

Programme Learning Outcomes – Major in Mathematics/Physics

1. University Educational Aims

Benchmarked against the highest international standards, the 4-year undergraduate curriculum at HKU is designed to enable our students to develop their capabilities in:

- (1) pursuit of academic/professional excellence, critical intellectual enquiry and life-long learning
- (2) tackling novel situations and ill-defined problems
- (3) critical self-reflection, greater understanding of others, and upholding personal and professional ethics
- (4) intercultural communication and global citizenship
- (5) communication and collaboration
- (6) leadership and advocacy for the improvement of the human condition

2. Faculty Learning Outcomes

Students completing the BSc curriculum should be able to:

- (1) explain the basic scientific principles and methods
- (2) comprehend fundamental concepts in mathematics and the physical, chemical, biological and earth sciences, and understand the interconnectivity among the sciences and other disciplines
- (3) apply scientific processes and knowledge in a wide variety of careers and professions
- (4) effectively communicate within and across the science disciplines
- (5) analyze scientific aspects of complex issues, and recognize and appraise moral and ethical issues within the sciences and related disciplines
- (6) integrate acquired discipline-specific knowledge in a science for professional and further academic pursuit in that discipline

3. Programme Learning Outcomes – Major in Mathematics/Physics

By the end of this programme, students should be able to:

- (1) identify and describe physical systems with a rigorous representation using their professional knowledge
(by means of coursework and tutorial classes in the curriculum)
- (2) have developed their scientific intuition, abilities and techniques to tackle physical problems with intellectual rigor theoretically
(by means of coursework, tutorial classes and assessments in the curriculum)
- (3) apply mathematical theory and techniques to analyze physical problems qualitatively and quantitatively, and appraise the related ethical issues
(by means of coursework, tutorial classes and research-based projects in the curriculum)
- (4) communicate and collaborate with people effectively in scientific issues
(by means of group projects, tutorial sessions and presentation opportunities in the curriculum)
- (5) apply scientific and quantitative methods in tackling problems in research or real-world setting
(by means of projects, directed studies, local and foreign internships attached to universities, research centers, government bodies, NGOs and influential companies)

4. Mapping of Programme Learning Outcomes to Faculty Learning Outcomes to University Educational Aims

Due to the richness and diversity of the Major, multiple Programme and/or Faculty Learning Outcomes may be used to satisfy the Faculty Learning Outcomes and/or University Educational Aims.

Programme Learning Outcomes – Major in Mathematics/Physics	Faculty Learning Outcomes – BSc programme	University Educational Aims
By the end of this programme, students should be able to:	Students completing the BSc curriculum should be able to:	Benchmarked against the highest international standards, the 4-year undergraduate curriculum at HKU is designed to enable our students to develop their capabilities in:
<ul style="list-style-type: none"> (1) identify and describe physical systems with a rigorous representation using their professional knowledge (2) have developed their scientific intuition, abilities and techniques to tackle physical problems with intellectual rigor theoretically (3) apply mathematical theory and techniques to analyze physical problems qualitatively and quantitatively, and appraise the related ethical issues (5) apply scientific and quantitative methods in tackling problems in research or real-world setting 	<ul style="list-style-type: none"> (1) explain the basic scientific principles and methods (2) comprehend fundamental concepts in mathematics and the physical, chemical, biological and earth sciences, and understand the interconnectivity among the sciences and other disciplines (3) apply scientific processes and knowledge in a wide variety of careers and professions (5) analyze scientific aspects of complex issues, and recognize and appraise moral and ethical issues within the sciences and related disciplines (6) integrate acquired discipline-specific knowledge in a science for professional and further academic pursuit in that discipline 	<ul style="list-style-type: none"> (1) pursuit of academic/professional excellence, critical intellectual enquiry and life-long learning
<ul style="list-style-type: none"> (2) have developed their scientific intuition, abilities and techniques to tackle physical problems with intellectual rigor theoretically (3) apply mathematical theory and techniques to analyze physical problems qualitatively and quantitatively, and appraise the related ethical issues (5) apply scientific and quantitative methods in tackling problems in research or real-world setting 	<ul style="list-style-type: none"> (2) comprehend fundamental concepts in mathematics and the physical, chemical, biological and earth sciences, and understand the interconnectivity among the sciences and other disciplines (3) apply scientific processes and knowledge in a wide variety of careers and professions (5) analyze scientific aspects of complex issues, and recognize and appraise moral and ethical issues within the sciences and related disciplines 	<ul style="list-style-type: none"> (2) tackling novel situations and ill-defined problems
<ul style="list-style-type: none"> (3) apply mathematical theory and techniques to analyze physical problems qualitatively and quantitatively, and appraise the related ethical issues 	<ul style="list-style-type: none"> (5) analyze scientific aspects of complex issues, and recognize and appraise moral and ethical issues within the sciences and related disciplines 	<ul style="list-style-type: none"> (3) critical self-reflection, greater understanding of others, and upholding personal and professional ethics

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*	*	(4) intercultural communication and global citizenship
(4) communicate and collaborate with people effectively in scientific issues	(4) effectively communicate within and across the science disciplines	(5) communication and collaboration
(3) apply mathematical theory and techniques to analyze physical problems qualitatively and quantitatively, and appraise the related ethical issues (5) apply scientific and quantitative methods in tackling problems in research or real-world setting	(3) apply scientific processes and knowledge in a wide variety of careers and professions	(6) leadership and advocacy for the improvement of the human condition

* This will be fulfilled by other components of the University curriculum such as the Common Core Curriculum, Internships, Service Learning, Exchange Studies, etc.