

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
112	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	
BPM0005	1 Topics on Biotech- Pharmaceutical Industry	3.0	3.0	0.0	
BPM0006	2 Internship in Domestic Biotech- Pharmaceutical Industry	3.0	0.0	6.0	
BPM0007	3 Pharmaceutical Industry Aspects on Chinese and Western Medicine	3.0	3.0	0.0	
BPM0008	4 Internship in Overseas Biotech- Pharmaceutical Industry	3.0	0.0	6.0	
BPM0009	5 Translational Medicine	2.0	2.0	0.0	
BIC0139	6 Protein and Enzyme Chemistry	3.0	3.0	0.0	
BIC9027	7 Concept and Experimental Learning of Plant Factory	2.0	1.0	2.0	
NSM0013	8 Topics in Functional Foods	3.0	3.0	0.0	
BIC7002	9 Industrial Practice	3.0	3.0	0.0	
BIC7001	10 Special Topics on Intellectual Property	2.0	2.0	0.0	
BIC0052	11 Neuropharmacology	3.0	3.0	0.0	
BPM0012	12 Application of Analytic Instruments in Biomedical Industry	2.0	2.0	0.0	
BIC8018	13 Topics on Animal Physiology (I)	2.0	2.0	0.0	
BIC9060	14 Pteridology	3.0	3.0	0.0	
BIC9059	15 Plant Pathology	3.0	3.0	0.0	
BIC8027	16 E Topics in Virology	2.0	2.0	0.0	
BIC8025	17 E Introduction to Statistical Analysis	3.0	3.0	0.0	
BIC8029	18 E Laboratory Rotations in Cell and Molecular Biology	3.0	3.0	0.0	
BIC8026	19 E Linear and Logistic Regression Models	3.0	3.0	0.0	
BIC8028	20 E Apply Sciences Lead to Biotechnology Industry	2.0	2.0	0.0	
BIC0001	21 Neurobiology	3.0	3.0	0.0	
BIC0006	22 Biological Geography	3.0	3.0	0.0	
BIC0011	23 Experimental Design and Data Analysis	3.0	3.0	0.0	
BIC0016	24 E Topics in Plant Molecular Biology	2.0	2.0	0.0	
BIC0017	25 Topics in Fish Physiology	3.0	3.0	0.0	
BIC0021	26 Topics in Molecular Genetics	3.0	3.0	0.0	
BIC0038	27 Studies in Adaptation and Natural Selection	2.0	2.0	0.0	
BIC0059	28 Architecture of Brain	3.0	3.0	0.0	
BIC0061	29 Principles and Methods of Plant Taxonomy	3.0	3.0	0.0	
BIC0084	30 Animal Behaviour	3.0	3.0	0.0	
BIC0085	31 Marine Biology	2.0	2.0	0.0	
BIC0086	32 Ornithology	3.0	3.0	0.0	
BIC0087	33 Herpetology	2.0	2.0	0.0	
BIC0088	34 Recreation Ecology	3.0	3.0	0.0	
BIC0101	35 Paper Writing and Presentation in Biological Science	2.0	2.0	0.0	
BIC0108	36 Marine Ecology	2.0	2.0	0.0	
BIC0111	37 Respiratory and Circulatory Physiology	2.0	2.0	0.0	
BIC0119	38 Learning and memory	3.0	3.0	0.0	
BIC0123	39 Developmental Biology	3.0	3.0	0.0	
BIC0133	40 Topics in Molecular Biology	2.0	2.0	0.0	

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			Lecture Hour	Lab/Practice Hour	
BIC0153	41 Regression Analysis	3.0	3.0	0.0	
BIC0170	42 E Forest Ecology	3.0	3.0	0.0	
BIC0175	43 Biological Invasions	3.0	3.0	0.0	
BIC0177	44 Biotechnology	3.0	3.0	0.0	
BIC0185	45 Adaptation and Natural Selection	3.0	3.0	0.0	
BIC0186	46 Protein Engineering	3.0	3.0	0.0	
BIC7003	47 Molecular Evolution	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	
BIC9037	83 Conservation Biology	3.0	3.0	0.0	
BIC9038	84 Disease Ecology	3.0	3.0	0.0	
BIC9062	85 E Plant Cell and Tissue Culture	3.0	3.0	0.0	
BIC9040	86 Signal Transduction	3.0	3.0	0.0	
BIC9041	87 Environmental Physiology	3.0	3.0	0.0	
BIC9042	88 Transgenic	2.0	2.0	0.0	
BIC9044	89 Virology	2.0	2.0	0.0	
BIC9045	90 Inquiry and Practice in Biology	2.0	2.0	0.0	
BIC9046	91 Curriculum Design for Scientific Inquiry and Practices	2.0	2.0	0.0	
BIC9047	92 Cross-Domain Learning Chinese Medicine and Health	2.0	2.0	0.0	
BIC9048	93 The Application of Biotechnological Advances on Complement for Clinical Practice	2.0	2.0	0.0	
BIC9049	94 Overview of Biomedical Development and Commercialization	2.0	2.0	0.0	
BIC9050	95 Plant Anatomy with Experiment	3.0	2.0	2.0	
BIC9051	96 Mammalogy	2.0	2.0	0.0	
BIC9052	97 The Latest Modern Issues in Biomedical Research and Technology	2.0	2.0	0.0	
BIC9053	98 Biomethology of Cancer Research	3.0	3.0	0.0	
BIC9054	99 Ecophysiology	3.0	3.0	0.0	
BIC9055	100 Evolution of Insects	3.0	3.0	0.0	
BIC9056	101 E Introduction in Virology	2.0	2.0	0.0	

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BIC9057	102 E Histology	2.0	2.0	0.0	
BIC9058	103 Basic and Applied Bone Biology	2.0	2.0	0.0	
BIC9061	104 E Oncology Journal Reading and Discussion	2.0	2.0	0.0	
BIM0125	105 E Ecoacoustics: Principle and Application	2.0	2.0	0.0	
BIM0126	106 E Knowledge Transformation and Dissemination for Life Science	2.0	2.0	0.0	
OEC8155	107 E Bio-Chips Manufacturing Technology	3.0	3.0	0.0	
BIC0138	108 Cellular and Molecular Biology	3.0	3.0	0.0	
BIC0173	109 Evolutionary Biology	3.0	3.0	0.0	
BIC0174	110 E Advanced Ecology	3.0	3.0	0.0	
BIC8007	111 Research Methods of Experimental Biology	2.0	2.0	0.0	
BIC8021	112 Experimental Physiology	2.0	2.0	0.0	
BIM0124	113 Modern Physiology	3.0	3.0	0.0	
BIC9063	114 E Plant Molecular Biology	2.0	2.0	0.0	

III. Free Elective Credits: 0.0 credit is required