

THE UNIVERSITY OF HONG KONG

FACULTY OF SCIENCE

Programme Learning Outcomes -Major in Molecular Biology & Biotechnology (Intensive)**1. University Educational Aims**

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 understanding 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 Molecular Biology & Biotechnology (Intensive)

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

- (1) describe key concepts in molecular biology and modern biotechnology using knowledge from cell biology, microbiology, biochemistry, immunology, omics and systems biology
(by means of coursework and laboratory-based and/or research-based opportunities in the curriculum)
- (2) apply laboratory techniques essential to modern molecular science
(by means of coursework and laboratory-based and/or research-based opportunities in the curriculum)
- (3) communicate in written and oral communication skills and collaborate with other students effectively
(by means of coursework, research-based learning and presentation opportunities in the curriculum)
- (4) acquire scientific inquiry and critical thinking skills, including the ability to understand, analyze, and evaluate debated problems in the field and develop solutions, and appraise the related ethical issues
(by means of coursework and laboratory-based and/or research-based opportunities in the curriculum)
- (5) gain insights into real-life experience in the applications of biotechnology for human health, agriculture, and the environment
(by means of coursework, laboratory-based and experiential learning in the curriculum)
- (6) equip with knowledges in chemistry, mathematics, statistics, or computer programming, with sufficient depth and breadth to apply these knowledges within a biological context.
- (7) solve a scientific question empirically by designing and implementing experiments, learning new experimental skills and tackling experimental errors, reporting results unbiasedly and systematically.

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 Molecular Biology & Biotechnology (Intensive)	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:	To enable our students to develop their capabilities in:
<ul style="list-style-type: none"> (1) describe key concepts in molecular biology and modern biotechnology using knowledge from cell biology, microbiology, biochemistry, immunology, omics and systems biology (2) apply laboratory techniques essential to modern molecular science (4) acquire scientific inquiry and critical thinking skills, including the ability to understand, analyze, and evaluate debated problems in the field and develop solutions, and appraise the related ethical issues (5) gain insights into real-life experience in the applications of biotechnology for human health, agriculture, and the environment (6) equip with knowledges in chemistry, mathematics, statistics, or computer programming, with sufficient depth and breadth to apply these knowledges within a biological context. (7) solve a scientific question empirically by designing and implementing experiments, learning new experimental skills and tackling experimental errors, reporting results unbiasedly and systematically 	<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) apply laboratory techniques essential to modern molecular science (4) acquire scientific inquiry and critical thinking skills, including the ability to understand, analyze, and evaluate debated problems in the field and develop solutions, and appraise the related ethical issues. (5) gain insights into real-life experience in the applications of biotechnology for human health, agriculture, and the environment (7) solve a scientific question empirically by designing and implementing experiments, learning new experimental skills and tackling experimental errors, reporting results unbiasedly and systematically 	<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

Programme Learning Outcomes – Major in Molecular Biology & Biotechnology (Intensive)	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:	To enable our students to develop their capabilities in:
(4) acquire scientific inquiry and critical thinking skills, including the ability to understand, analyze, and evaluate debated problems in the field and develop solutions, and appraise the related ethical issues (7) solve a scientific question empirically by designing and implementing experiments, learning new experimental skills and tackling experimental errors, reporting results unbiasedly and systematically	(5) analyze scientific aspects of complex issues, and recognize and appraise moral and ethical issues within the sciences and related disciplines	(3) critical self-reflection, greater understanding of others, and upholding personal and professional ethics
*	*	(4) intercultural understanding and global citizenship
(3) communicate in written and oral communication skills and collaborate with other students effectively (7) solve a scientific question empirically by designing and implementing experiments, learning new experimental skills and tackling experimental errors, reporting results unbiasedly and systematically	(4) effectively communicate within and across the science disciplines	(5) communication and collaboration
(4) acquire scientific inquiry and critical thinking skills, including the ability to understand, analyze, and evaluate debated problems in the field and develop solutions, and appraise the related ethical issues (5) gain insights into real-life experience in the applications of biotechnology for human health, agriculture, and the environment	(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.