

Course Structure for M.A. Program
Graduate Program of Biotechnology and Pharmaceutical Industries
National Taiwan Normal University

Adaptive to Class of	Required Credit(s)	Elective Credit(s)	Free Elective Credit(s)	Minimum Total Credits for Graduation
113	12.0	12.0	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: 12.0 credits are required

Course Code	Course Name	Credit(s)	Credit Unit		Note
			Lecture Hour	Lab/Practice Hour	
BPM0001	1 Seminar	2.0	2.0	0.0	This course must be retaken with a passing score for 2 times
BPM0002	2 Studies in Biotech- Pharmaceutical Industry	2.0	2.0	0.0	
BPM0003	3 Biotech Product Development and Intellectual Property Management	3.0	3.0	0.0	
BPM0004	4 Research and Design Management in Bioindustry	3.0	3.0	0.0	

II. Elective Courses: 12.0 credits are required

Students can choose to take up to 8 credits outside the school with the guidance of a professor.

Course Code	Course Name	Credit(s)	Credit Unit		Note
			Lecture Hour	Lab/Practice Hour	
1 Core Elective Courses (Select at Least One) 1 course is least required, Select at Least One					
BIC0173	1-1 Evolutionary Biology	3.0	3.0	0.0	
BIC0174	1-2 E Advanced Ecology	3.0	3.0	0.0	
BIC8007	1-3 Research Methods of Experimental Biology	2.0	2.0	0.0	
BIC0138	1-4 Cellular and Molecular Biology	3.0	3.0	0.0	
BIC8021	1-5 Experimental Physiology	2.0	2.0	0.0	
BIM0124	1-6 Modern Physiology	3.0	3.0	0.0	
BPM0005	2 Topics on Biotech- Pharmaceutical Industry	3.0	3.0	0.0	
BPM0006	3 Internship in Domestic Biotech- Pharmaceutical Industry	3.0	0.0	6.0	
BPM0007	4 Pharmaceutical Industry Aspects on Chinese and Western Medicine	3.0	3.0	0.0	
BPM0008	5 Internship in Overseas Biotech- Pharmaceutical Industry	3.0	0.0	6.0	
BPM0009	6 Translational Medicine	2.0	2.0	0.0	
BIC0139	7 Protein and Enzyme Chemistry	3.0	3.0	0.0	
BIC9027	8 Concept and Experimental Learning of Plant Factory	2.0	1.0	2.0	
NSM0013	9 Topics in Functional Foods	3.0	3.0	0.0	
BIC7002	10 Industrial Practice	3.0	3.0	0.0	
BIC7001	11 Special Topics on Intellectual Property	2.0	2.0	0.0	
BIC0052	12 Neuropharmacology	3.0	3.0	0.0	
BPM0012	13 Application of Analytic Instruments in Biomedical Industry	2.0	2.0	0.0	
BIC8018	14 Topics on Animal Physiology (I)	2.0	2.0	0.0	
BIC9060	15 Pteridology	3.0	3.0	0.0	
BIC9059	16 Plant Pathology	3.0	3.0	0.0	
BIC8027	17 E Topics in Virology	2.0	2.0	0.0	
BIC8025	18 E Introduction to Statistical Analysis	3.0	3.0	0.0	
BIC8030	19 E Comprehensive Biotech Practice-From Micro Molecular Biology to Macro Physiology	3.0	3.0	0.0	
BIC8026	20 E Linear and Logistic Regression Models	3.0	3.0	0.0	
BIC8028	21 E Apply Sciences Lead to Biotechnology Industry	2.0	2.0	0.0	
BIC0001	22 Neurobiology	3.0	3.0	0.0	
BIC0006	23 Biological Geography	3.0	3.0	0.0	
BIC0011	24 Experimental Design and Data Analysis	3.0	3.0	0.0	
BIC0016	25 E Topics in Plant Molecular Biology	2.0	2.0	0.0	
BIC0017	26 Topics in Fish Physiology	3.0	3.0	0.0	
BIC0021	27 Topics in Molecular Genetics	3.0	3.0	0.0	
BIC0038	28 Studies in Adaptation and Natural Selection	2.0	2.0	0.0	
BIC0059	29 Architecture of Brain	3.0	3.0	0.0	
BIC0061	30 E Principles and Methods of Plant Taxonomy	3.0	3.0	0.0	
BIC0084	31 Animal Behaviour	3.0	3.0	0.0	
BIC0085	32 Marine Biology	2.0	2.0	0.0	
BIC0086	33 Ornithology	3.0	3.0	0.0	
BIC0087	34 Herpetology	2.0	2.0	0.0	

Course Code	Course Name	Credit(s)	Credit Unit		Note
			Lecture Hour	Lab/Practice Hour	
BIC0088	35 Recreation Ecology	3.0	3.0	0.0	
BIC0101	36 Paper Writing and Presentation in Biological Science	2.0	2.0	0.0	
BIC0108	37 Marine Ecology	2.0	2.0	0.0	
BIC0111	38 Respiratory and Circulatory Physiology	2.0	2.0	0.0	
BIC0119	39 Learning and memory	3.0	3.0	0.0	
BIC0123	40 Developmental Biology	3.0	3.0	0.0	
BIC0133	41 Topics in Molecular Biology	2.0	2.0	0.0	
BIC0153	42 Regression Analysis	3.0	3.0	0.0	
BIC0170	43 E Forest Ecology	3.0	3.0	0.0	
BIC0175	44 Biological Invasions	3.0	3.0	0.0	
BIC0177	45 Biotechnology	3.0	3.0	0.0	
BIC0185	46 Adaptation and Natural Selection	3.0	3.0	0.0	
BIC0186	47 Protein Engineering	3.0	3.0	0.0	
BIC7004	48 Translational Medicine — Novel Compounds and Chinese Herbal Medicines	2.0	2.0	0.0	
BIC7005	49 E Drug Development and Translational Medicine	2.0	2.0	0.0	
BIC7007	50 Population Genetics and Evolution	3.0	3.0	0.0	
BIC7009	51 Immunochemistry	3.0	3.0	0.0	
BIC7010	52 Neuroethology	3.0	3.0	0.0	
BIC7012	53 Principles of Phylogenetics	3.0	3.0	0.0	
BIC7015	54 Comparative Animal Physiology	3.0	3.0	0.0	
BIC8003	55 Ecology and Evolution of Amphibians and Reptiles	2.0	2.0	0.0	
BIC8006	56 Topics on Animal Physiology (II)	2.0	2.0	0.0	
BIC8010	57 Research Methods in Ecology and Evolution	1.0	1.0	0.0	
BIC8012	58 Oxidative Stress Physiology	3.0	3.0	0.0	
BIC8016	59 Writing Scientific Papers in English	3.0	3.0	0.0	
BIC8020	60 Biotechnology for the Drug Development	2.0	2.0	0.0	
BIC8022	61 E Behavioral Ecology	3.0	3.0	0.0	
BIC8023	62 Application of Optoelectronic Technology in Biomedical	2.0	2.0	0.0	
BIC9006	63 Stem Cell Biology	3.0	3.0	0.0	
BIC9008	64 E Landscape Ecology	3.0	3.0	0.0	
BIC9009	65 Plant Genetic Engineering	3.0	3.0	0.0	
BIC9011	66 Bioindustry	2.0	2.0	0.0	
BIC9013	67 Program Language in Bioinformatics	3.0	3.0	0.0	
BIC9014	68 Algorithms in Bioinformatics	3.0	3.0	0.0	
BIC9015	69 Biological Microtechnique (including Lab.)	3.0	2.0	2.0	
BIC9021	70 E Wildlife Biology	3.0	3.0	0.0	
BIC9022	71 Endocrinology	3.0	3.0	0.0	
BIC9024	72 Principles of Systematic Biology	3.0	3.0	0.0	
BIC9025	73 Island Biogeography	3.0	3.0	0.0	
BIC9028	74 Translational Application of Stem Cell	1.0	1.0	0.0	
BIC9029	75 Translational Application of Stem Cell Experiment	1.0	0.0	3.0	
BIC9030	76 Biodiesel Biotechnology	1.0	1.0	0.0	
BIC9031	77 Biodiesel Biotechnology Experiment	1.0	0.0	3.0	
BIC9032	78 Cancer Biology	2.0	2.0	0.0	
BIC9033	79 Reactive Oxygen Species and Biological Medicine	1.0	1.0	0.0	
BIC9034	80 Methods for Reactive Oxygen Species Measurement	1.0	0.0	3.0	
BIC9035	81 Data Analysis for Ecology and Evolution in R Programming Language	3.0	3.0	0.0	
BIC9036	82 Ecological Plant Physiology	3.0	3.0	0.0	
BIC9062	83 E Plant Cell and Tissue Culture	3.0	3.0	0.0	
BIC9040	84 Signal Transduction	3.0	3.0	0.0	
BIC9041	85 Environmental Physiology	3.0	3.0	0.0	
BIC9042	86 Transgenic	2.0	2.0	0.0	
BIC9044	87 Virology	2.0	2.0	0.0	
BIC9045	88 Inquiry and Practice in Biology	2.0	2.0	0.0	
BIC9046	89 Curriculum Design for Scientific Inquiry and Practices	2.0	2.0	0.0	
BIC9047	90 Cross-Domain Learning Chinese Medicine and Health	2.0	2.0	0.0	
BIC9048	91 The Application of Biotechnological Advances on Complement for Clinical Practice	2.0	2.0	0.0	
BIC9049	92 Overview of Biomedical Development and Commercialization	2.0	2.0	0.0	
BIC9050	93 Plant Anatomy with Experiment	3.0	2.0	2.0	
BIC9051	94 Mammalogy	2.0	2.0	0.0	
BIC9052	95 The Latest Modern Issues in Biomedical Research and Technology	2.0	2.0	0.0	

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BIC9053	96 Biomethology of Cancer Research	3.0	3.0	0.0	
BIC9054	97 Ecophysiology	3.0	3.0	0.0	
BIC9055	98 Evolution of Insects	3.0	3.0	0.0	
BIC9056	99 E Introduction in Virology	2.0	2.0	0.0	
BIC9057	100 E Histology	2.0	2.0	0.0	
BIC9058	101 Basic and Applied Bone Biology	2.0	2.0	0.0	
BIC9061	102 Oncology Journal Reading and Discussion	2.0	2.0	0.0	
BIM0125	103 E Ecoacoustics: Principle and Application	2.0	2.0	0.0	
BIM0126	104 E Knowledge Transformation and Dissemination for Life Science	2.0	2.0	0.0	
OEC8155	105 E Bio-Chips Manufacturing Technology	3.0	3.0	0.0	
BIC9063	106 E Plant Molecular Biology	2.0	2.0	0.0	
BPM0013	107 Special Topics of Intellectual Property in Biomedical Industry	3.0	3.0	0.0	
BIC9067	108 Internship in Ecological Industry	3.0	0.0	6.0	
BIC9066	109 Field Ecology Survey Techniques	3.0	3.0	0.0	

III. Free Elective Credits: 0.0 credit is required