Course Selection Counselling Day
15 Aug 2023
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 be not fewer than 240!!*
BSc&MRes Curriculum Structure

Total passed credits for the BSc degree must be $\geq 240$!!

Total passed credits for the MRes degree must be $\geq 63$!!

**Science Courses**
At least 144-150 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 (3 credits) + 18 credits of other research PG courses

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

For the BSc degree

For the MRes degree
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)  
Law & science interdiscip. electives as prescribed in the syllabus

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

*Total passed credits must be not 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 can 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*
- STAT1600 Statistics: Ideas & Concepts*

*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 fulfil 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
Studying Physics and Maths in HKU

• Question: If I want to study physics and mathematics in HKU, should I select the Major in Physics (Intensive) plus Minor in Mathematics, Major in Mathematics (Intensive) plus Minor in Physics, or Major in Physics plus Major in Mathematics?

• Answer:
  - The double major requires a minimum of 192 credits while the intensive major-minor combination requires a minimum of 180 credits.
  - More restriction for the course selection of an intensive major; And a minor only provides students with fundamental knowledge in the subject.
  - For the double major, you need to complete two capstone courses for the normal case.
  - It also depends on whether you are more interested in one of the subjects.
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/guideline2324
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></th>
<th>Semester 1</th>
<th>Semester 2</th>
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<tbody>
<tr>
<td>Year 1</td>
<td>PHYS1150 Problem Solving in Phys XXX XXX XXX XXX</td>
<td>PHYS2250 Intro Mechanics XXX XXX XXX XXX</td>
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<td>XXX</td>
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<td>Year 2</td>
<td>PHYS2150 Method in Physics I PHYS2261 Intro Heat &amp; Thermo XXX XXX XXX</td>
<td>PHYS2255 Intro Elect &amp; Magnetism PHYS2265 Intro Quantum Physics 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>
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</tr>
<tr>
<td>MATH1011 University Math I#</td>
<td>PHYS1150 Problem Solving in Phys</td>
</tr>
<tr>
<td>PHYS1250 Fundamental Physics#</td>
<td>XXX</td>
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<tr>
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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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<tr>
<td>PHYS1150 Problem Solving in Phys</td>
<td>PHYS2250 Intro Mechanics</td>
</tr>
<tr>
<td>PHYS1650^ or MATH1013^ or STAT1600^ or COMP1117^</td>
<td>PHYS2055 Intro Relativity or PHYS2255 Intro Elect &amp; Magnetism</td>
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<tr>
<td>XXX</td>
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<td>XXX</td>
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^Select 2 out of 6!

*For reference only, you should consult your course schedule with Course Selection Advisor!
Sample Major in Physics (Intensive, Astro theme) 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>PHYS2155 Method in Physics II&lt;br&gt;PHYS2055 or PHYS2255&lt;br&gt;XXX&lt;br&gt;XXX&lt;br&gt;Possibly 3000-level courses!</td>
</tr>
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*For reference only, you should consult your course schedule with Course Selection Advisor!
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)