endocrinology	3.0	3.0	0.0	
BIC9024	41 Principles of Systematic Biology	3.0	3.0	0.0	
BIC9025	42 Island Biogeography	3.0	3.0	0.0	
BIC9027	43 Concept and Experimental Learning of Plant Factory	2.0	1.0	2.0	
BIC9028	44 Translational Application of Stem Cell	1.0	1.0	0.0	
BIC9029	45 Translational Application of Stem Cell Experiment	1.0	0.0	3.0	
BIC9030	46 Biodiesel Biotechnology	1.0	1.0	0.0	
BIC9031	47 Biodiesel Biotechnology Experiment	1.0	0.0	3.0	
BIC9032	48 Cancer Biology	2.0	2.0	0.0	
BIC9033	49 Reactive Oxygen Species and Biological Medicine	1.0	1.0	0.0	
BIC9034	50 Methods for Reactive Oxygen Species Measurement	1.0	0.0	3.0	
BIC9035	51 Data Analysis for Ecology and Evolution in R Programming Language	3.0	3.0	0.0	
BIC9036	52 Ecological Plant Physiology	3.0	3.0	0.0	
BIC9062	53 E Plant Cell and Tissue Culture	3.0	3.0	0.0	
BIC9040	54 Signal Transduction	3.0	3.0	0.0	
PHU0254	55 Fundamental Physics Laboratory	1.0	0.0	3.0	
BIU0009	56 Organic Chemistry Laboratory	1.0	0.0	3.0	
BIU0017	57 Plant Morphology	3.0	3.0	0.0	
BIU0018	58 Plant Morphology Laboratory	1.0	0.0	3.0	
BIU0019	59 Invertebrate Zoology	3.0	3.0	0.0	
BIU0020	60 Invertebrate Zoology Laboratory	1.0	0.0	3.0	
BIU0021	61 Taxonomy of Seed-Plants	3.0	3.0	0.0	
BIU0022	62 Taxonomy of Seed Plants Laboratory	1.0	0.0	3.0	
BIU0023	63 Vertebrate Zoology	3.0	3.0	0.0	
BIU0024	64 Vertebrate Zoology Laboratory	1.0	0.0	3.0	
BIU0031	65 Microbiology	3.0	3.0	0.0	
BIU0037	66 Entomology	2.0	2.0	0.0	
BIU0038	67 Entomology Laboratory	1.0	0.0	3.0	
BIU0039	68 Human Physiology	3.0	3.0	0.0	
BIU0088	69 Introduction to Conservation Biology	3.0	3.0	0.0	

Course Code	Course Name	Credit(s)	Credit Unit		Note
			Lecture Hour	Lab/Practice Hour	
BIU0096	70 Comparative Anatomy	2.0	2.0	0.0	
BIU0097	71 Comparative Anatomy Laboratory	1.0	0.0	3.0	
BIC9050	72 Plant Anatomy with Experiment	3.0	2.0	2.0	
BIU0148	73 Immunology	3.0	3.0	0.0	
BIC9044	74 Virology	2.0	2.0	0.0	
BIU0155	75 Introduction to Bioinformatics	3.0	3.0	0.0	
BIC9068	76 Field ecology	3.0	3.0	0.0	
BIU0175	77 Introduction to Research on Ecology and Evolutionary Biology	2.0	2.0	0.0	
BIU0176	78 Introduction to Research on Physiology, Cellular and Molecular Biology	2.0	2.0	0.0	
BIU0179	79 Advance Research on Special Topics	3.0	3.0	0.0	
BIC9057	80 E Histology	2.0	2.0	0.0	
BIU0182	81 Ichthyology	3.0	3.0	0.0	
BIC9045	82 Inquiry and Practice in Biology	2.0	2.0	0.0	
BIU0184	83 Microbiology Laboratory	1.0	0.0	3.0	
BIC9046	84 Curriculum Design for Scientific Inquiry and Practices	2.0	2.0	0.0	
BIC9047	85 Cross-Domain Learning Chinese Medicine and Health	2.0	2.0	0.0	
BIC9049	86 Overview of Biomedical Development and Commercialization	2.0	2.0	0.0	
BIC9048	87 The Application of Biotechnological Advances on Complement for Clinical Practice	2.0	2.0	0.0	
BIC9051	88 Mammalogy	2.0	2.0	0.0	
BIC9053	89 Biomethology of Cancer Research	3.0	3.0	0.0	
BIC9052	90 The Latest Modern Issues in Biomedical Research and Technology	2.0	2.0	0.0	
BIU0187	91 Introduction to Research on Physiology	2.0	2.0	0.0	
BIU0186	92 Introduction to Research on Cellular and Molecular Biology	2.0	2.0	0.0	
BIC9054	93 Ecophysiology	3.0	3.0	0.0	
BIC9055	94 Evolution of Insects	3.0	3.0	0.0	
BIU0188	95 Introduction of Pharmacology	2.0	2.0	0.0	
BIC9058	96 Basic and Applied Bone Biology	2.0	2.0	0.0	
BIC9056	97 E Introduction in Virology	2.0	2.0	0.0	
BIU0092	98 Biometry	3.0	3.0	0.0	
BIC9061	99 Oncology Journal Reading and Discussion	2.0	2.0	0.0	
BIC9059	100 Plant Pathology	3.0	3.0	0.0	
BIC9060	101 Pteridology	3.0	3.0	0.0	
BIC9063	102 E Plant Molecular Biology	2.0	2.0	0.0	
BIC9065	103 E Introduction to Biomaterials	3.0	3.0	0.0	
BIC9064	104 Introduction to Biomedical Engineering	3.0	3.0	0.0	
BIC9067	105 Internship in Ecological Industry	3.0	0.0	6.0	
BIC9066	106 Field Ecology Survey Techniques	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.