

Physics 物理 / Combined Science (Physics Part) 組合科學 (物理部分)

Learning and Teaching Resource List 學與教資源表

教育局一站式學與教資源平台: <http://www.hkedcity.net/edbosp>

(A) Textbooks 課本

適用書目表 Recommended Textbook List <http://www.edb.gov.hk/rtl>

(B) Learning and teaching materials jointly developed by EDB 教育局參與編制的學與教資源

| No. 編號 | Title / Description 題目 / 內容簡介 | Web link 網址 |
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| 1 | <p>運用 3D 打印機及 IT 工具促進物理科的學與教</p> <p>本教材套提供十個在物理科教學時與 3D 打印技術相關的資源。透過 3D 打印製作零件或實驗裝置等教學資源以輔助教授相關課題，課題包括：力學、電磁學、光學及能量和能源的使用。各課題均有不同的教學活動建議供教師參考。</p> <p>Using 3D Printers and IT tools to Enhance Learning and Teaching of Physics</p> <p>This learning and teaching package provides ten sets of 3D-printing technology related resources. With the use of 3D-printing technology, parts or experimental setups could be fabricated to enhance the learning and teaching of relevant topics such as mechanics, electromagnetism, optics, and energy and use of energy. The learning and teaching activities of different topics are provided for teachers' reference.</p> | <p>https://www.edb.gov.hk/attachment/en/curriculum-development/kla/science-edu/ref-and-resources/rtc_L_and_T.zip</p> |
| 2 | <p>運用「AP Sensor」流動應用程式及流動裝置的內置傳感器進行物理實驗</p> <p>「AP Sensor」是一個手機及平板應用程式，利用流動裝置內置的各種傳感器作物理測量，使物理實驗更流動、更簡便，讓學生可以隨時隨地進行探究。這個網站提供「AP Sensor」應用程式相關的教材包括使用手冊、實驗手冊及示範短片。</p> <p>Using the “AP Sensor” Apps and build-in sensors of mobile devices to conduct Physics experiments</p> <p>“AP Sensor” is a mobile Apps that enables mobile and easily accessible physical measurement for Physics experiments, with the use of built-in sensors in mobile devices, such as smart phones and tablets. It enables students to conduct investigations at anytime and anywhere. This website provides related teaching materials of the "AP-Sensor" application, which include user manual, laboratory manual and demonstration video clips.</p> | <p>http://apsensor.ap.polyu.edu.hk/</p> |

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| 3 | <p>循序式自學與<物理相關之數學技巧>短片 這個網站提供網上短片及學與教資源，以提升學生學習物理科所需的數學概念。</p> <p>Short Video Clips for Self-Paced Learning of Physics-Related Maths Techniques</p> <p>This website provides short video clips and learning and teaching materials to facilitate students in learning fundamental mathematics concepts pertinent to physics learning.</p> | <p>http://ap.polyu.edu.hk/apshchoy/qef-project_2014_0600.html</p> |
| 4 | <p>製作物理科探究研習流動應用程式 本資源旨在向教師介紹運用 App Inventor 編寫物理科探究研習流動應用程式的基本技巧。</p> <p>Writing Mobile Apps for Investigative Study of Physics</p> <p>This resource aims to introduce to teachers the basic technique of writing Mobile Apps for investigative study of Physics by using App Inventor.</p> | <p>https://www.edb.gov.hk/attachment/en/curriculum-development/kla/science-edu/ref-and-resources/Writing_Mobile_Apps_for_Investigative_Study_of_Physics.zip</p> |
| 5 | <p>能源效益 這個網站提供有關 (1)能量的產生、(2)家居能源效益、(3)商業/工業能源效益和(4)另類能源的全面資料，作為選修部分中「能量和能源的使用」的輔助資料。網站內有工作紙、錄像和動畫供註冊會員使用。此外，網站也具有一個互動電子學習平台，促進「能量」和「能源的使用」的網絡學習。</p> <p>Energy Efficiency</p> <p>This website provides a very comprehensive information related to (1) power production, (2) domestic energy efficiency, (3) commercial / industrial energy efficiency and (4) alternative sources of energy to support the “Energy and Use of Energy” of the Elective Part in the Physics Curriculum. Worksheets, video clips and Flash animation programmes are provided for registered users. It also includes an interactive e-learning platform to foster cyber-learning for energy and use of energy.</p> | <p>http://www.hk-phy.org/energy/index.c.html (請使用 Internet Explorer 瀏覽網頁。)</p> <p>http://www.hk-phy.org/energy/index.e.html (Please use Internet Explorer to browse the website.)</p> |
| 6 | <p>原子世界 這個網站為高中物理課程的選修部分「原子世界」而設，包含豐富且有系統的納米科學的學與教材料。教師可下載不同的材料，如學習活動資料、有關碳分子結構、透射電子顯微鏡和掃描穿隧顯微鏡運作原理的模擬片段等，作教學和自學之用。</p> <p>Atomic World</p> <p>This website consists of comprehensive and organized materials on the part of nano science in the elective part “Atomic World” of the</p> | <p>http://www.hk-phy.org/atomic_world (請使用 Internet Explorer 瀏覽網頁。)</p> <p>(Please use Internet Explorer to browse the website.)</p> |

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| | SS Physics Curriculum. Ready-made materials, e.g. learning activities and animations of different carbon molecule structures, working principles of transmission electronic microscope and scanning tunneling microscope atoms, can be downloaded for teaching and self-directed learning. | |
| 7 | <p>醫學物理學</p> <p>這個網站為高中物理課程的選修部分「醫學物理學」而設，提供教師互動式的學與教示例，演示較抽象的醫學影像學概念。示例利用互動式的動畫介紹概念。課題包括使用非電離輻射(例如：A-掃描和 B-掃描)和電離輻射(例如：放射攝照圖像和 CT)。網站也提供學習目標、背景資料、學習活動及答問供教師參考。</p> <p>Medical Physics</p> <p>This website provides interactive learning and teaching exemplars for teachers to delivery abstract concepts in the elective part of “Medical Physics”. Exemplars are presented in a graphic format with interactive animations. Topics such as medical imaging using non-ionization radiation (e.g. A-scan and B-scan) and ionization radiation (e.g. radiographic images and CT) are included. Learning objectives, background information, learning activities and questions with answers are offered by the website for teacher reference.</p> | <p>http://cd1.edb.hkedcity.net/cd/science/physics/NSS/MedicalPhysics.zip (詳情請參閱 readme file。) (Please refer to readme for details.)</p> |
| 8 | <p>探究研習</p> <p>這個網站為高中物理課程的「探究研習」而設，為教師提供探究研習的真實示例，部分示例曾在一些學校的中四及中六學生作先導研究。網站備有探究研習指引、教材示例、評估工具、先導計劃的結果、工作坊及推行探究研習分享會的簡報及錄像檔案以供參考。</p> <p>Investigative Study</p> <p>This website provides teachers with authentic exemplars for Investigative Study. A pilot-study of exemplars was conducted in S4 and S6 students of a number of schools. At this website, guideline, exemplars, assessment tools, results of school trials, PowerPoint files and video files of workshop and sharing seminar on the implementation of Investigative Study are also included.</p> | <p>http://www.isphys.ust.hk/</p> |
| 9 | <p>物理科專科語體答題及應用</p> <p>這個網站提供語體筆記、教學設計、網上互動練習，以及常用的物理科專科語體的參考教材。教師可使用這些教材教授物理科專科語體，以助學生改善物理科寫作技巧。</p> <p>Writing and Application of Physics Specific Genres</p> | <p>http://cd1.edb.hkedcity.net/cd/science/physics/phygenres/zh/index.htm http://cd1.edb.hkedcity.net/cd/science</p> |

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| | <p>This website provides notes on genres, instructional design, on-line interactive exercises and relevant reference materials of the commonly-used physics specific genres. Teachers can make use of these materials to teach students the physics specific genres and ultimately help them improve their writing skills in physics.</p> | <p>/physics/phygenres/en/index.htm</p> |
| 10 | <p>運用數據收集器於物理科教學</p> <p>這個網站提供有關在物理學教學時運用數據收集器的全面教學資源，課題包括：力學、電磁學、光學與波動狀態，以及熱與能量。各課題均有一系列的實驗和建議教學活動。這個網頁亦提供各個範疇（如運用、界面、傳感器、軟件和採購）的資源。</p> <p>Using Data Logger in the Teaching of Physics</p> <p>This website provides a comprehensive collection of teaching resources materials for using data logger in the teaching of physics. Topics include “Mechanics”, “Electricity and Magnetism”, “Optics and Waves”, and “Heat and Energy”. Within each topic there is collection of experiments and suggested teaching activities. This website also provides various types of information such as the operation, interface, sensor, software and vendor.</p> | <p>http://data-log.hkedcity.net/physics/index.shtml</p> <p>http://data-log.hkedcity.net/physics/index.html</p> |
| 11 | <p>物理名詞</p> <p>這個網站為教師和學生提供一個互動網絡平台，讓他們可搜尋在中學教授物理學時常用的英漢名詞。網站提供關鍵字搜尋和讀音。</p> <p>Glossary in Physics</p> <p>This website provides an interactive web-based platform for teachers and students to find English-Chinese glossary of terms commonly used in the teaching of physics in secondary schools. Key words search and pronunciation are offered.</p> | <p>http://cd1.edb.hkedcity.net/cd/science/glossarysci.html</p> |
| 12 | <p>情境物理</p> <p>這個網站提供有關教學、試教、課程指引和參考資料的資源連結，提倡物理情境教學法，並為教師提供討論園地和共享園地。教授「運動」、「力」、「動量」、「能量」、「溫度」、「熱」、「熱的傳遞」和「物態變化」等課題時可運用情境教學法。</p> <p>Contextual Physics</p> <p>This website offers an extensive collection of links to resources in teaching, tryouts, curriculum and references to advocate contextual approach in physics teaching. Forum and sharing area for teachers are also provided. Contextual approach may be adopted in teaching the topics of “Motion”, “Force”, “Momentum”, “Energy”,</p> | <p>http://www.hk-phy.org/contextual/</p> |

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| | "Temperature", "Heat", "Heat Transfer" and "Change of States" etc. | |

| (C) Other useful resources / web links 其他有用資源 / 網上資源 | | |
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| 1 | <p>Curriculum Resources for SS Physics Curriculum</p> <p>高中物理科課程資源</p> | <ul style="list-style-type: none"> • http://www.edb.gov.hk/en/curriculum-development/kla/science-edu/ref-and-resources/physics-curriculum-resources.html • http://www.edb.gov.hk/tc/curriculum-development/kla/science-edu/ref-and-resources/physics-curriculum-resources.html |
| 2 | <p>物理相關的活動教材套</p> <p>這套物理相關的活動教材套由香港大學教育學院高級講師梁健儀女士及其學生製作。教師可透過相關活動，提高學生學習物理的興趣和效能。</p> <p>Learning and Teaching Package of Physics-related Activities</p> <p>This learning and teaching package of Physics-related activities was developed by Ms Promail Leung and her students of the Faculty of Education, The University of Hong Kong. Teachers may make use of the package to promote students' interest and enhance their learning effectiveness in studying Physics.</p> | <p>https://cd1.edb.hkedcity.net/cd/science/physics/NSS/QR_Codes_and_Quick_Links_of_Teaching_Package_Phy.pdf</p> |
| 3 | <p>「參觀標準及校正實驗室」資料</p> <p>透過點擊連結，下載「標準及校正實驗室」提供有關測量標準的資料，加強教師對國際標準單位的了解。</p> <p>Materials on "Visit to The Standards and Calibration Laboratory"</p> <p>Click on the link to download the resources provided by "The Standards and Calibration Laboratory (SCL)", in order to enhance teachers' understanding about SI units.</p> | <p>http://resources.edb.gov.hk/cd/science/physics/The_Standards_and_Calibration_Laboratory.zip</p> |
| 4 | <p>香港天文台教學資源網頁</p> <p>Hong Kong Observatory's Educational Resources webpage</p> | <ul style="list-style-type: none"> • https://www.hko.gov.hk/tc/education/edu.htm • https://www.hko.gov.hk/en/education/edu.htm |

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| 5 | <p>Astronomy</p> <ul style="list-style-type: none"> • 香港太空館-網上資源 • NASA - Educators This site in NASA is dedicated for educators and teachers. There are many well designed learning and teaching activities. • National Cheng Kung University, Taiwan This site (國立成功大學) contains a tour over astronomy. Course materials are presented in Traditional Chinese. | <ul style="list-style-type: none"> • https://www.lcsd.gov.hk/CE/Museum/Space/zh_TW/web/spm/onlineresources.html • http://www.nasa.gov/audience/foreducators/index.html • http://www.phys.ncku.edu.tw/~astro/lab/e_book/ |
| 6 | <p>Physics Education Technology (PhET)</p> <p>這個網站的目的是為科學教育的學與教提供範圍廣泛的電腦模擬活動。使用者可透過網站運作模擬活動，或下載全部內容後直接在電腦運作模擬活動。如需要運作這些模擬活動，則必須安裝 Java。</p> | <ul style="list-style-type: none"> • http://phet.colorado.edu/zh_TW/ • http://phet.colorado.edu/ |
| 7 | <p>National Nanotechnology Initiative Education Centre</p> <p>The National Nanotechnology Initiative (NNI) is a program established in 2001 to coordinate Federal nanotechnology research and development in U.S. The education centre provides resources of various levels.</p> | http://www.nano.gov/education-training/k12 |
| 8 | <p>Medical Physics - Obstetric Ultrasound</p> <p>This site is maintained by Dr Joseph Woo in Hong Kong and it contains an extremely detailed description of the history, theory and application of ultrasound in medical diagnosis. A lot of resources are hidden in the bullets. It is highly recommended to read the introduction which contains the history of the use of ultrasound.</p> | http://www.ob-ultrasound.net/ |
| 9 | <p>Resources Depository - ETV, EDB</p> <p>教學資源庫 - 教育局教育電視</p> | http://resources.hkedcity.net/etv/ |