



**SAMSEN WITTAYALAI SCHOOL  
ENGLISH PROGRAM**

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**COURSE OUTLINE**

**Subject:** Physics (SC31211)

**Course Classification:**  Foundation  Additional

**Learning Period:** 2 Periods/Week

**Credit Unit:** 1.0

**Grade Level:** Mattayomsuksa 4 (Grade 10)

**Semester 1, Academic Year 2022**

**Learning Area:** Science and technology

**Samsenwittayalai School English Program**

**Teacher:** Dr. Songsak Phonghirun  
Dr. Kem Pumsa-ard

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**I. COURSE DESCRIPTION**

Study of basic concept of Physics, physical quantities, SI units, estimating physical quantities, scientific equations, vectors and scalars, combining vectors, resolution of vectors, distance and displacement, speed and velocity, acceleration, graphs for motion, distance-time graphs, velocity-time graphs, mass, forces, and Newton's laws of motion.

By using the scientific processes, seeking knowledge, searching data, investigating, analyzing, comparing, explaining, discussing and conclude.

For improving the scientific knowledge and understanding so that the students can make use of the knowledge to make decision, develop scientific skill including the 21<sup>st</sup> century skills in information technology, critical thinking and problem-solving and communicating. They can also communicate the knowledge and can use the knowledge in every day's life, leading to scientific mind, ethics, virtues and appropriate attitudes.

**II. INDICATORS / LEARNING OUTCOMES**

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. Explain the basic concept of Physics, physical quantities, SI units, estimating physical quantities, scientific equations, vectors, and scalars, and apply knowledge of Physics to explain phenomenon in daily life.
4. Explain the graphs for motion.
5. Explain definition of kinematics, one-dimension motion, distance and displacement, speed and velocity, acceleration, and apply to problems solving as well as to explain phenomenon in daily life.

6. Explain the resultant force from two forces.
7. Explain the free body diagram, the definition of mass, forces, Newton's laws of motion, and apply to problems solving as well as to explain phenomenon in daily life.
8. Explain the basic concept of Newton gravitational force and relationship between the force and weight.
9. Explain the frictions and apply to problems solving as well as to explain phenomenon in daily life.

### III. TENTATIVE COURSE OUTLINE

Week	Topics / Contents	Indicators	Period(s)
1.	Basic concept of Physics, physical quantities, and SI units		2
2.	Estimating physical quantities, scientific equations, vectors and scalars, combining vectors		2
3.	Introduction of kinematics of one-dimension motion, distance and displacement, speed and velocity, acceleration		2
4.	Equation of motion, example, and application		2
5.	Graph for motion, example, and application		2
6.	One-dimension in vertical axis		2
7.	One-dimension in horizontal axis		2
8.	The effect of air resistance on a falling body		2
9.	Unit test and review for the exam		2
10.	<b>Midterm Exam</b>		
11.	Introduction of mass and force		2
12.	Types of forces		2
13.	Introduction of the Newton's law of motion		2
14.	The 1 <sup>st</sup> law of motion		2
15.	The 2 <sup>nd</sup> law of motion		2
16.	The 3 <sup>rd</sup> law of motion		2
17.	The Newton's law of motion, example, and application		2
18.	The Newton's law of motion, example, and application		2
19.	Unit Test and review for the exam		2
20.	<b>Final Exam</b>		

### IV. Teaching Methods and Management

Experiment

Lecture/Discussion

Group work

- |   |   |   |
|---|---|---|
| <input type="checkbox"/> Individual work          | <input checked="" type="checkbox"/> Game          | <input type="checkbox"/> Song           |
| <input checked="" type="checkbox"/> Self-learning | <input checked="" type="checkbox"/> Demonstration | <input type="checkbox"/> Role play      |
| <input checked="" type="checkbox"/> Project       | <input type="checkbox"/> Experience               | <input checked="" type="checkbox"/> ICT |
| <input type="checkbox"/> Local Wisdom based       | <input type="checkbox"/> Others                   |   |

#### V. Teaching Materials/Supplements

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|--|--|--|
| <input checked="" type="checkbox"/> Handouts | <input checked="" type="checkbox"/> Worksheets | <input type="checkbox"/> Teacher's text book |
| <input type="checkbox"/> Graphs/ Diagrams    | <input type="checkbox"/> Maps                  | <input type="checkbox"/> Pictures            |
| <input type="checkbox"/> Samples/ Models     | <input checked="" type="checkbox"/> Exercises  |  |
- Commercial Textbook Physics for Scientists and Engineers with Modern Physics, Technology by Raymond Serway
- DVD/VCD
- Website
- Others

#### 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	
<b>Total score</b>	<b>10</b>	<b>10</b>			<b>15</b>	<b>10</b>	<b>10</b>					<b>30</b>
Learners' reading, analytical thinking						10						
Learners' desirable characteristics							10					
List indicators/ Learning Outcome												
3 & 4	10											
5		10			15							
6, 7, 8 & 9								15				30

## VII. Assignment

SGS No.	Score (points)	Assignment	Deadline	Type			Remark
				Test	Individual	Group	
1.	5	Homework	June		✓		
2.	5	Worksheet	July			✓	
3.	5	Quiz 1	June	✓			
4.	5	Quiz 2	July	✓			
5.	5	Homework	August		✓		
6.	5	Worksheet	September			✓	
7	5	Quiz 3	September	✓			

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