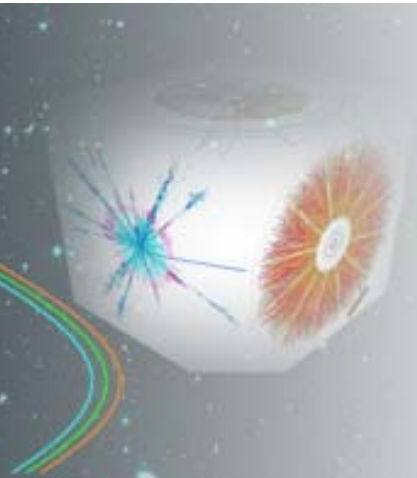




中大 物理

PHYSICS

THE CHINESE UNIVERSITY OF HONGKONG



從基本粒子到宇宙
明萬物之理

歡迎您 WELCOME!



*Department of Physics,
The Chinese University of Hong Kong
Introduction to the Undergraduate Program*

*New student orientation
19/08/2011*

*Physics dept. webpage:
student handbook;*

<http://www.phy.cuhk.edu.hk>

<http://www.cuhk.edu.hk/aqs>

Our Goals

Programme Learning Outcomes

Train our students to:

- have a good grasp of the *fundamental knowledge and skills in physics*;
- acquire a *solid foundation* in physics for the pursuit of *further study* through active learning experiences;
- understand and appreciate *how physics works* in nature as well as its *important applications* in the modern society ;
- develop the *generic capabilities* that are important for *future career* and *lifelong learning* through a flexible curriculum and a variety of learning experiences.



PHYSICS PROGRAMME OBJECTIVE

ATTITUDE

A

- 嚴謹、堅毅 *rigorous and resolute*
- 追求卓越 *pursuit of excellence*
- 強烈責任感 *strong sense of responsibility*
- 積極主動 *proactive*
- 自學精神 *motivated in self-learning*
- 自信提升 *self confidence*

SKILLS

- 研究及自學基本技巧：數理方法、實驗、電算 *basic skills for research and self learning: math/computational/experimental*
- 物理學家之解難及思考方法 *physicists' problem solving and analytical skills*
- 溝通、人際 *communication, interpersonal*
- 閱讀 *reading*
- 時間管理 *time management*

S



K

KNOWLEDGE

- 堅實及均衡的物理基礎知識 *solid and balanced training in physics*
- 數學及實驗方法 *mathematical and experimental methods*



Who's in charge?

YOU!

You are responsible for your own learning!

But you are not alone ... we are there to help

↓
*Advisors, teachers, TAs, fellow
students, PHY alumni*

An aerial photograph of a university campus, likely the University of the Philippines Diliman, showing various academic buildings, a large green forested area, and a wide body of water (Laguna de Bay) in the background under a cloudy sky. The text 'Undergraduate Curriculum' is overlaid in the center in a black, italicized serif font.

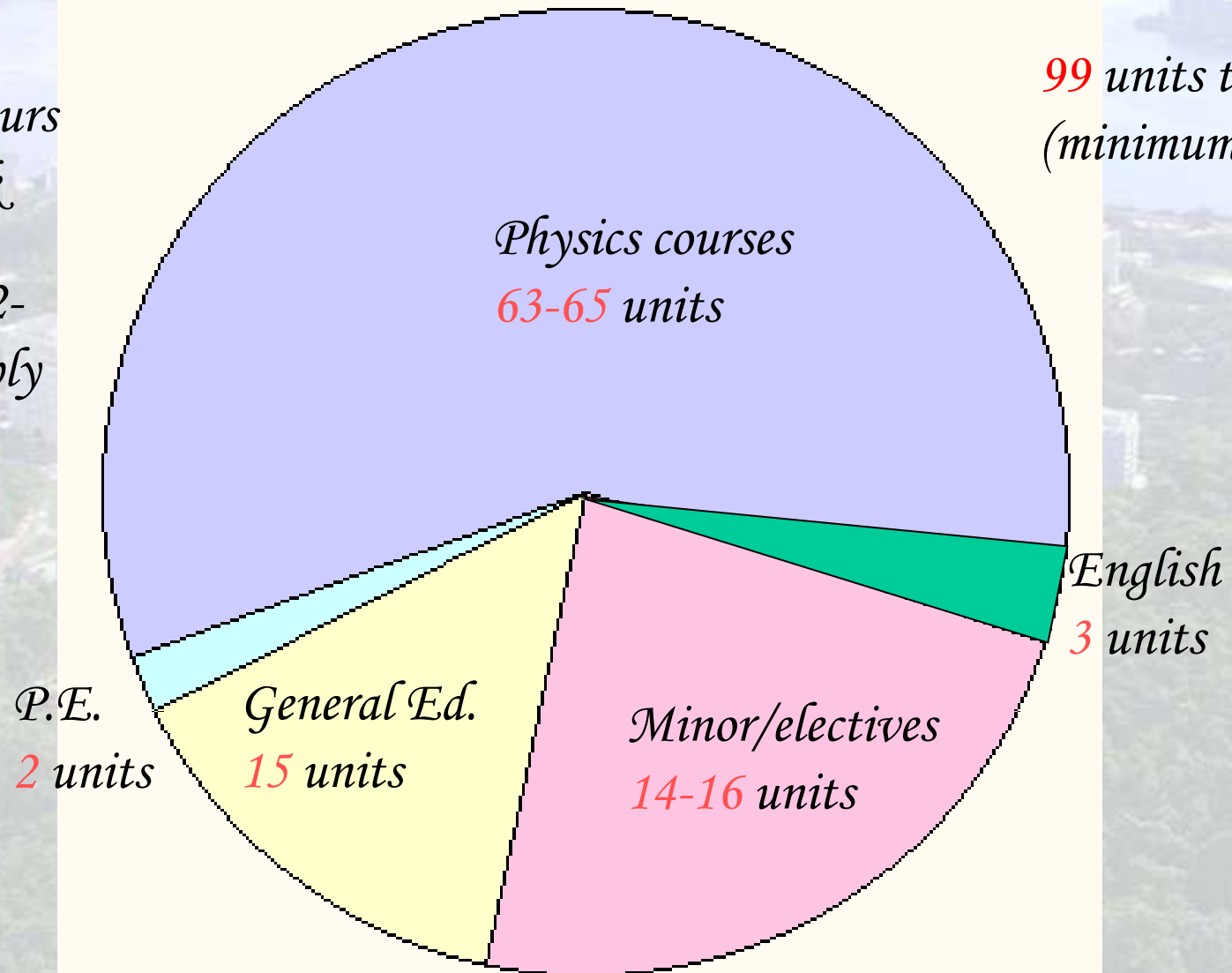
Undergraduate Curriculum

For students in the 3-year program:



Each unit ~ 3 hours
of work per week

Normally take 12-
19 units (can apply
to take up to 21)
per semester



99 units total
(minimum)

P.E.
2 units

General Ed.
15 units

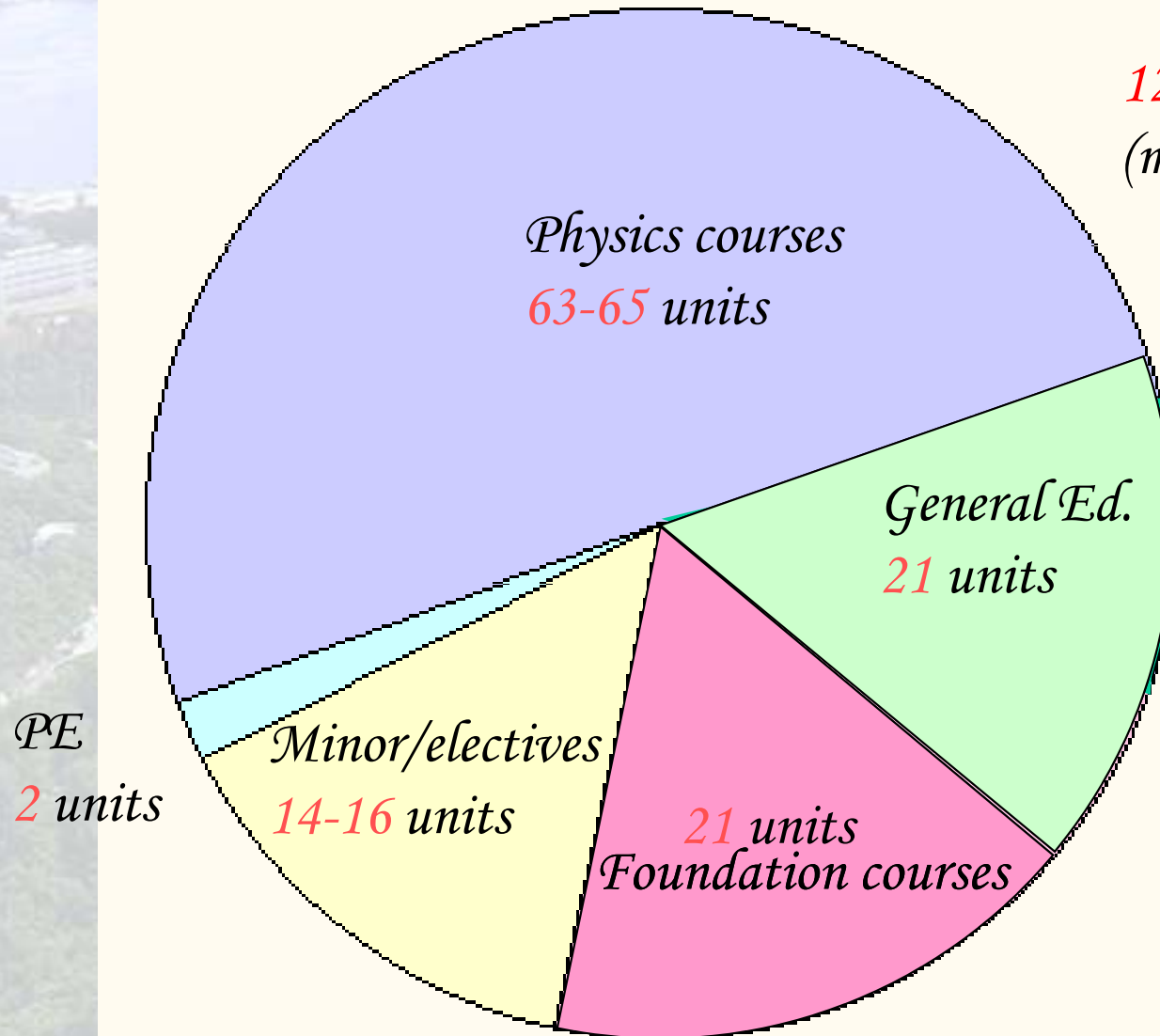
Minor/electives
14-16 units

English
3 units

For students in the 4-year program:



*123 units total
(minimum)*



Foundation courses



21 units total

*Faculty
9 units*

- 1. General Phys.(I) 1001*
- 2. Math. MATH1010*
- 3. Bio. BIOL1005、Chem. CHEM1070/1870、or Statistics STAT1310*

*May take a placement exam on
31/08/11 to exempt PHYS1001
(contact PHY General Office)*

*Languages
12 units*

- 1. ELTU2450 or ELTU2456*
- 2. HKCEE Eng 'A(5*)' or 'B(5)': 2 from ELTU2201, 2392, 2500, 2501, 3102, 3103, 3112, 3402, 3501*
HKCEE Eng 'C(4)' or below: 2 from ELTU1001, 1106, 1107, 1109, 1110
- 3. 1 from CHLT1510, 1520, 1586, 1814*

Physics Program

*Common
courses*

38 units



*Stream
required
courses*

*Theoretical
15 units*



*Physics
1 unit*



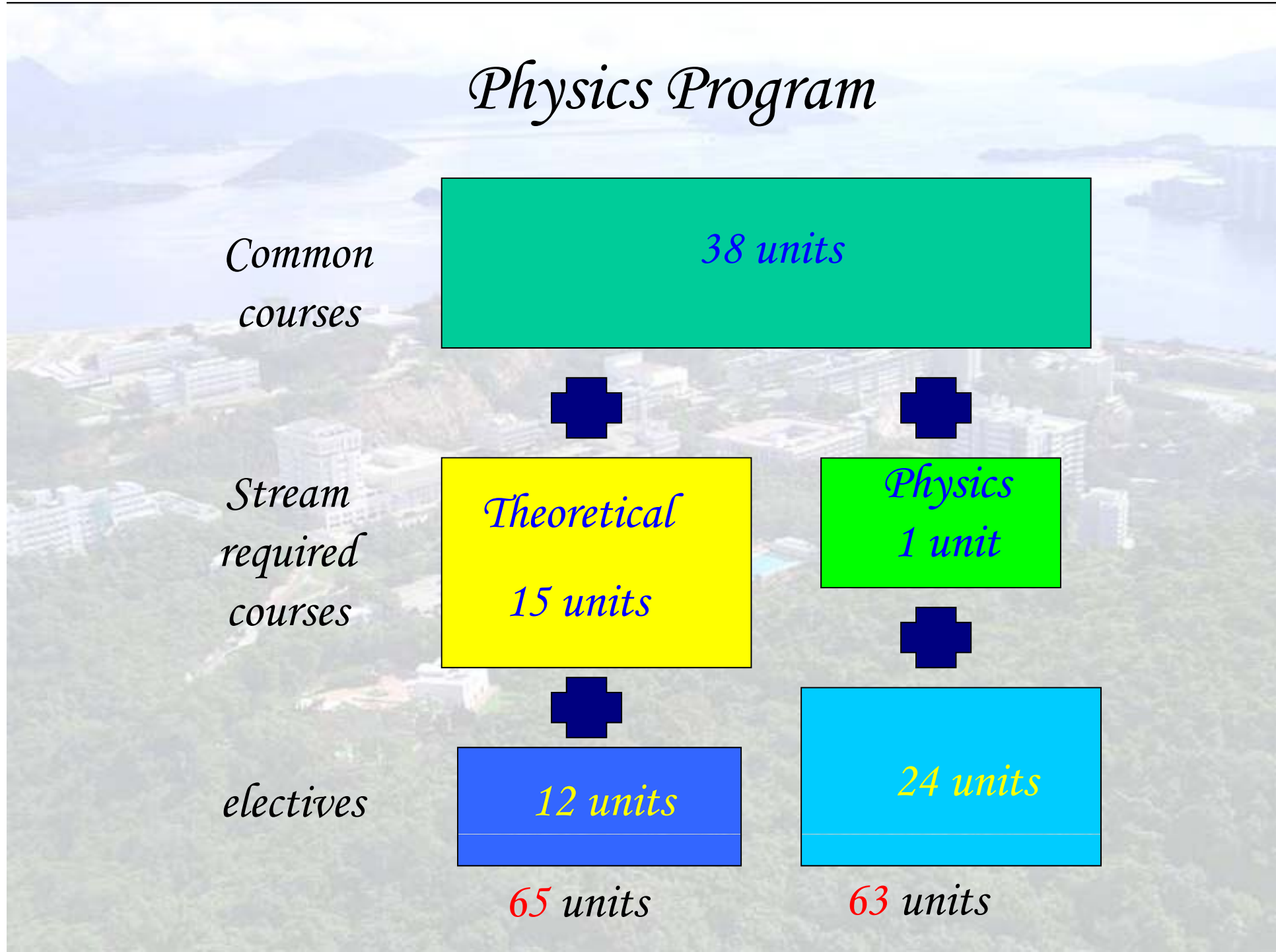
electives

12 units

24 units

65 units

63 units



Common courses (38 units)

- *Intro. to Mechanics 2001* 、 *Intro. to Thermal Physics 2002* 、 *Intro. to E&M 2003* 、 *Quantitative Methods 2004+2005*
- *Basic Computational Physics 2351*
- *Mechanics 3011*
- *E&M 3041*
- *Quantum Physics I, II 3201, 3202*
- *Physics Lab I, II 2811, 2822*
- *Student Oriented Teaching STOT (Physics Problems) I, II, 2011, 2022*
- *Seminar 4011*

Required Courses



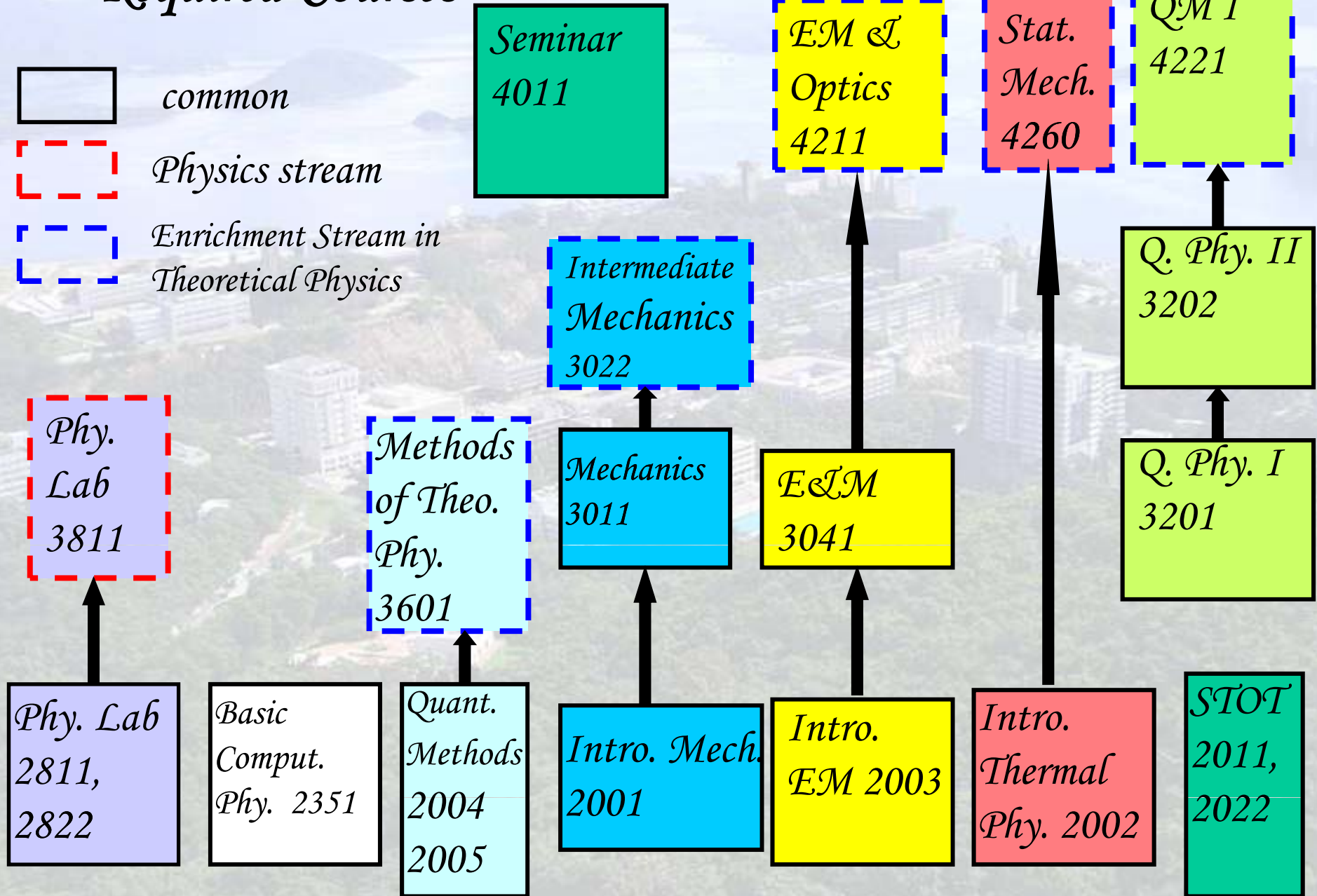
common



Physics stream



Enrichment Stream in
Theoretical Physics



Physics Stream

Required (1 unit):

- *Phys. Lab III 3811*

Electives (24 units =15+9):

- *At least 15 from : Int. Mech. 3022 、 Computer Simulation of Physical Systems 3350 、 Meth. In Theoretical Phy. I, II 3601 、 4602 、 EM Theory & Optics 4211, QM I 4221 、 Relativity 4460 、 Stat. Mech. 4260 、 Nanoscience & Tech. 4700 、 Photonics 5320 、 Instrumentation I 5330*
- *At least 9 from: Topics in Contemp. Phy. 2400 、 Intro. Astronomy & Astrophysics 2910 、 Special Experimental/Theoretical Projects 3710/3720/3751/3752/4711/4712/4721/4722/4751/4752 、 Contemp. Topics in Applied Phy. 3401 、 Applied Solid State Phy. 3402 、 Electronics 3412 、 Phys. Lab IV 3822 、 Seminar II 4022 、 Electronic Packaging 4360 、 Computational Phy. 4370 、 Laser 4440 、 Solid State Phy. 4450 、 Thematic Melodies 4510 、 Phys. Of Meteorology 4520 、 Astrophysics 4530 、 Final Year Project I, II 4610 、 4620 、 graduate courses 5350/5410/5420/5430/5570*

Enrichment Stream in Theoretical Physics

Required (15 units):

- *Methods in Theo. Phy. I 3601* 、 *Int. Mech. 3022* 、 *EM Theory & Optics 4211* 、 *QM I 4221* 、 *Stat. Mech. 4260*

Electives (12 units):

- *Theory: Solid State 4450* 、 *Relativity 4460* 、 *Physics in Meteorology 4520* 、 *Astrophysics 4530* 、 *Methods in Theo. Phy. II 4602* 、 *QM II 5410* 、 *Classical ED 5420* 、 *Solid State Theory 5430* 、 *Methods in Theo. Phy. III 5570* 、 *Topics in Theoretical Physics 5510-5550* 、 *Quantum Info. 5580*
- *Computational: Computer Sim. of Phy. Systems 3350*
- *Final Year Projects 4610 or 4620*

Physics Stream

Typical course pattern:

1st sem: 2011, 2001, 2004, 2351, 2811 (12)

2nd sem: 2022, 2002, 2003, 2005, 2822 (11)

3rd sem: 3011, 3041, 3201, 3811 (11)

4th sem: 3202, electives (7-10)

5th sem: 4011, electives (10-13)

6th sem: electives (9-12)

All students are in Physics stream. Qualified students may apply to switch to Enrichment Stream in Theoretical Physics in or after 3rd semester.

Enrichment Stream in Theoretical Physics

Typical course pattern:

1st sem: 2011, 2001, 2004, 2351, 2811 (12)

2nd sem: 2022, 2002, 2003, 2005, 2822 (11)

3rd sem: 3601, 3011, 3041, 3201 (13)

4th sem: 3022, 3202, electives (10-13)

5th sem: 4011, 4221, 4260, electives (10)

6th sem: 4211, electives (9)

An aerial photograph of a university campus. The foreground is dominated by a dense, green forest. In the middle ground, several multi-story university buildings are visible, interspersed with more greenery. A blue swimming pool is located near the center. In the background, a large body of water, likely a bay or harbor, stretches across the horizon, with several islands and mountains visible in the distance under a cloudy sky.

*Extracurricular Learning
Opportunities*

Research & Internship

www.phy.cuhk.edu.hk/internship

Dept. strongly encourages students to take up research projects and/or internship, eg.: Overseas Program for Undergraduate Students (**OPUS**), Summer Undergraduate Research Exchange (**SURE**), Summer Teacher Apprenticeship (**STAR**), Special projects, internship opportunities (HKO, Space Museum, etc.)

University, colleges, and Sci. Fac. also provide exchange opportunities



STAR ↑ Sze Wing Chun working at a secondary school

← SURE Ben Lau at Caltech

Research opportunities for undergraduates

- *Dept. strongly encourages students to join research groups*
- *May earn credits (special experimental/theoretical projects)*
- *Final-year projects (PHY4610, 4620)*



Undergraduates taking up projects



本科生暑期海外研究計劃

(Summer Undergraduate Research Exchange)

www.phy.cuhk.edu.hk/sure

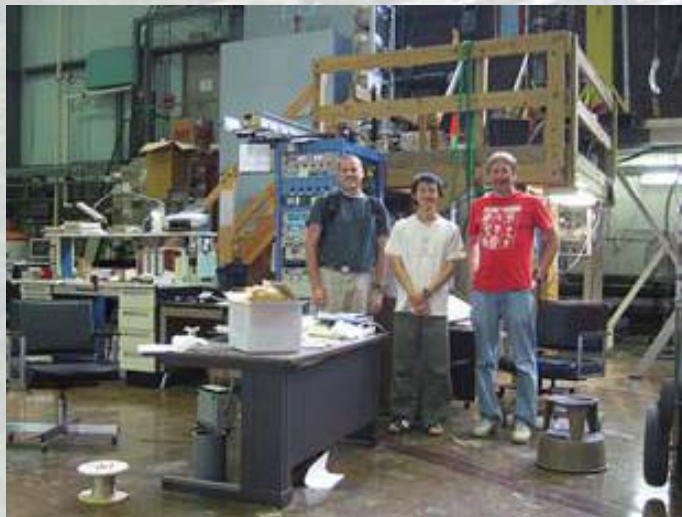
Since 2000

Selected students can take up summer research projects in leading groups abroad, with financial support from the dept. Eg.: planetary science (Caltech) 、 dark energy survey (UIUC) 、 nuclear physics (MSU/NSCL, UIUC) 、 biophysics (Brown) 、 ...

August 2011: 69 have completed the program (7 in 2011)

52 have continued on to graduate study; 37 admitted to PhD programs

3 PRLs, 2 Phys. Lett. B, 1 Geophy. Res. Lett., 3 PRCs, 1 Global Biogeochem. Cycles



本科生海外交流計劃

(*Overseas Program for Undergraduate Students*)

www.phy.cuhk.edu.hk/opus

Since 2006

Dept. sponsors 4 – 8 students each year to take up 1 semester of exchange and 1 summer research at U. C. Berkeley, Fudan Univ., and Peking Univ.



U. C. Berkeley



Peking U.



Fudan

*August, 2011: 23 have completed the program
15 have continued on to graduate study; 10 for PhD*

Other exchange programs

Science Faculty:

<http://www.cuhk.edu.hk/sci/ssep/>

University:

<http://www.cuhk.edu.hk/oal/>

Colleges:

http://www.cuhk.edu.hk/ccc/chi/students_12sep.htm

<http://naweb.na.cuhk.edu.hk/life/exchange.asp>

<http://www.cuhk.edu.hk/uc/exchange/exchangeindexc.htm#>

http://www.cuhk.edu.hk/shaw/chi/student_prog.html#prog1

Map of alumni overseas: <http://maps.google.com/maps/ms?ie=UTF&msa=0&msid=111514872469039539967.00044a2dd8eae8cd1d386>

暑期教師學徒計劃

(*Summer Teacher AppRenticeship*)

www.phy.cuhk.edu.hk/star

Since 2002

Dept. sponsors 5-10 each summer to work in local secondary schools



*June 2011: - 66 have completed the program, 6 more in 2011
-26 have continued on to graduate study, 5 for PhD
-22 have become teachers*

暑期實習計劃

(*Summer Internship*)

http://www.phy.cuhk.edu.hk/intern/notice_2008.pdf

Placement at Hong Kong Observatory: summer or full-year Since 2005

*June 2011: - 22 have completed the program, 4 more in 2011
- 17 have continued on to graduate study, 7 for PhD*



Announcements

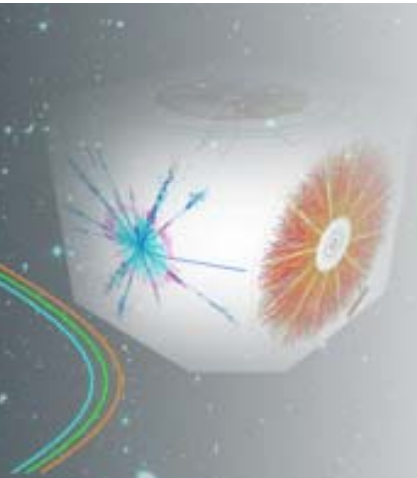
- *Contact me if you need MATH tutoring during August*
- *Questions about curriculum, course selection, etc.:
contact M. –C. Chu, mcchu@phy.cuhk.edu.hk,
26096364, Rm. 106, Science Center N. Block*



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