

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
115	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	
BIC0177	1-7 Biotechnology	3.0	3.0	0.0	
BIC9006	1-8 Stem Cell Biology	3.0	3.0	0.0	
BIC8006	1-9 Topics on Animal Physiology (II)	2.0	2.0	0.0	
BIC8018	1-10 Topics on Animal Physiology (I)	2.0	2.0	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	

Course Code	Course Name	Credit(s)	Credit Unit		Note
			Lecture Hour	Lab/Practice Hour	
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	
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	
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	
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	
BIC7004	47 Translational Medicine — Novel Compounds and Chinese Herbal Medicines	2.0	2.0	0.0	
BIC7005	48 E Drug Development and Translational Medicine	2.0	2.0	0.0	
BIC7007	49 Population Genetics and Evolution	3.0	3.0	0.0	
BIC7009	50 Immunochemistry	3.0	3.0	0.0	
BIC7010	51 Neuroethology	3.0	3.0	0.0	
BIC7012	52 Principles of Phylogenetics	3.0	3.0	0.0	
BIC7015	53 Comparative Animal Physiology	3.0	3.0	0.0	
BIC8003	54 Ecology and Evolution of Amphibians and Reptiles	2.0	2.0	0.0	
BIC8006	55 Topics on Animal Physiology (II)	2.0	2.0	0.0	
BIC8010	56 Research Methods in Ecology and Evolution	2.0	2.0	0.0	
BIC8012	57 Oxidative Stress Physiology	3.0	3.0	0.0	
BIC8016	58 Writing Scientific Papers in English	3.0	3.0	0.0	
BIC8022	59 E Behavioral Ecology	3.0	3.0	0.0	
BIC8023	60 Application of Optoelectronic Technology in Biomedical	2.0	2.0	0.0	
BIC9006	61 Stem Cell Biology	3.0	3.0	0.0	
BIC9008	62 E Landscape Ecology	3.0	3.0	0.0	
BIC9009	63 E Plant Genetic Engineering	3.0	3.0	0.0	
BIC9011	64 Bioindustry	2.0	2.0	0.0	
BIC9013	65 Program Language in Bioinformatics	3.0	3.0	0.0	
BIC9014	66 Algorithms in Bioinformatics	3.0	3.0	0.0	
BIC9015	67 Biological Microtechnique (including Lab.)	3.0	2.0	2.0	
BIC9021	68 E Wildlife Biology	3.0	3.0	0.0	
BIC9022	69 Endocrinology	3.0	3.0	0.0	
BIC9024	70 Principles of Systematic Biology	3.0	3.0	0.0	
BIC9025	71 Island Biogeography	3.0	3.0	0.0	
BIC9032	72 Cancer Biology	2.0	2.0	0.0	
BIC9035	73 Data Analysis for Ecology and Evolution in R Programming Language	3.0	3.0	0.0	
BIC9062	74 E Plant Cell and Tissue Culture	3.0	3.0	0.0	
BIC9040	75 Signal Transduction	3.0	3.0	0.0	
BIC9041	76 Environmental Physiology	3.0	3.0	0.0	
BIC9042	77 Transgenic	2.0	2.0	0.0	
BIC9044	78 Virology	2.0	2.0	0.0	
BIC9045	79 Inquiry and Practice in Biology	2.0	2.0	0.0	
BIC9046	80 Curriculum Design for Scientific Inquiry and Practices	2.0	2.0	0.0	
BIC9047	81 Cross-Domain Learning Chinese Medicine and Health	2.0	2.0	0.0	
BIC9048	82 The Application of Biotechnological Advances on Complement for Clinical Practice	2.0	2.0	0.0	
BIC9049	83 Overview of Biomedical Development and Commercialization	2.0	2.0	0.0	
BIC9050	84 Plant Anatomy with Experiment	3.0	2.0	2.0	
BIC9051	85 Mammalogy	2.0	2.0	0.0	
BIC9052	86 The Latest Modern Issues in Biomedical Research and Technology	2.0	2.0	0.0	
BIC9053	87 Biomethology of Cancer Research	3.0	3.0	0.0	
BIC9054	88 Ecophysiology	3.0	3.0	0.0	
BIC9055	89 Evolution of Insects	3.0	3.0	0.0	
BIC9056	90 E Introduction in Virology	2.0	2.0	0.0	
BIC9057	91 E Histology	2.0	2.0	0.0	

Course Code	Course Name	Credit(s)	Credit Unit		Note
			Lecture Hour	Lab/Practice Hour	
BIC9058	92 Basic and Applied Bone Biology	2.0	2.0	0.0	
BIC9061	93 E Oncology Journal Reading and Discussion	2.0	2.0	0.0	
BIM0125	94 E Ecoacoustics: Principle and Application	2.0	2.0	0.0	
BIM0126	95 E Knowledge Transformation and Dissemination for Life Science	2.0	2.0	0.0	
OEC8155	96 E Bio-Chips Manufacturing Technology	3.0	3.0	0.0	
BIC9063	97 E Plant Molecular Biology	2.0	2.0	0.0	
BPM0013	98 Special Topics of Intellectual Property in Biomedical Industry	3.0	3.0	0.0	
BIC9067	99 Internship in Ecological Industry	3.0	0.0	6.0	
BIC9066	100 Field Ecology Survey Techniques	3.0	3.0	0.0	
BPM0014	101 Biomedical Product Innovation and Entrepreneurship Management	2.0	2.0	0.0	
BIC8031	102 Special Topics in Brain Neurobehavioral Studies	3.0	3.0	0.0	
BIC9068	103 Field ecology	3.0	3.0	0.0	
BIC9065	104 E Introduction to Biomaterials	3.0	3.0	0.0	
BIC9064	105 Introduction to Biomedical Engineering	3.0	3.0	0.0	
BPM0015	106 Management of Entrepreneurial Risk and Tax Planning in Biotechnology Industry	2.0	2.0	0.0	
BIC9071	107 Marine Ecosystem	2.0	2.0	0.0	
BIC9070	108 Forest Ecophysiology	3.0	3.0	0.0	
BIC9069	109 Natural Carbon Sink Analysis	3.0	3.0	0.0	
BIC9074	110 E Wildlife Management	3.0	3.0	0.0	
BIC9073	111 E Introduction to Biostatistics	3.0	3.0	0.0	
BIC9072	112 E Remote Sensing in Vegetation Ecology	2.0	2.0	0.0	
BIC9075	113 Laboratory for Biological Inquiry and Practices	1.0	0.0	2.0	
BIC9076	114 Laboratory in Curriculum Design for Scientific Inquiry and Practices	1.0	0.0	2.0	
BIC8032	115 Regulatory and Verification Mechanism Analysis for Nature-Based Carbon Sinks	3.0	3.0	0.0	

III. Free Elective Credits: 0.0 credit is required