

**City University of Hong Kong  
Course Syllabus**

**offered by Department of Biomedical Sciences  
with effect from Semester A, 2016/2017**

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**Part I Course Overview**

**Course Title:** Cell Transport and Signalling

**Course Code:** BMS3101

**Course Duration:** One Semester

**Credit Units:** 3

**Level:** B3

Arts and Humanities

**Proposed Area:**  
*(for GE courses only)*

Study of Societies, Social and Business Organisations

Science and Technology

**Medium of Instruction:** English

**Medium of Assessment:** English

**Prerequisites:**  
*(Course Code and Title)* NIL

**Precursors:**  
*(Course Code and Title)* NIL

**Equivalent Courses:**  
*(Course Code and Title)* BCH3856 Cell Transport and Signalling  
(for students who took BCH3856 during academic year from 2011/2012 to  
2014/2015)

**Exclusive Courses:**  
*(Course Code and Title)* NIL

## Part II Course Details

### 1. Abstract

(A 150-word description about the course)

This advanced cell biology course deals with the molecular biology of cell signaling. The students will gain an insight into the fundamental processes of the cellular uptake of molecules by membrane receptors, including membrane-protein and protein-protein interactions, and their associated effectors. The objective is to provide students with current knowledge of cell signaling from the cell surface to the nucleus, integrating cellular regulatory signals. Students will learn about insulin and the signal transduction cascades it invokes, and neural signalling. This course builds on (and complements) knowledge covered in Cell Biology, and underpins the more advanced concepts that are covered in Physiology, Molecular Biology and Final Year Project.

### 2. Course Intended Learning Outcomes (CILOs)

(CILOs state what the student is expected to be able to do at the end of the course according to a given standard of performance.)

No.	CILOs <sup>#</sup>	Weighting* (if applicable)	Discovery-enriched curriculum related learning outcomes (please tick where appropriate)		
			A1	A2	A3
1.	Relate structures of the membrane receptors to their functions in cell transport	20%		✓	
2.	Explore the fundamental mechanisms of membrane transport – both trans-membrane transport and membrane-vesicle-mediated transport	20%	✓	✓	
3.	Apply the principles of cellular uptake of molecules and information to signal transduction pathways originating at membranes	20%		✓	✓
4.	Integrate cell signalling concepts to the in the endocrine and nervous system	40%	✓	✓	✓
* If weighting is assigned to CILOs, they should add up to 100%.		100%			

<sup>#</sup> Please specify the alignment of CILOs to the Gateway Education Programme Intended Learning outcomes (PILOs) in Section A of Annex.

A1: Attitude

Develop an attitude of discovery/innovation/creativity, as demonstrated by students possessing a strong sense of curiosity, asking questions actively, challenging assumptions or engaging in inquiry together with teachers.

A2: Ability

Develop the ability/skill needed to discover/innovate/create, as demonstrated by students possessing critical thinking skills to assess ideas, acquiring research skills, synthesizing knowledge across disciplines or applying academic knowledge to self-life problems.

A3: Accomplishments

Demonstrate accomplishment of discovery/innovation/creativity through producing /constructing creative works/new artefacts, effective solutions to real-life problems or new processes.

### 3. Teaching and Learning Activities (TLAs)

(TLAs designed to facilitate students' achievement of the CILOs.)

TLA	Brief Description	CILO No.				Hours/week (if applicable)
		1	2	3	4	
Lectures	Teaching and learning will be based on lectures to investigate the mechanisms of membrane transport and cell communications, and to comprehend different types of cell signalling pathways	✓	✓	✓	✓	
Tutorials	Teaching and learning will be based on tutorials to investigate the mechanisms of membrane transport and cell communications, and to comprehend different types of cell signalling pathways		✓	✓		
Group discussions	Teaching and learning will be primarily based on lectures and group discussion to examine neural signalling. Most current topics will be presented and discussed by different groups of students. Daily life examples of cell signalling in human and animals will also be discussed.	✓			✓	

### 4. Assessment Tasks/Activities (ATs)

(ATs are designed to assess how well the students achieve the CILOs.)

Assessment Tasks/Activities	CILO No.				Weighting*	Remarks
	1	2	3	4		
Continuous Assessment : 30%						
Oral Presentation	✓			✓	30%	Students will be assessed individually.
Examination: 70% (duration: 3hrs)						
* The weightings should add up to 100%.					100%	

#### "Minimum Passing Requirement" for BMS courses:

A minimum of 30% in coursework as well as in examination, in addition to a minimum of 40% in coursework and examination taken together.

## 5. Assessment Rubrics

*(Grading of student achievements is based on student performance in assessment tasks/activities with the following rubrics.)*

Assessment Task	Criterion	Excellent (A+, A, A-)	Good (B+, B, B-)	Adequate (C+, C, C-)	Marginal (D)	Failure (F)
1. Oral Presentation	Demonstrate the ability to apply what has been taught in lectures/tutorials in their oral presentation	High	Significant	Moderate	Basic	Not even reaching marginal levels
2. End-of-term examination	To test students' application of material taught in class and evaluate their performance based on their performance on the exam	High	Significant	Moderate	Basic	Not even reaching marginal levels

**Part III Other Information** (more details can be provided separately in the teaching plan)

**1. Keyword Syllabus**

*(An indication of the key topics of the course.)*

- Membrane receptors and membrane transport mechanism
- Gene expression and regulation
- Protein structure and function
- Signal transduction
- Endocrine, paracrine and synaptic signalling, G-Protein linked signalling, enzyme-linked signalling (kinase and phosphatase), and receptor tyrosine kinase signalling
- Cell communication in the nervous system

**2. Reading List**

**2.1 Compulsory Readings**

*(Compulsory readings can include books, book chapters, or journal/magazine articles. There are also collections of e-books, e-journals available from the CityU Library.)*

1.	Lewin's CELLS, Third Edition, ISBN-13: 9781284029390
2.	<a href="http://www.jblearning.com/catalog/9781284029390/">http://www.jblearning.com/catalog/9781284029390/</a>

**2.2 Additional Readings**

*(Additional references for students to learn to expand their knowledge about the subject.)*

NIL