Course Selection Counselling Day

15 Aug 2023

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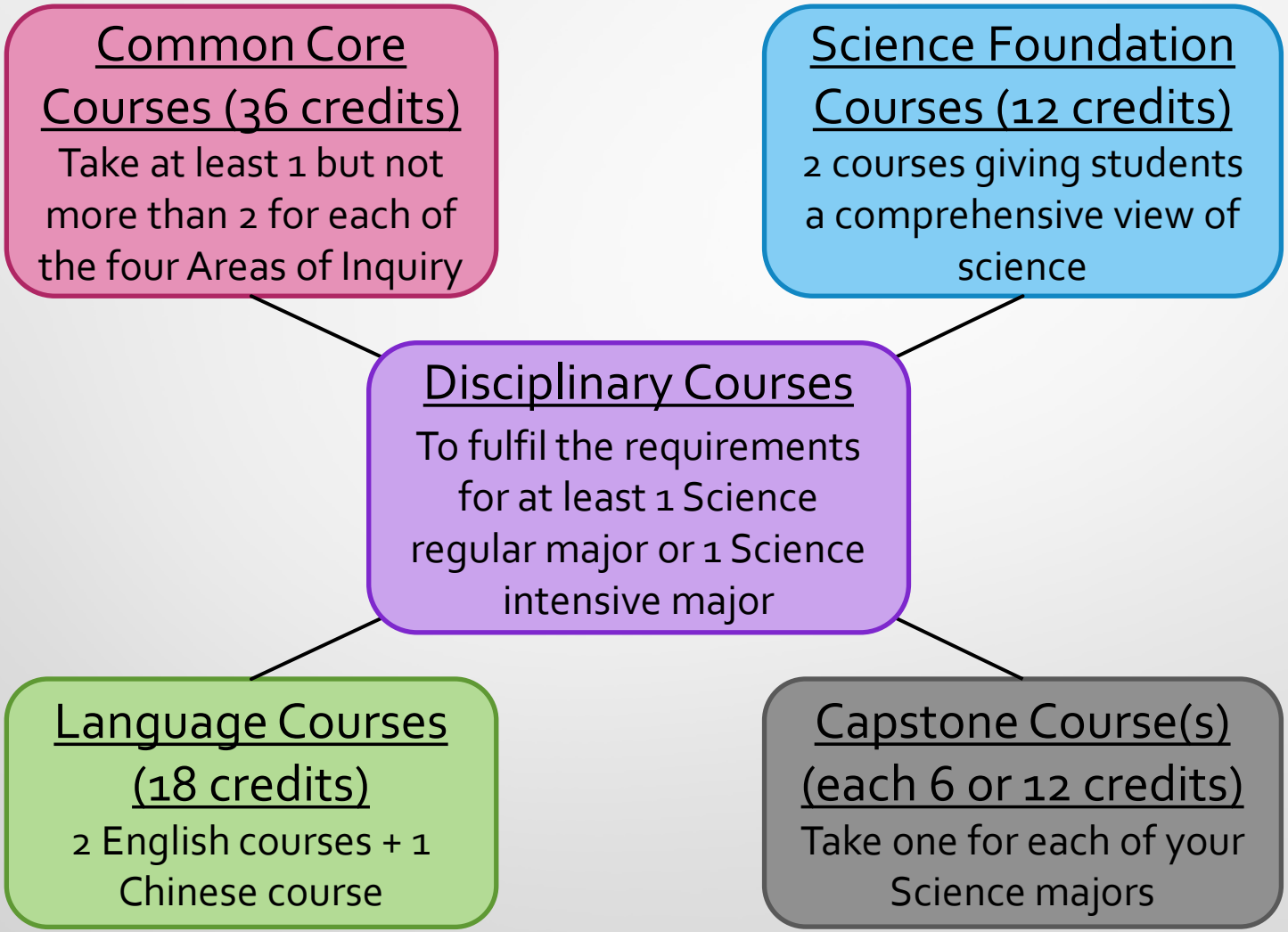
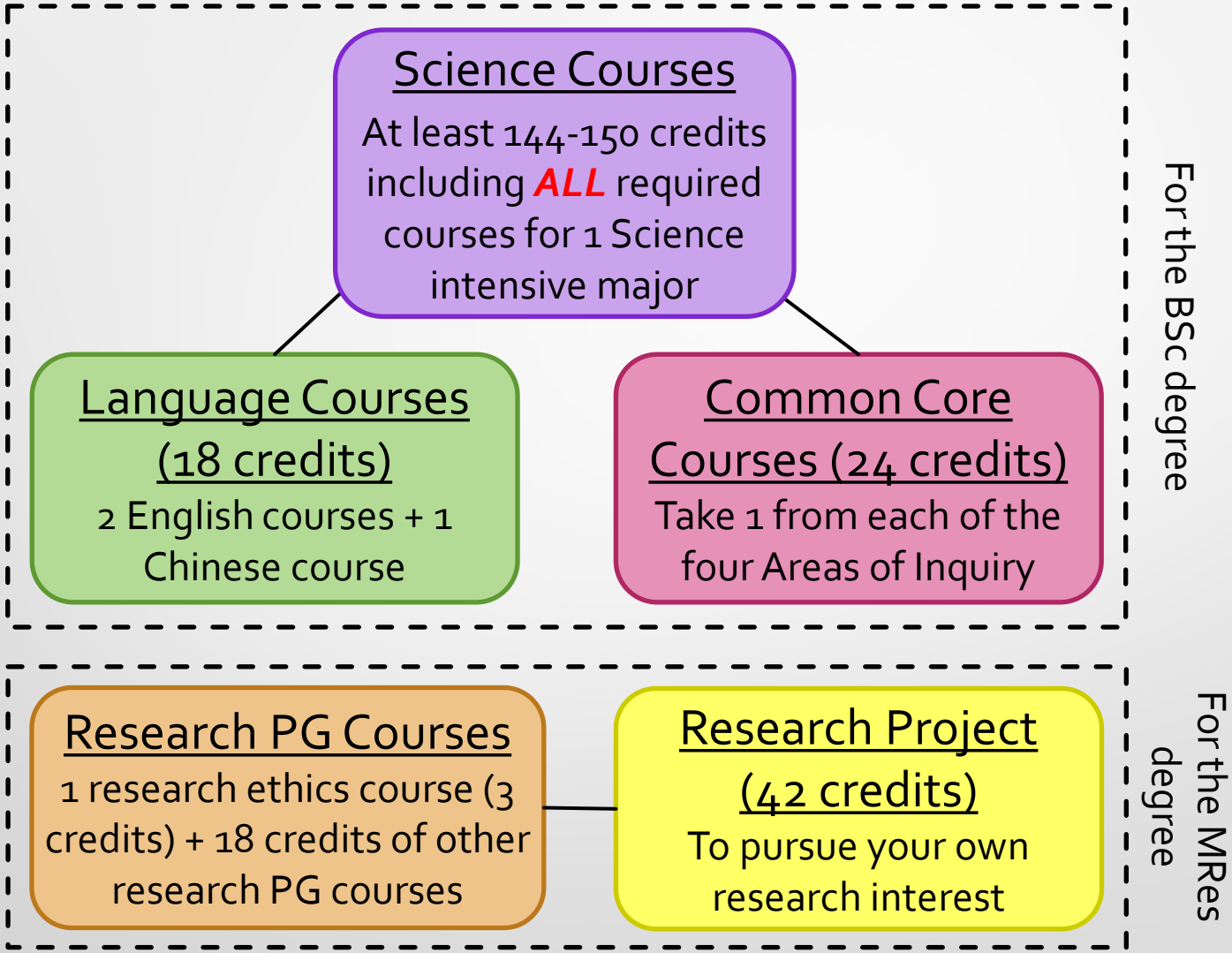
Department of Physics, HKU

BSc Curriculum Structure



Total passed credits must be not fewer than 240!!

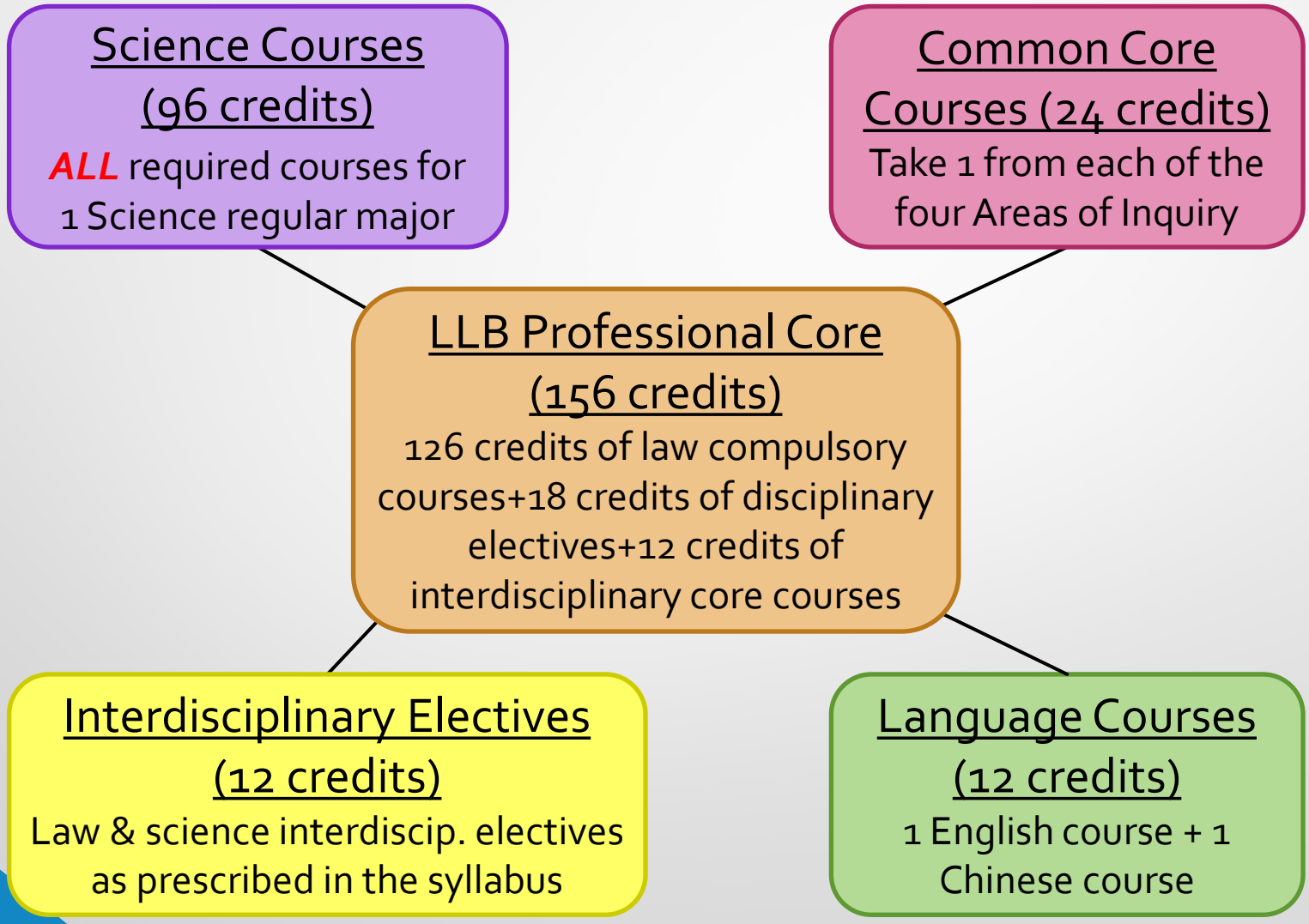
BSc&MRes Curriculum Structure



Total passed credits for the BSc degree must be ≥ 240!!

Total passed credits for the MRes degree must be ≥ 63!!

BSc&LLB Curriculum Structure



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)

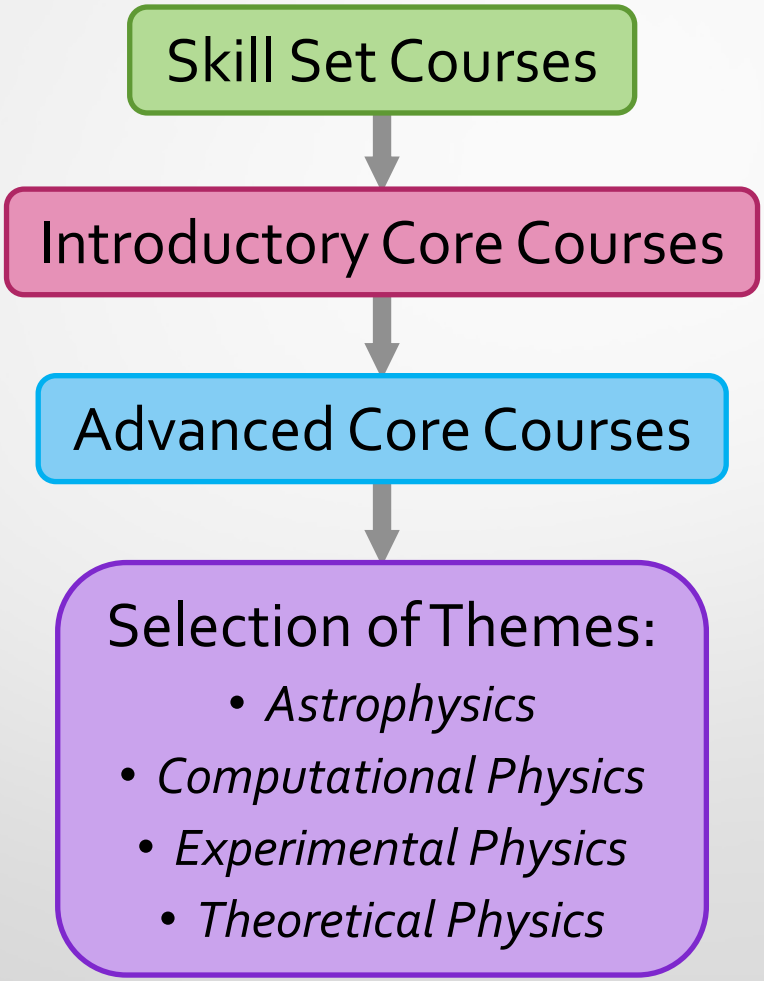
Physics Major

- 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



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

COMP1117 Computer Prog*

MATH1013 University Math II*

PHYS1650 Nature of the Universe*

PHYS2650 Modern Astro*

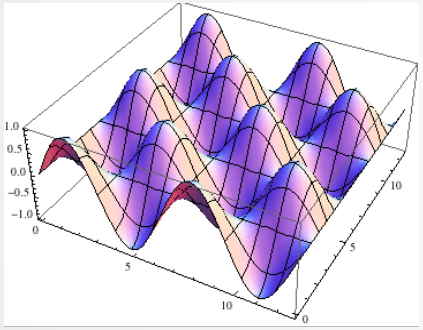
STAT1600 Statistics: Ideas & Concepts*

*Select 2 out of 6 (all others are required courses)

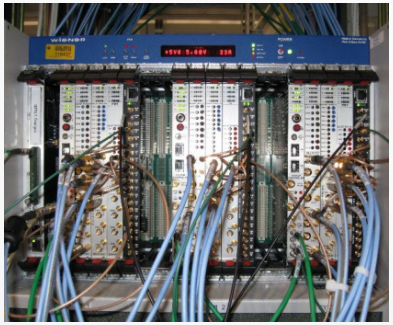
Themes for Physics or Physics (Intensive) Majors

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

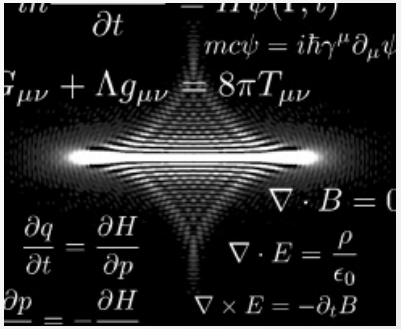
Astrophysics



Computational Physics



Experimental Physics



Theoretical Physics

- 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

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

	Semester 1	Semester 2
Year 1	PHYS1150 Problem Solving in Phys XXX XXX XXX XXX	PHYS2250 Intro Mechanics XXX XXX XXX XXX
Year 2	PHYS2150 Method in Physics I PHYS2261 Intro Heat & Thermo XXX XXX XXX	PHYS2255 Intro Elect & Magnetism PHYS2265 Intro Quantum Physics XXX XXX XXX

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

	Semester 1	Semester 2
Year 1	MATH1011 University Math I# PHYS1250 Fundamental Physics# XXX XXX XXX	PHYS1150 Problem Solving in Phys XXX XXX XXX XXX
Year 2	PHYS2150 Method in Physics I PHYS2250 Intro Mechanics PHYS2261 Intro Heat & Thermo XXX XXX	PHYS2255 Intro Elect & Magnetism PHYS2265 Intro Quantum Physics XXX XXX XXX

#Not counted towards Major requirements!

For reference only, you should consult your course schedule with Course Selection Advisor!

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

	Semester 1	Semester 2
Year 1	PHYS1150 Problem Solving in Phys PHYS1650^ *or* MATH1013^ *or* STAT1600^ *or* COMP1117^ XXX XXX XXX	PHYS2250 Intro Mechanics PHYS2055 Intro Relativity *or* PHYS2255 Intro Elect & Magnetism XXX XXX XXX
Year 2	PHYS2150 Method in Physics I PHYS2261 Intro Heat & Thermo PHYS2265 Intro Quantum Physics XXX XXX	PHYS2155 Method in Physics II PHYS2055 *or* PHYS2255 PHYS2160 Intro Comp Phys^ *or* PHYS2650 Modern Astro^ XXX XXX } Possibly 3000-level courses!

^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

	Semester 1	Semester 2
Year 1	PHYS1150 Problem Solving in Phys PHYS1650 Nature of the Universe XXX XXX XXX	PHYS2250 Intro Mechanics PHYS2055 Intro Relativity *or* PHYS2255 Intro Elect & Magnetism PHYS2650 Modern Astronomy XXX XXX
Year 2	PHYS2150 Method in Physics I PHYS2261 Intro Heat & Thermo PHYS2265 Intro Quantum Physics XXX XXX	PHYS2155 Method in Physics II PHYS2055 *or* PHYS2255 XXX XXX XXX Possibly 3000-level courses!

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)