Demonstration School of Suan Sunandha Rajabhat University, English Program
M.4/1 and M.4/2 Semester 1-2, Academic Year 2022

Course Focus: Biological Science is an academic requirement for both Math-Science and Math-English majors studying at Mathayom 4 (Secondary Grade 10) for semesters 1 and 2. Students are geared to acquire the basic understanding of concepts and details of covered topics through lectures, exercises, hands-on experiment(s), and interactive discussions during the class session. Student preparation and review of reading material prior and post class session is advised in order to keep up with the pace of instruction.

NOTE: Timely class attendance is taken seriously. Tardy or absent students should follow up on missed work promptly.

	Score Assessment	Points	Total Points
1	Class Attendance	10	60
2	Class Manners and Participation • Attention/responsiveness • Inappropriate conduct such as playing on mobile phones, tablets, etc... will result in point(s) deduction. **Note**: Mobile phones will be permitted for searches in accordance to specific assignment/class activities <u>once announced at specific timepoint(s)</u>.		
3	Presentation in groups (individual scores for each student) Group Session – problem solving	20	
4	Extra-curriculum Activities • Lab with printed scientific report	20	
5	Pop Quiz	10	
6	Midterm	20	40
7	Final	20	
8	Extra Credit will be considered based on quality of work	0-10	
	Passing Score	**50 %**	

Semester 1: (SCI 30101) 1.0 Credit **Grade 10 (M4) Biological Science 1**		
Topics Covered		**Details**
1	Environmental Homeostasis	• Biome Diversity • Physical Laws and Energy Flow • Biogeochemical Cycles • Trophic Levels • Biotic and Abiotic Factors
2	Conservation Biology and Restoration Ecology	• Types of Environments and Natural Resources • Effect on Environment and Natural resources • Environmental Conservation
	Midterm Exam	**Cover up to topics 1-2**
3	Cellular Transport	• Structure and Function of Cell Membrane • Active and Passive Transport (Endocytosis, Exocytosis, Diffusion, and Osmosis)
4	Cellular Homeostasis	• Kidney and Function • Kidney Malfunction and Disease • Endocrine System function in homeostasis • Immune Mechanism and Immunity • Types of Immune Response • Components of Immune Response • Impaired Immune Response • Immunocompromised arising from HIV Infection
	Final Exam	**Cover up to topics 3-4**

Semester 2: (SCI 30102) 1.0 Credit **Grade 10 (M.4) Biological Science 2**		
	Topics Covered	**Details**
1	Heredity	• Mendel's Principle of Heredity • Gene and Chromosome • Central Dogma and Gene Express • DNA and Molecular Function • Mutation and Diversity • Genetic and DNA Technology
2	Evolution	• Biodiversity • Taxonomy • Darwin and The Origin of Species
	Midterm Exam	**Cover up to topics 1-2**
3	Plant Growth and Survival	• General Factors in Plant Growth and Survival • Structure and Function of Root, Stem and Leaf • Transpiration in Plant • Transport System • Essential Organic and Inorganic Molecules for Plant Growth • Importance of Photosynthesis • Plant Reproduction
4	Plant Stimulus and Response	• Plant Hormones • Plant Response to Stimulus • External Stimulus Inducing Plant Development
	Final Exam	**Cover up to topics 3-4**

Reading and Study Material:

(1) Campbell PowerPoint Lectures and uploads given in conjunction with textbooks

(2) Textbooks

2.1. New Century Elective Biology: Secondary 4, 5, and 6.
Hodder Education Singapore, 2019 Edition.
Beverly Tay, Loo Kwok Wai, Ong Bee Hoo, and Janlin Chan

2.2. Biology: A Global Approach, Global Edition, 10/E
Neil A. Campbell, University of California, Riverside
Jane B. Reece, Palo Alto, California
Lisa Urry
Michael L Cain, Bowdoin College, Brunswick, Maine
Steven A Wasserman, University of California, San Diego
Peter V Minorsky, Mercy College, Dobbs Ferry, New York
Robert B Jackson, Duke University, Durham, North Carolina
or equivalent version.

2.3. Extra reading from sheets to be given.