



Course Description

Subject: Additional Science 4

Code: SC22203

Periods: 2 period/ week

Credit: 1.0

Class: M 2

Semester: 2 / 2014

Instructor: Mr. John Andrew Bonila

Unit	Indicators
<p>1. Light and Colours</p> <p>1.1 The Speed of Light</p> <p>1.2 Plane Mirrors</p> <p>1.3 Spherical Mirrors</p> <p>1.4 Refraction of Light</p> <p>1.5 Dispersion of Light</p> <p>1.6 Lenses and Optical Instruments</p>	<p>the students will be able to:</p> <ol style="list-style-type: none"> 1. Visualize and explain the behavior and reflection of light by using their thinking capacity, problem-solving capacity and capacity for technological application for the students to have avidity for learning; and dedication and commitment to work. 2. Visualize and describe different images formed by different types of mirrors and how light is refracted using their thinking capacity and problem-solving capacity for the students to have self-discipline, avidity for learning and dedication and commitment to work. 3. Describe and explain the process in the dispersion of light and how human beings able to see colors by using their communication capacity, thinking capacity and capacity for applying life skills for the students to have self-discipline, avidity for learning and dedication and commitment to work. 4. Answer and produce the chapter exam and mind mapping by using their thinking capacity, problem-solving capacity and capacity for applying life skills for the students to observe honesty and integrity; and self-discipline.
<p>2. Sound</p> <p>2.1 How is Sound Produced?</p> <p>2.2 How Sound Travels</p> <p>2.3 How We Hear Sound</p> <p>2.4 Importance of Sound in Society</p> <p>2.5 Noise Pollution</p>	<p>students should be able to:</p> <ol style="list-style-type: none"> 5. Understand and explain how sounds are produced and how sounds travel using their capacity for applying life skills and thinking capacity for the students to have self-discipline, avidity for learning, dedication and commitment to work. 6. Identify and perform the different parts of the ear and a song using their capacity for applying life skills, thinking capacity, communication capacity to have self-discipline and avidity of learning. 7. Answer and produce the chapter exam and mind mapping by using their thinking capacity, problem-solving capacity and capacity for applying life skills for the students to observe honesty and integrity; and self-discipline.

Unit	Indicators
3. Ecology 3.1 Habitat 3.2 Environment 3.3 Ecosystems 3.4 Conserving the Physical Environment 3.5 Balance in the Ecosystem 3.6 Nutrient Cycles	students should be able to: 8. Identify and categorize the physical components of the environment and the animals based on their relationship using their thinking skills and capacity for applying life skills to have self-discipline and avidity for learning. 9. Appreciate and find the beauty of the world and ways in conserving the environment using their thinking capacity, problem-solving capacity and capacity for applying life skills to have avidity for learning, observance of principles of sufficiency economy philosophy in one's way of life, and dedication and commitment to work. 10. Conceptualize and produce a product out of recyclable materials using their thinking capacity, problem-solving capacity and capacity for applying life skills to have thinking capacity, problem-solving capacity, and capacity for applying life skills 11. Identify and describe the energy flow in the ecosystem and in the food web and food chain using their thinking capacity, capacity for applying life skills to have self-discipline, avidity for learning and dedication and commitment to work. 12. Create and answer food chain or food web of the living organisms and the short quiz using their thinking capacity, capacity for applying life skills, problem-solving capacity to have avidity for learning, honesty and integrity, and self-discipline. 13. Describe in brief the carbon and nitrogen cycle using their thinking capacity and problem-solving capacity to have dedication and commitment; and avidity for learning

Measurement and Evaluation

Total 100 marks (Assessment 60 marks : Midterm test / Final test 40 marks)

Measurement and Evaluation	Evaluation Method	Assessment tool	Marks	Indicators
1. Pre-midterm	1. Project 2. Test	1. Invention 2. Assignment Quizzes	25	1-4
2. Midterm test	Test	Examination Chapter 1	20	1-4
3. Post-midterm	1. Project 2. Test	1. Report & Chart 2. Assignment Quizzes	25	5-13
4. Final test	Test	Examination Chapter 2-3	20	5-13

Measurement and Evaluation	Evaluation Method	Assessment tool	Marks	Indicators
5. Desirable Characteristics	1. Class Participation	1. Observation by students' involvement of class activities	10	-
6. Competencies	1. Observation	1. Observation	-	-
7. Analytical reading and writing	1. Test in each unit 2. Examining homework 3. Examination	1. Unit tests 2. Exercises book 3. Examination	-	-

คุณลักษณะอันพึงประสงค์ 10 ข้อ

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| 1. รักษา ศาสน์ กษัตริย์ | 2. ซื่อสัตย์สุจริต |
| 3. มีวินัย | 4. ใฝ่เรียนรู้ |
| 5. อยู่อย่างพอเพียง | 6. มุ่งมั่นในการทำงาน |
| 7. รักความเป็นไทย | 8. มีจิตสาธารณะ |
| 9. ปลอดภัยเสพติดและอบายมุข | 10. มีความเป็นผู้นำและกล้าแสดงออก |

สมรรถนะ 5 ข้อ

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| 1. ความสามารถในการสื่อสาร | 2. ความสามารถในการคิด |
| 3. ความสามารถในการแก้ปัญหา | 4. ความสามารถในการใช้ทักษะชีวิต |
| 5. ความสามารถในการใช้เทคโนโลยี | |