Course Selection Counselling Day
17 Aug 2022
Dr. Judy Chow
Department of Physics, HKU
BSc Curriculum Structure

- **Common Core Courses (36 credits)**
  - Take at least 1 but not more than 2 for each of the four Areas of Inquiry

- **Language Courses (18 credits)**
  - 2 English courses + 1 Chinese course

- **Science Foundation Courses (12 credits)**
  - 2 courses giving students a comprehensive view of science

- **Disciplinary Courses**
  - To fulfill the requirements for at least 1 Science regular major or 1 Science intensive major

- **Capstone Course(s) (each 6 or 12 credits)**
  - Take one for each of your Science majors

*Total passed credits must not be $\geq 240!!$*
BSc&MRes Curriculum Structure

Science Courses
At least 144 credits including **ALL** required courses for 1 Science intensive major

Language Courses
(18 credits)
2 English courses + 1 Chinese course

Common Core Courses (24 credits)
Take 1 from each of the four Areas of Inquiry

Research PG Courses
1 research ethics course + at least 18 credits of other research PG courses

Research Project (42 credits)
To pursue your own research interest

Total passed credits for the BSc degree must be ≥ 240!!
Total passed credits for the MRes degree must be ≥ 63!!
BSc&LLB Curriculum Structure

**Science Courses (96 credits)**
- *ALL* required courses for 1 Science regular major

**Common Core Courses (24 credits)**
- Take 1 from each of the four Areas of Inquiry

**LLB Professional Core (156 credits)**
- 126 credits of law compulsory courses + 18 credits of disciplinary electives + 12 credits of interdisciplinary core courses

**Interdisciplinary Electives (12 credits)**
- 2 interdiscip. courses as prescribed in the syllabus

**Language Courses (12 credits)**
- 1 English course + 1 Chinese course

*Total passed credits must be no fewer than 300!!*
Majors and Minors

• **Physics Major** (96 credits; 16 courses)
  - Large flexibility in curriculum, lead to diverse career paths

• **Physics Major (Intensive)** (144 credits; 24 courses)
  - Comprehensive training in physics, targeted for students who want to pursue Master of PhD in physics or other science/technical disciplines

• **Astronomy Minor** (36 credits; 6 courses)
  - Suitable for all students (BSc or non-BSc) interested in the subject
  - Minimum physics & mathematics background needed

• **Physics Minor** (42 credits; 7 courses)
  - Skills learnt in could be useful in many science and non-science fields (e.g., chemistry, economics and finance)
Physics Major

• Aim: Educating all-rounded physics students which best fit their interest and expertise

• Large flexibility in curriculum, lead to diverse career paths

• **Reformed curriculum structure** for students since 2018
  
  – Learn the “**physics skill set**” first:
    
    ✔ Mathematics, problem-solving, model-building, and computing
  
  – Follow with core courses for physics undergraduates:
    
    ✔ Introductory level (Years 1 and 2): fully integrating usage of calculus and vectors; stress daily life connections
  
    ✔ Advanced level (Years 3 and 4): formal training in physics with more abstraction and advanced mathematics
Physics Major (Intensive)

• Aim: Educating physics students with a solid foundation on the subject in both breath and depth
• Targeted for students who want to pursue further studies in physics and other science/technical disciplines
• **New curriculum structure** for students since 2018
   All students who major in physics has the option to select either the “regular” Major curriculum or the Intensive option
   All required courses for the “regular” Major curriculum are included in the Intensive option
   **No penalty** for students who cannot complete the Intensive option: we will just check the list of courses at graduation
Curriculum Structure for Physics or Physics (Intensive) Majors

Skill Set Courses

Introductory Core Courses

Advanced Core Courses

Selection of Themes:
- Astrophysics
- Computational Physics
- Experimental Physics
- Theoretical Physics
Year 1&2 - Physics Major

Skill Set Courses
- PHYS1150 Problem Solving in Phys*
- PHYS2150 Method in Physics I*
- PHYS2155 Method in Physics II*
- PHYS2160 Intro Comp Phys*

Intro Core Courses
- PHYS2055 Intro Relativity*
- PHYS2250 Intro Mechanics
- PHYS2255 Intro E & M
- PHYS2261 Intro Heat & Thermo
- PHYS2265 Intro Quan Phys

*Select 2 out of 5 (all others are required courses)
Year 1&2 - Physics Major (Intensive)

**Skill Set Courses**
- PHYS1150 Problem Solving in Phys
- PHYS2150 Method in Physics I
- PHYS2155 Method in Physics II
- PHYS2160 Intro Comp Phys*

**Intro Core Courses**
- PHYS2055 Intro Relativity
- PHYS2250 Intro Mechanics
- PHYS2255 Intro E & M
- PHYS2261 Intro Heat & Thermo
- PHYS2265 Intro Quan Phys

**Intro Core Courses**
- COMP1117 Computer Prog*
- MATH1013 University Math II*
- PHYS1650 Nature of the Universe*
- PHYS2650 Modern Astro*
- STAT1603 Intro Statistics*

*Select 2 out of 6 (all others are required courses)
Themes for Physics or Physics (Intensive) Majors

• *Optional* for students *(may choose 0, 1, or 2 themes)*

  - Cluster of courses to build expertise in specific areas
  - Capstone project related to the theme
  - Enhanced training to prepare for postgraduate studies
  - Department issues certificate to graduates upon completion

Astrophysics  |  Computational Physics  |  Experimental Physics  |  Theoretical Physics
Capstone Requirement

• All HKU students need to complete capstone to graduate

• Students *had to fulfill the 24 credits advanced level core course requirement in the major before taking the capstone course*

• The *earliest* that students are allowed to take capstone course is their *year 3* of study

• Capstone courses offered by Physics Department:
  - PHYS3999 Directed Studies in Physics (6 credits; one semester)
  - PHYS4966 Physics Internship (6 credits; *offered in summer only*; AND the 24-credit prerequisite requirement need to be fulfilled before the start of the internship)
  - PHYS4999 Physics Project (12 credits; full year)
Astronomy Minor

• Aim: Provide interested students with a fundamental outlook on the subject, with *minimal physics and mathematics requirements*

• **Revised curriculum structure** for students since 2018
  
  - Introductory level courses (18 credits):
    - ✓ PHYS1650 Nature of the Universe
    - ✓ PHYS2650 Modern Astronomy
    - ✓ PHYS1250 Fundamental Physics *or* PHYS2055 Introductory Relativity *or* PHYS2160 Introductory Computational Physics *or* EASC2408 Planetary Geology
  
  - Advanced level courses (18 credits):
    - ✓ PHYS 3650 Observational Astronomy
    - ✓ Any two advanced level astronomy electives
Studying Astronomy in HKU

• Question: If I want to study astronomy in HKU, should I select the Major in Physics (Intensive) with Astrophysics theme, Major in Physics-Minor in Astronomy combination, or just the Minor in Astronomy?

• Answer:

➢ The Minor in Astronomy is suitable for science or non-science students with minimal physics and math requirements

➢ If you are interested to pursue postgraduate research in astronomy/astrophysics, then choose EITHER Major in Physics (Intensive) with Astrophysics theme OR Major in Physics-Minor in Astronomy combination

➢ Slightly more restriction for the Major(intensive)+theme option: a 4000-level course plus a project in astronomy
Physics Minor

• Aim: Provide interested students with a fundamental outlook on the subject, with great flexibility to explore one’s interest

• *Helpful* for studies of other science or non-science disciplines

• **Revised curriculum structure** since 2018

  ❖ Introductory level courses (24 credits):
    ✓ PHYS 1250 Fundamental Physics
    ✓ Any three intro level physics electives from PHYS1150, PHYS2055, PHYS2150, PHYS2155, PHYS2160, PHYS2250, PHYS2255, PHYS2261, PHYS2265

  ❖ Advanced level courses (18 credits):
    ✓ Any three advanced level physics courses
Points to Notes about Course Selections for Majors and Minors

- **Watch out for pre-requisite requirements!**
- **Beware of timetable clash!**
- The courses required (hence, the number of credits) for the Majors listed in the BSc syllabus is the *minimum*.
- Need **more** for research postgraduate studies! Ask your **Course Selection Advisor** for details!
- **Course Selection Road Map for students** are available on the website:  

  https://www.physics.hku.hk/students/students/major-minor&phy-theme/guideline2223
Sample Major in Physics
Year 1 & 2 Curriculum (minimum)

For students with
(1) HKDSE Physics AND
(2) HKDSE Extended Mathematics Module 1 or Module 2

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Semester 2</th>
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<tbody>
<tr>
<td><strong>Year 1</strong></td>
<td><strong>Year 2</strong></td>
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<tr>
<td>PHYS1150 Problem Solving in Phys XXX XXX XXX XXX</td>
<td>PHYS2150 Method in Physics I PHYS2261 Intro Heat &amp; Thermo XXX XXX XXX</td>
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<td>PHYS2250 Intro Mechanics XXX XXX XXX XXX</td>
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*For reference only, you should consult your course schedule with Course Selection Advisor!*
Sample Major in Physics
Year 1&2 Curriculum (minimum)

For students with only HKDSE Physics

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<tr>
<td><strong>Year 1</strong></td>
<td><strong>MATH1011 University Math I#</strong></td>
<td><strong>PHYS1150 Problem Solving in Phys</strong></td>
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<td><strong>XXX</strong></td>
<td><strong>XXX</strong></td>
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<tr>
<td><strong>Year 2</strong></td>
<td><strong>PHYS2150 Method in Physics I</strong></td>
<td><strong>PHYS2255 Intro Elect &amp; Magnetism</strong></td>
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<tr>
<td></td>
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#Not counted towards Major requirements!

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## Sample Major in Physics (Intensive)

### Year 1 & 2 Curriculum

For students with
(1) HKDSE Physics AND
(2) HKDSE Extended Mathematics Module 1 or Module 2

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<td>PHYS1150 Problem Solving in Phys</td>
<td>PHYS2250 Intro Mechanics</td>
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<tr>
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<td>PHYS2055 Intro Relativity or</td>
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<td>PHYS2255 Intro Elect &amp; Magnetism</td>
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^Select 2 out of 6!

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Sample Major in Physics (Intensive, Astro theme) Year 1&2 Curriculum

For students with
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(2) HKDSE Extended Mathematics Module 1 or Module 2

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Revised UG Courses Offered in 2022/23

- PHYS4653 Selected Topics in Astrophysics and Cosmology

   The aim of the course is to offer an advanced introduction to cosmology as well as some current topics in astrophysics. It may be taken as a self-contained course or as background to research work in astrophysics or cosmology.
Further advices for students intended to do research after graduation

• **Keep your eyes wide open** – learn more about different fields of physics

• **Learn about the surroundings** – find out more about the research being done in the Department (webpage, seminars, talk to teachers, ...)

• **Watch out for emails** – get on the email list of the department (if you have declared or incline to declare majors) because information about many learning programs are announced this way

• **Give it a try!** – the only way to find out whether you like or you are capable to do research is to try doing it (e.g. doing research project)