**Course Focus:** Biological Science is an academic requirement for both Math-Science and Math-English majors studying at Mathayom 4 (Secondary Grade 10). 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.

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| --- | --- |
| **Semester 2: (SCI 30102) 1.0 Credits, 60 hours****M.4/1-2 (Science-Math and Math-English Majors)** **Grade 10 (M.4) Biological Science 2** | **Reading** |
| **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
 | Elective Biology 6:Chapters 1-3 |
| 2 | Evolution | * Biodiversity
* Taxonomy
* Darwin and The Origin of Species
 | Elective Biology 6:Chapters 4 |
|  | **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
 | Elective Biology 5:Chapters 4 |
| 4 | Plant Stimulus and Response | * Plant Hormones
* Plant Response to Stimulus
* External Stimulus Inducing Plant Development
 | Campbell Biology |
|  | **Final Exam** | **Cover up to topics 3-4** |  |

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

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| --- | --- | --- | --- |
|  | **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 once announced at specific timepoint(s). |
| 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 %** |

**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.