

# PHYSICS

## Subject Information

### 課程資料

### Aim (課程宗旨)

- To provide physics-related learning experiences for students to develop scientific literacy (observation skill, analyzing power, data management, scientific method, etc) so that they can participate actively in our rapidly changing knowledge-based society.
- To prepare for further studies or careers in fields related to physics, and become lifelong learners in science and technology.



### Syllabus (課程架構)

| Physics (Full X)                           |
|--|
| Heat and Gases (熱和氣體)                      |
| Force and Motion (力學)                      |
| Wave Motion (波動學)                          |
| Electricity and Magnetism (電磁學)            |
| Radioactivity and Nuclear Energy (放射現象和核能) |
| Elective 1: Medical Physics (醫學物理)         |
| Elective 2: Atomic World (原子世界)            |

### Teaching and Learning 學與教

It covers a range of content with a lot of daily examples and applications that enables students to develop understanding of fundamental principles, concepts in physics, scientific process skills and develop positive attitudes and values towards Science.

## Learning targets - enable students to develop

### (1) Knowledge and understanding,

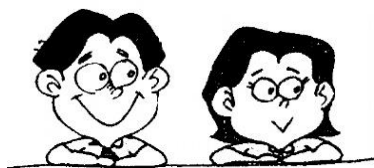
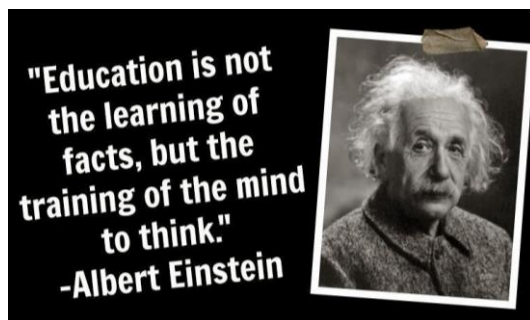
- laws / concepts / facts / models / daily applications

### (2) Skills and processes,

- scientific thinking / investigation
- problem-solving / information handling
- communication / Decision-making / collaboration

### (3) Values and attitudes.

- an integrative view of the relationships that hold between science, technology, society and the environment, and to become responsible citizens.
- enable students to appreciate and understand the nature of science in physics-related contexts.



## Assessment Method

### 評估方法

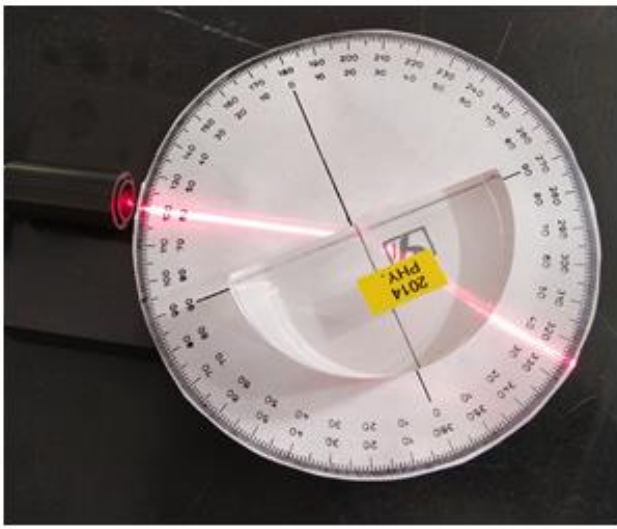
## Mark distribution of Internal Examination

| Component   | Outline  | Weighting |
|-------------|--|-----------|
| Examination | Written exam.  | ~ 70 %    |
| Others      | Assignment<br>Test/Quiz<br>Laboratory report<br>Lesson performance | ~ 30 %    |

## Outline of the HKDSE assessment (Full X)

| Component                     | Outline   | Weighting |
|-------------------------------|---|-----------|
| Public examination            | Paper 1 Compulsory Part                         | 60 %      |
|                               | Paper 2 Elective Part                           | 20 %      |
| School-Based Assessment (SBA) | Practical related tasks and Investigative study | 20 %      |

Photos of learning activities



## S.3 Physics Curriculum

### Ch.1 Temperature and Thermometers

| Topic                                     | Core   |
|---|--|
| 1.1 Temperature and the temperature scale | 1 Temperature<br>2 The Celsius temperature scale                       |
| 1.2 Thermometers                          | 1 The liquid-in-glass thermometer<br>2 Different types of thermometers |

### Ch.2 Heat and Internal Energy

| Topic                      | Core  |
|----------------------------|---|
| 2.1 Internal energy        | 1 Internal energy<br>2 Heat as a way of energy transfer<br>3 Energy transfer and power  |
| 2.2 Specific heat capacity | 1 Energy transfer and temperature change<br>2 Heat capacity<br>3 Specific heat capacity<br>4 Importance of high specific heat capacity of water |

### Ch.3 Change of State

| Topic           | Core  |
|-----------------|---|
| 3.1 Latent heat | 1 Latent heat and change of state<br>2 Specific latent heat<br>a Specific latent heat of fusion of ice<br>b Specific latent heat of vaporization of water<br>3 Internal energy and molecular potential energy |
| 3.2 Evaporation | 1 Evaporation and boiling<br>2 Cooling effect of evaporation<br>3 Evaporation and molecular motion<br>a Explaining the cooling effect<br>b Factors affecting evaporation<br>4 Condensation                    |

## Ch.4 Transfer Processes

| Topic          | Core   |
|----------------|--|
| 4.1 Conduction | 1 Conduction in solids, liquids and gases<br>2 Examples of conduction and insulation<br>3 Conduction and particle motion                   |
| 4.2 Convection | 1 Convection in liquids and gases<br>2 Examples of convection  |
| 4.3 Radiation  | 1 Energy transfer by radiation<br>2 Factors affecting the emission and absorption of radiation<br>3 Examples of heat transfer by radiation |

### Assessment of S.3 Physics

| Form | 1 <sup>st</sup> Term Exam<br><i><u>(3-12 Dec 2018)</u></i>                                      | Uniform Test<br><i><u>(7-12 Mar 2019)</u></i>   | Final Exam<br><i><u>(3 - 18 Jun 2019)</u></i>   |
|------|---|---|---|
| S.3  | Exam (70%)<br>Coursework (30%)<br>(e.g. Tests, homework, worksheets, practical, study attitude) | UT (60%)<br>Coursework (40%)<br>(e.g. Tests, homework, worksheets, practical, study attitude) | Exam (70%)<br>Coursework (30%)<br>(e.g. Tests, homework, worksheets, practical, study attitude) |