How STEM activities are integrated into the contest of subject teaching

HKUST

胡錦添簡介

1. STEM@HKUST 創始人之一
2. 工學院 環球社會中心 總監
3. 鵬程青年工程師學苑 副總監
4. 科大機械人競賽團隊 導師
5. 科大水底機械人比賽 籌委會 主席
6. 大學教育資助委員會2015 傑出教學獎得主
STEM is ......

Stems have four main functions which are:
- Support for and the elevation of leaves, flowers and fruits.
- Transport of fluids between the roots and the shoots in the xylem and phloem.
- Storage of nutrients.
- Production of new living tissue.

Source from Wikipedia

學習模式

知識經濟
內容
老師在講台上
教室與白板
你知道什麼

製造者經濟
仿做
仿做
完備
一邊指導
製造者群組
與小組項目
你可以做什麼

創新者經濟
主意
同伴學習？
設計思維？
你的想法
Design Process

There is always a better solution somewhere
嵌入式系統課程

- Integrate with a digital clock widget

- Features
  1. Power up by the battery
  2. Set the clock information by using buttons
  3. Display the texts, numbers and graphics
  4. Provide real-time clock
  5. Sense the temperature and display its values
  6. Keep the historical data

- Let's see how this course helps
Design architecture of an embedded system

學生的評論

• “Hands on experience to boost your creativity”
• “Projects! I love projects. And lecture videos~”
• “.... you are an excellent teacher and have inspired me to continue learning with an open and positive mind. ...”
• “Provide a great freedom for student to work on the project they interested in”
• “This is a dream-landing course for us to do whatever we want, and better still, it encourages engineers to care for the community.”
Another example: A course for secondary school students

- This course is designed to illustrate the interesting link between science, mathematics, engineering and daily life to secondary students.
Extension of electronic piano

Any online resources?

Any creative application?
Social innovation?

Projects for secondary school students
A family of ...
Creativity
Knowledge
Hands-on experience
Problem Solving Skills
Team Work
Research Work

Our website: http://robotics.ust.hk/
HKUST Robotics Team
https://www.facebook.com/ustrobotics

• Technical
• Business
• Entrepreneur

Courses for Robotics Competitions

Connect to the world

Student Initiated Projects
• Final Year Projects
• Hobbies / Makers
• Research projects

Community Engagement
• Junior Mentoring Scheme
• Public exhibitions
• Robotics x Community

Friendship-exchange programs

Other competitions

HKUST Robotics Team
香港科技大學機械人競賽團隊
他們現在在幹什麼?

Visit the video in the following link:
https://www.facebook.com/ustrobotics/videos/560390514378929/
為社區做出貢獻
通過我們的知識賦予同理心

為大中小學生培養人才

STEM@HKUST
- Kick@RUST
- Secondary Schools-HKUST Dual Program
- Enrichment Program for Gifted Learners
- AIPYE
- Physics Olympiad
- Biology Olympiad
- Underwater Robot Competition
- Summer Programs

University Activities
- IGEM
- Robotics Team
- RoboMaster
- URCIP
- SIGHT
- Exchange programs
- Service learning

Entrepreneurship and Innovation
- BASE
- Entrepreneurship center
- Technology Leadership and Entrepreneurship
- Successful Examples
- UAVs, ORI, Bicycle Helmet
- New Startups
- Pavaner, P-Sense, Umlk, i-Square
University Activities

**iGEM**
- International Genetically Engineered Machine Competition

**HKUST Robotics Team**

**SIGHT** Student Innovation for Global Health Technology

**UROP** Undergraduate Research Opportunities program

Entrepreneurship

**BASE**

**Entrepreneurship Weeks**
- Technology Leadership and Entrepreneurship (TLE)
My contact: Tim Woo
Email: eetim@ust.hk