香 港 資 優 教 育 學 苑
The Hong Kong Academy for Gifted Education

Basic Mechanics in Engineering (E2PHY001C)

Introduction	This programme is designed for junior secondary students who are interested in physics. It is delivered through 24-hour lectures and 9-hour tutorials. During the tutorials, students will participate in interactive learning activities in groups, e.g. experiments and group discussions, etc. This programme provides students fundamental knowledge in mechanics with applications in engineering, such as Newton's laws of motion, concept of moment, and different kinds of machines, in an inquisitive approach through various experiments, educational software and teaching aids for physics. This course is co-organised with Kwai Chung Methodist College.
Programme Type / Level	Physics Course (Level II) (Token-required)
Instructor(s)	Mr NG Chun Keung (Panel Chairperson of Physics, Kwai Chung Methodist College)
Pre-requisite	• Students are recommended to have fundamental knowledge in Newtonian Mechanics. • Students should be good at scientific reasoning and mathematical calculation. • Students need to bring their calculators to the lesson.
Target Participants	➢ S1-S3 HKAGE student members only in 2020/21 school year ➢ Class size: 30 This programme is the same as Physics Core Programme (Level 2): Basic Mechanics in Engineering (SCIS2004) in 2019/20 school year.
Medium of Instruction	Cantonese with English Handouts
Certificate	**E-Certificate** will be awarded to participants who have: ❖ Attended **AT LEAST 8** sessions AND ❖ Completed all the assessments with satisfactory performance.
Intended Learning Outcomes	Upon completion of the programme, participants should be able to: 1. describe the basic concepts of mechanics; 2. apply Newton's laws of motion and concept of moment and equilibrium to practical problems; 3. explain mechanics theories behind levers, pulleys or other tools used in engineering application.
Screening	Please answer the screening question in the online application form. *The screening question is designed to help the applicant understands the course level and the course content. The question must be answered by the student applicant and it can only be attempted once. The answer cannot be changed once the application is submitted. Selection is based on students' performance in answering the question. Only students who can demonstrate motivation and the knowledge of Physics in the screening question can be enrolled in the programme.
Application Deadline	**1 Mar 2021, 12:00 n.n**
Application Result Release Date	**9 Mar 2021**

If student members withdraw from the programme after the Application Deadline, the token will be deducted.

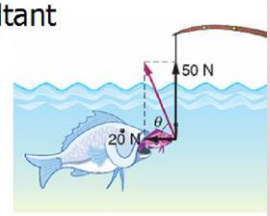
Schedule

Session	Date	Time	Venue
1	7 Apr	9:30 a.m. - 12:30 p.m.	Kwai Chung Methodist College[1]
2	7 Apr	2:00 p.m. - 5:00 p.m.	
3	10 Apr	9:30 a.m. - 12:30 p.m.	
4	10 Apr	2:00 p.m. - 5:00 p.m.	
5	24 Apr	9:30 a.m. - 12:30 p.m.	
6	8 May	9:30 a.m. - 12:30 p.m.	
7	15 May	9:30 a.m. - 12:30 p.m.	
8	29 May	9:30 a.m. - 12:30 p.m.	
9	5 Jun	9:30 a.m. - 12:30 p.m.	
10	12 Jun	9:30 a.m. - 12:30 p.m.	
11	26 Jun Test	9:30 a.m. - 12:30 p.m.	

[1]Address: Estate Secondary School Lai Yiu Estate NT (Map)

Sample Notes

Magnitude and direction of resultant force on the small fish = ?



Draw a rectangle as shown.

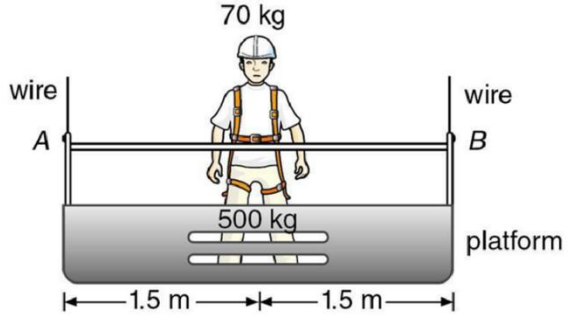
Magnitude $= \sqrt{50^2 + 20^2}$

$= 53.9$ N

$\tan\theta = \frac{50}{20} \Rightarrow \theta = 68.2°$

The resultant force is 53.9 N acting at 68.2° to the 20-N force from the big fish.

A worker stands in the middle of a suspended working platform which is at rest. The platform's c.g. is at its mid-point.



1 Tension in the wires suspending the platform = ?

In equilibrium, net moment = 0
Take moment about *A*.
Clockwise moment = anticlockwise moment
$70 \times 9.81 \times 1.5 + 500 \times 9.81 \times 1.5 = T_B \times 3$
$\Rightarrow \quad T_B = 2800$ N
$T_A = T_B = 2800$ N

Enquiries

For enquiries, please contact Academic Programme Development Division on 3940 0101 after language selection, press "1".