**Learning Standards and Indicators**

**The Department of Science Level of Students: M. 2 Subject Code: SC20204 Subject: Universal Science 4**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Indicators** | **Key Word**  **(คำสำคัญ)**  **จากตัวชี้วัด** | **Learners’ Key Competencies - Activities** | **21st-Century Skill/**  **Local Wisdom/Thai Wisdom/**  **Sufficiency Economy Philosophy /School Focus** | **Desirables** | |
| 1. Understand and explain quantity in physics | Understand Explain | - communication capability - thinking capability - problem solving capability - capability in applying life skills and - capability in technological application - 5E Model - CIPPA - Mind Maps - Group work | - Critical Thinking and Problem Solving  - Communications, Information, and Media Literacy,  - Computing and ICT Literacy,  - Creativity and Innovation, | 1. Honesty and integrity 2. Self-discipline 3. Avidity for learning 4.Dedication and commitment to work 5.Cherishing Thai-ness 6. Public-mindedness 7. Gentlemen of Assumption College | |
| 2. Name the different physical quantities | Name |
| 1. Understand SI measurement system and describe the units of measurement for length, time, area, volume, mass and weight | Understand Describe |
| 1. Name the instrument for methods of measurement for these physical quantities | Name |
| 1. Explain mass, weight, and density of objects. | Explain |
| 1. Explain the difference between mass and weight | Explain |
| 1. Calculating weight and density of objects and apply knowledge learned. | Calculating  Apply |
| **Indicators** | **Key Word**  **(คำสำคัญ)**  **จากตัวชี้วัด** | **Learners’ Key Competencies - Activities** | **21st-Century Skill/ Local Wisdom/Thai Wisdom/ Sufficiency Economy Philosophy /School Focus** | | **Desirables** |
| 1. Explain about types of force and effects of force on the motion of an object | Explain | - communication capability  - thinking capability  - problem solving capability  - capability in applying life skills and  - capability in technological application  - 5E Model  - CIPPA  - Mind Maps  - Group work | - Critical Thinking and Problem Solving  - Communications, Information, and Media Literacy,  - Computing and ICT Literacy,  - Creativity and Innovation, | | 1. Honesty and integrity 2. Self-discipline 3. Avidity for learning 4.Dedication and commitment to work 5. Cherishing Thai-ness 6. Public-mindedness 7. Gentlemen of Assumption College |
| 1. Distinguish between static friction and kinetic friction, understand their benefits and apply the knowledge to use | Distinguish Understand Apply |
| 1. Explain gravitational attraction and its effects on weight | Explain |
| 1. Explain electric changes electric force | Explain |
| 1. Describe magnetic force and magnetic field | Describe |
| 1. Explain hydrostatic pressure , buoyancy ,floating and sinking | Explain |
| 1. Explain buoyant forces acting on objects | Explain |
| 1. Explain and calculate pressure and apply knowledge learned | Explain Calculate |
| **Indicators** | **Key Word**  **(คำสำคัญ)**  **จากตัวชี้วัด** | **Learners’ Key Competencies - Activities** | **21st-Century Skill/ Local Wisdom/Thai Wisdom/ Sufficiency Economy Philosophy /School Focus** | | **Desirables** |
| 1. Explain torque and rotation | Explain | - communication capability  - thinking capability  - problem solving capability  - capability in applying life skills and  - capability in technological application  - 5E Model  - CIPPA  - Mind Maps  - Group work | - Critical Thinking and Problem Solving  - Communications, Information, and Media Literacy,  - Computing and ICT Literacy,  - Creativity and Innovation, | | 1. Honesty and integrity 2. Self-discipline 3. Avidity for learning 4.Dedication and commitment to work 5. Cherishing Thai-ness 6. Public-mindedness 7. Gentlemen of Assumption College |
| 1. Explain about equilibrium and restoring force , apply the knowledge gained for useful purposes. | Explain , Apply |
| 1. Explain waves and sound , formation of sound, motion or vibration of sound, human’s hearing, its use, and noise pollution | Explain |
| 1. Understand and classify types of simple machines, apply the knowledge gained for useful purposes. | Understand Classify, Apply |
| 1. Describe the internal structure of the Earth | Describe |
| 1. Explain how erosion takes place on the Earth’s surface | Explain |
| 1. Distinguish between the different types of soil | Distinguish |
| 1. Describe how petroleum is formed | Describe |
| 1. Describe the cycle of water in the surroundings | Describe |