SAMSEN WITTAYALAI SCHOOL
ENGLISH PROGRAM

COURSE OUTLINE

Subject: Science 3 (SC22101)
Course Classification: ☑ Foundation ☐ Additional
Learning Period: 3 Periods/Week
Credit Unit:1.5
Grade Level: Mattayomsuksa 2 (Grade 8)
Semester 1, **Academic Year** 2022
Learning Area: Science and technology
Samsenwittayalai School English Program
Teacher: Mr. Peeradach Jintasuttisak
Mr. Kim Oneil Madrigal Alveyra

I. COURSE DESCRIPTION

Study body systems, including circulation, respiration, excretion, nervous system, and reproduction. The systems focus on both human and animals. The topics will discuss about mechanisms of gas exchange in different organisms, filtration of blood, pathway of blood flows, comparative structures of nervous organs in different organisms, and structures and functions of male and female reproductive systems. In addition, learners will also study solutions, together with its components and properties, factors affecting the dissolution of substances, and concentration of solutions. Motions will also be tackled involving scalar and vector quantities, speed, velocity, and acceleration, and the wide varieties of forces.

By using the scientific processes, searching data, discussion, analyzing, comparing, presentation, testing, prediction, investigation and experimenting.

For improving the scientific knowledge, thoughts and understanding so that the students can make use of the knowledge to make decision. They can also use the knowledge in every day's life, leading to scientific mind, ethics, virtues and appropriate attitudes. Eventually, they can read, analyze and write critically to meet the school standard and attain the desirable characteristics.

II. INDICATORS

1. Learners' reading, analytical thinking and writing skills meet the criteria prescribed by the respective educational institutions.
2. Learners' desirable characteristics meet the criteria prescribed by the respective educational institutions.

3. Sc. 1.2.4 Indicate organs and explain their functions relating to the excretory system
4. Sc. 1.2.5 Realize about importance of respiratory system to remove waste products through kidney and take care of excretory organs to perform function normally
5. Sc. 1.2.6 Explain structures and functions of heart, blood vessels, and blood
6. Sc. 1.2.7 Explain functions of blood circulation by using a model
7. Sc. 1.2.8 Design an experiment and perform the activity by comparing to heart pulses between resting stage and exercising stage
8. Sc. 1.2.9 Realize about importance of circulatory system and take care of circulatory organs to perform function normally
9. Sc. 1.2.10 Indicate organs and explain their functions relating to nervous system to control body functions
10. Sc. 1.2.11 Realize about importance of nervous system and take care of nervous organs including prevention of traumatic damages to brain and spinal cord
11. Sc. 1.2.12 Indicate organs and explain their functions relating to male and female reproductive organs by using models
12. Sc. 1.2.13 Explain effects of male and female hormones to control body changes during adolescence
13. Sc. 1.2.14 Realize about importance of body change during adolescence and take care of body and mind during this stage
14. Sc. 1.2.15 Explain ovulation process, menstruation, fertilization, zygotic development, and laboring process
15. Sc. 1.2.16 Choose correct types of contraception relating to the situation
16. Sc. 1.2.17 Realize about effects of premature pregnancy by adapting proper behaviors.
17. Sc. 2.1.4 Design and do the experiment to explain the result of type of solute, type of solvent temperature on solubility and explain the result of pressure on solubility by using the information.
18. Sc. 2.1.5 Indicate quantity of solute in volume-by-volume percentage, mass by mass percentage and mass by volume percentage.
19. Sc. 2.1.6 Realize the important of the knowledge of solution concentration utilizing by give the example of the use of solution in daily life.
20. Sc. 2.2.1 Predict the motion of object result from several forces acting on objects on the same plane from the empirical evidence.
21. Sc. 2.2.2 Construct the diagram to show force and resultant force from several forces acting on objects on the same plane.
22. Sc. 2.2.3 Design and do the experiment with suitable method to explain factors affecting on liquid pressure.
23. Sc. 2.2.4 Analyze buoyant force and sinking, floating of object in liquid from the empirical evidence.
24. Sc. 2.2.5 Construct the diagram to show force acting object in liquid.
25. Sc. 2.2.6 Explain static friction force and kinetic friction force from empirical evidence.
26. Sc. 2.2.7 Design and do the experiment by suitable method to explain factor affecting on magnitude of friction force.
27. Sc. 2.2.8 Construct the diagram to show friction force and other forces acting on the object.
28. Sc. 2.2.9 Realize the useful of knowledge of friction force by analyze the problem situation and propose the increasing and decreasing of friction which helpful in daily life activities.

29. Sc. 2.2.10 Design and do experiment with suitable method to explain moment of force when object is balance, calculate with equation $M = Fl$.
30. Sc. 2.2.11 Compare source of magnetic field, electric field, gravitational field and direction of force acting on object in particular fields from data gathering.
31. Sc. 2.2.12 Construct the diagram to show magnetic field, electric field and gravitational field acting on the object.
32. Sc. 2.2.13 Analyze the relationship between magnitude of magnetic force, electric force, and gravitational force acting on the object in particular field and distance between object and field from data gathering.
33. Sc. 2.2.14 Explain and calculate speed and velocity of object by using equation.

III. TENTATIVE COURSE OUTLINE

Week	Topics / Contents	Indicators	Period(s)
1	Circulation of invertebrates and vertebrate (PJ) Definition of solution (KA)	Sc. 1.2.7 Sc. 2.1.4 Sc. 2.1.6	2 1
2	Circulation of human (PJ) Components of Solution (KA)	Sc. 1.2.8, Sc. 1.2.9 Sc. 2.1.4 Sc. 2.1.5	2 1
3	Respiration of invertebrates, vertebrates, and human (PJ) Dissolution property of substances (KA)	Sc. 1.2.1 Sc. 2.1.4 Sc. 2.1.5	2 1
4	Respiration: gas exchange and cellular respiration (PJ) Factors affecting the dissolution of substances (KA)	Sc. 1.2.1, Sc. 1.2.2, Sc. 1.2.3 Sc. 2.1.5 Sc. 2.1.6	2 1
5	Excretion of vertebrates and invertebrates (PJ) Group Activity (Experiment/Worksheet) (KA)	Sc. 1.2.4 Sc. 2.1.5 Sc. 2.1.6	2 1
6	Human excretion (PJ) Concentration of solutions (KA)	Sc. 1.2.4 Sc. 2.1.5	2 1
7	Ultrafiltration and reabsorption in kidney (PJ) Energy under the dissolution of substances (KA)	Sc. 1.2.4, Sc. 1.2.5 Sc. 2.1.4 Sc. 2.1.5	2 1
8	Lab: Pig heart dissection (PJ) Unit Quiz (Solutions) (KA)	Sc. 1.2.7 Sc. 2.1.4 Sc. 2.1.5 Sc. 2.1.6	2 1
9	Revision: Midterm examination (PJ) Review		2 1
10	**Midterm exam**		

11	Nervous system of invertebrate and invertebrate (PJ) Motion (KA)	Sc. 1.2.10, Sc. 1.2.11 Sc. 2.2.1	2 1
12	Male reproduction (PJ) Speed and velocity (KA)	Sc. 1.2.8, Sc. 2.2.14	2 1
13	Female reproduction (PJ) Forces, finding resultant vector and resultant force (KA)	Sc. 1.2.12 Sc. 2.2.1 Sc. 2.2.2 Sc. 2.2.5	2 1
14	Hormonal control of sexual developments (PJ) Friction force (KA)	Sc. 1.2.7 Sc. 2.2.7	2 1
15	Fertilization (PJ) Static friction and kinetic friction (KA)	Sc. 1.2.8, Sc. 2.2.6 Sc. 2.2.7	2 1
16	zygote development and laboring (PJ) Moment of a force (KA)	Sc. 1.2.8, Sc 2.2.10	2 1
17	contraception, premature pregnancy (PJ) Liquid pressure (KA)	Sc. 1.2.9 Sc. 2.2.3 Sc. 2.2.4 Sc. 2.2.5	2 1
18	Lab: Nervous responses (PJ) Unit Quiz (Motion) (KA)	Sc. 1.2.1	2 1
19	Revision: final exam (PJ) Review		2 1
20	Final exam		

IV. TEACHING METHODS AND MANAGEMENT

☑ Experiment ☑ Lecture/Discussion ☑ Group work

☑ Self-learning ☑ Demonstration

V. TEACHING MATERIALS/SUPPLEMENTS

☑ Handouts ☑ Worksheets ☑ Graphs/ Diagrams

☑ Others

☑ Pictures Google Classroom

VI. Assessment and Evaluation

Indicator / Learning Outcome Score from SGS	Formative I				Midterm	Formative II						Final
	1	2	3	4		10	11	12	13	14	15	
Total score	**10**	**10**			**20**	**10**	**10**	**20**				**20**
Learners' reading, analytical thinking												
Learners' desirable characteristics												
Sc 1.2.4	0.8				1.4							
Sc 1.2.5	0.8				1.4							
Sc 1.2.6	0.8				1.4							
Sc 1.2.7	0.8				1.4							
Sc 1.2.8	0.8				1.4							
Sc 1.2.9	0.8				1.4							
Sc 1.2.10	0.8				1.4							
Sc 1.2.11	0.8					1.4	1.4					
Sc 1.2.12	0.8					1.4	1.4					
Sc 1.2.13	0.8					1.4	1.4					
Sc 1.2.14	0.8					1.4	1.4					
Sc 1.2.15	0.8					1.4	1.4					
Sc 1.2.16	0.8					1.4	1.4					
Sc 1.2.17	0.8					1.4	1.4					
Sc 2.1 M.2/9-12		10										
Sc 2.2 M.2/9-12								20				
Midterm Exam					20							
Final Exam												20

VII. Assignment

SGS No.	Score (points)	Assignment	Deadline	Type			Remark
				Test	Individual	Group	
1.	10	(PJ) Lecture Note 1 (5 points) (PJ) Quiz 1 (5 points)	June /July	✓	✓		
2.	10	(KA)					
10.	10	(PJ) Lecture Note 2 (5 points) (PJ) Quiz 2 (5 points)	October September	✓			
11.	10	(PJ) Lab report 1 (5 points) (PJ) Worksheet1 (5 points)	October September	✓	✓		
12.	20	(KA)					

Note: 1. Assignment are quiz, homework, exercise report or project etc.
2. The details in assessment and evaluation are tentative.