

## Demonstration School of Suan Sunandha Rajabhat University, English Program

### Class Information and Learning Approach

**Instructor:** Ajchara Aksomboon Vongsawan

#### **The Goal:**

The three-year Biology curriculum serves as a pre-requisite for Science-Math majors in preparation for entering biomedical sciences as well as other science fields.

Mathayom 4 (Secondary Grade 10): Year 1 Biology 1, 2

Mathayom 5 (Secondary Grade 11): Year 2 Biology 3, 4

Mathayom 6 (Secondary Grade 12): Year 3 Biology 5, 6

The study approach adheres to the Thai curriculum using combination of US and Singaporean textbooks with emphasis in preparing students to apply analytical thinking in the subject matter. English is the language of instruction in the English Program. Students planning to enter the biomedical field or medical field within the Thai university system are advised to read a Thai version of textbook in preparation for their entrance exam due to technical term discrepancy that may be used in Thai exams. Pre-med and biomedical science students will be expected to pay close attention to current knowledge of bioscience technology for future use at undergraduate university level.

<b>Grade 10 (M4): Year 1 Biology 2</b> <b>Semester 2: (SCI 31242) 1.5 Credits, 60 hours</b>	
<b>Course Content</b>	<b>Details</b>
<b>Unit 1: Heredity</b>	<ul style="list-style-type: none"><li>• Gregor Mendel: also known as the Father of Modern Genetics.</li><li>• Mendel's experiments with pea plants</li><li>• Mendel's Laws of Inheritance</li><li>• The Chromosomal Basis of Inheritance</li><li>• Genetic Material and Gene Expression</li><li>• Mechanisms leading to Mutations</li></ul>
<b>Unit 2: Genes and Chromosome</b>	<ul style="list-style-type: none"><li>• History of Genetic Material: experiments leading to unraveling Genetic Material, DNA structure and function.</li><li>• DNA Replication</li><li>• Central Dogma: Gene flow from DNA-RNA-Protein</li></ul>
<b>Midterm Exam</b>	<b>Material Covered from Units 1 and 2</b>

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<b>Unit 3: Genetics and DNA Technology</b>	<ul style="list-style-type: none"><li>• Errors during Gene Expression giving rise to Mutations</li><li>• Genomics and Biotechnology</li><li>• Genetic Engineering/ Recombinant DNA Technology</li></ul>
<b>Unit 4: Evolution</b>	<ul style="list-style-type: none"><li>• Darwin's Theory of Natural Selection</li><li>• Genotype Frequency</li><li>• Hardy-Weinberg Theory</li><li>• Origin of Species</li></ul>
<b>Final Exam</b>	<b>Material Covered from Units 3 and 4</b>
<b>Grading and Evaluation</b>	
<b>Percent Allocation</b>	<b>Percent</b>
Attendance and Participation	10
Assignments and Quiz	20
Experiments and Lab Report	30
Midterm	20
Finals	20
<b>Grade</b>	<b>Percent</b>
A	80-100
B+	75-79
B	70-74
C+	65-69
C	60-64
D+	55-59
D	50-54
F	Below 50

**Expectations from students:**

- (1) to always attend class
- (2) to critically read the assigned material before class
- (3) to enthusiastically participate in class discussions and problem-solving sessions
- (4) to diligently prepare for all exams

**Study and Reading Materials**

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

**(2) Textbooks**

- 2.1. 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.
- 2.2. 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

**(3) Video Clips and Scientific Readings from Journals**