Course Structure for Ph. D Program
Cellular and Molecular, Department of Life Science
National Taiwan Normal University

Adaptive to Class of	Required Credit(s)	Elective Credit(s)	Free Elective Credit(s)	Minimum Total Credits for Graduation
114	13.0	11.0	0.0	24.0

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

I. Required Courses: 0.0 credit is required

II. Elective Courses: 0.0 credit is required

III. Courses Offered to Students in Different Divisions

Required Course, 13.0 credits are required

Course Code	Course Name	Credit(s)	Credit Unit		Note
			Lecture Hour	Lab/Practice Hour	
BIC8007	1 Research Methods of Experimental Biology	2.0	2.0	0.0	
BIC0138	2 Cellular and Molecular Biology	3.0	3.0	0.0	
BID0165	3 Seminar	2.0	2.0	0.0	This course must be retaken with a passing score for 4 times

Elective Course: 11.0 credits are required

Direct Admission to Doctoral Program from Master's Program must Practice 17 credits

Course Code	Course Name	Credit(s)	Credit Unit		Note
			Lecture Hour	Lab/Practice Hour	
	1 Core Elective Curriculum 2 courses are least required				
BIC0139	1-1 Protein and Enzyme Chemistry	3.0	3.0	0.0	
BIC8016	1-2 Writing Scientific Papers in English	3.0	3.0	0.0	
BIC7009	1-3 Immunochemistry	3.0	3.0	0.0	
BIC0133	1-4 Topics in Molecular Biology	2.0	2.0	0.0	
BID0169	1-5 Special Topic on Signal Transduction	3.0	3.0	0.0	
BIC0186	1-6 Protein Engineering	3.0	3.0	0.0	
BIC0173	2 Evolutionary Biology	3.0	3.0	0.0	
BIC0174	3 E Advanced Ecology	3.0	3.0	0.0	
BIC8010	4 Research Methods in Ecology and Evolution	2.0	2.0	0.0	
BIC0011	5 Experimental Design and Data Analysis	3.0	3.0	0.0	
BIC7007	6 Population Genetics and Evolution	3.0	3.0	0.0	
BIC7012	7 Principles of Phylogenetics	3.0	3.0	0.0	
BIC8018	8 Topics on Animal Physiology (I)	2.0	2.0	0.0	
BIC7015	9 Comparative Animal Physiology	3.0	3.0	0.0	
BIC0119	10 Learning and memory	3.0	3.0	0.0	
BID0074	11 Topics in Sensory Physiology	3.0	3.0	0.0	
BIC0052	12 Neuropharmacology	3.0	3.0	0.0	
BIC8006	13 Topics on Animal Physiology (II)	2.0	2.0	0.0	
BIC0017	14 Topics in Fish Physiology	3.0	3.0	0.0	
BID0069	15 Topics in principle of phylogenetics	3.0	3.0	0.0	
BID0072	16 Topics in Plant Growth and Development	2.0	2.0	0.0	
BID0075	17 Topics in Brain Physiology	3.0	3.0	0.0	
BIC0016	18 E Topics in Plant Molecular Biology	2.0	2.0	0.0	
BIC0021	19 Topics in Molecular Genetics	3.0	3.0	0.0	
BIC0038	20 Studies in Adaptation and Natural Selection	2.0	2.0	0.0	
BIC0059	21 Architecture of Brain	3.0	3.0	0.0	
BIC0061	22 E Principles and Methods of Plant Taxonomy	3.0	3.0	0.0	
BIC0101	23 Paper Writing and Presentation in Biological Science	2.0	2.0	0.0	
BIC0153	24 Regression Analysis	3.0	3.0	0.0	
BIC0185	25 Adaptation and Natural Selection	3.0	3.0	0.0	
BIC7001	26 Special Topics on Intellectual Property	2.0	2.0	0.0	
BIC8003	27 Ecology and Evolution of Amphibians and Reptiles	2.0	2.0	0.0	
BIC8012	28 Oxidative Stress Physiology	3.0	3.0	0.0	
BIC8020	29 Biotechnology for the Drug Development	2.0	2.0	0.0	
BIC7002	30 Industrial Practice	3.0	3.0	0.0	
BIC7004	31 Translational Medicine — Novel Compounds and Chinese Herbal Medicines	2.0	2.0	0.0	
BIC7005	32 E Drug Development and Translational Medicine	2.0	2.0	0.0	
BIC7010	33 Neuroethology	3.0	3.0	0.0	
BIC8021	34 Experimental Physiology	2.0	2.0	0.0	
BIC8022	35 E Behavioral Ecology	3.0	3.0	0.0	
BIC8009	36 Advanced Seminar (I)	0.0	0.0	0.0	

Course Code	Course Name	Credit(s)	Credit Unit		Note
			Lecture Hour	Lab/Practice Hour	
BIC8014	37 Advanced Seminar (II)	0.0	0.0	0.0	
BID0166	38 Issues and Rationale of Biological Education	3.0	3.0	0.0	
BIC8023	39 Application of Optoelectronic Technology in Biomedical	2.0	2.0	0.0	
BIC8027	40 E Topics in Virology	2.0	2.0	0.0	
BIC8025	41 E Introduction to Statistical Analysis	3.0	3.0	0.0	
BIC8030	42 E Comprehensive Biotech Practice-From Micro Molecular Biology to Macro Physiology	3.0	3.0	0.0	
BIC8026	43 E Linear and Logistic Regression Models	3.0	3.0	0.0	
BIC8028	44 E Apply Sciences Lead to Biotechnology Industry	2.0	2.0	0.0	
BID0168	45 Special Topic on Endocrinology	3.0	3.0	0.0	
BID0170	46 Special Topics on Scleractinian Coral Taxonomy (I)	3.0	3.0	0.0	
BIC8031	47 Special Topics in Brain Neurobehavioral Studies	3.0	3.0	0.0	
BID0171	48 Special Topics on Scleractinian Coral Taxonomy (II)	3.0	3.0	0.0	

IV. Free Elective Credits: 0.0 credit is required