BMS8107: CANCER BIOLOGY AND PRECISION MEDICINE

Effective Term
Semester B 2024/25

Part I Course Overview

Course Title
Cancer Biology and Precision Medicine

Subject Code
BMS - Biomedical Sciences
Course Number
8107

Academic Unit
Biomedical Sciences (BMS)

College/School
College of Biomedicine (BD)

Course Duration
One Semester

Credit Units
3

Level
R8 - Research Degree

Medium of Instruction
English

Medium of Assessment
English

Prerequisites
Nil

Precursors
Nil

Equivalent Courses
Nil

Exclusive Courses
Nil

Part II Course Details

Abstract

The course aims to introduce the genetic basis of human cancer including mechanisms of mutations, the activation of oncogenes, the loss of tumour suppressor genes, and the roles of oncogenes and tumor suppressor genes in the regulation of cell cycle and apoptosis.

This course will also focus on the principles and applications of modern cancer therapeutic approaches. Cancer stem cells and therapeutic approaches focused on cancer stem cells are also discussed.

Course Intended Learning Outcomes (CILOs)

	CILOs	Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Describe the central themes in cancer biology.			x	
2	Identify the cellular basics and molecular mechanisms of cancer biology.		x	x	x
3	Integrate the genetic basis of human cancer.		x	x	
4	Design a concept map based on published data to illustrate genetic basis of human cancer.		x	x	x

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 real-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.

Learning and Teaching Activities (LTAs)

	LTAs	Brief Description	CILO No.	Hours/week (if applicable)
1	Lecture	Students will attend formal lectures to gain knowledge about the fundamental principles in cancer biology, molecular and cellular basis of cancer, as well as advances in biomedical technology for tumour diagnosis and treatment.	1, 2, 3, 4	39 hours in total
2	Tutorial	Students will select and present scientific articles to extend the basic concepts and theories of cancer and biology. They will also be audiences of their peer classmates in order to learn critical thinking skill.	1, 2, 3, 4	39 hours in total

Assessment Tasks / Activities (ATs)

	ATs	CILO No.	Weighting (%)	Remarks (e.g. Parameter for GenAI use)
1	Presentation	1, 4	55	

Continuous Assessment (%)

55

Examination (%)

45

Examination Duration (Hours)

3

Minimum Continuous Assessment Passing Requirement (%)

0

Minimum Examination Passing Requirement (%)

0

Assessment Rubrics (AR)

Assessment Task

Presentation (for students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter)

Criterion

Ability to show the learning progress, analyse and express the synthesis of ideas and knowledge

Excellent

(A+, A, A-) Outstanding performance on all CILOs. Strong evidence of original thinking; good organization, capacity to analyse and synthesize; superior grasp of subject matter; evidence of extensive knowledge base.

Good

(B+, B, B-) Substantial performance on all CILOs. Evidence of grasp of subject, some evidence of critical capacity and analytic ability; reasonable understanding of issues; evidence of familiarity with literature.

Fair

(C+, C, C-) Satisfactory performance on the majority of CILOs possibly with a few weaknesses. Being able to profit from the course experience; understanding of the subject; ability to develop solutions to simple problems in the material.

Marginal

(D) Barely satisfactory performance on a number of CILOs. Sufficient familiarity with the subject matter to enable the student to progress without repeating the course.

Failure

(F) Unsatisfactory performance on a number of CILOs. Failure to meet specified assessment requirements, little evidence of familiarity with the subject matter; weakness in critical and analytic skills; limited or irrelevant use of literature

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Assessment Task

Examination (for students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter)

Criterion

Ability to synthesize, state and apply the principles and subject matter learnt in the course

Excellent

(A+, A, A-) Outstanding performance on all CILOs. Strong evidence of original thinking; good organization, capacity to analyse and synthesize; superior grasp of subject matter; evidence of extensive knowledge base.

Good

(B+, B, B-) Substantial performance on all CILOs. Evidence of grasp of subject, some evidence of critical capacity and analytic ability; reasonable understanding of issues; evidence of familiarity with literature.

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Assessment Task

Presentation (for students admitted from Semester A 2022/23 to Summer Term 2024)

Criterion

Ability to show the learning progress, analyse and express the synthesis of ideas and knowledge

Excellent

(A+, A, A-) Outstanding performance on all CILOs. Strong evidence of original thinking; good organization, capacity to analyse and synthesize; superior grasp of subject matter; evidence of extensive knowledge base.

Good

(B+, B) Substantial performance on all CILOs. Evidence of grasp of subject, some evidence of critical capacity and analytic ability; reasonable understanding of issues; evidence of familiarity with literature.

Marginal

(B-, C+, C) Satisfactory performance on the majority of CILOs possibly with a few weaknesses. Being able to profit from the course experience; understanding of the subject; ability to develop solutions to simple problems in the material.

Failure

(F) Unsatisfactory performance on a number of CILOs. Failure to meet specified assessment requirements, little evidence of familiarity with the subject matter; weakness in critical and analytic skills; limited or irrelevant use of literature

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Assessment Task

Examination (for students admitted from Semester A 2022/23 to Summer Term 2024)

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Ability to synthesize, state and apply the principles and subject matter learnt in the course

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(A+, A, A-) Outstanding performance on all CILOs. Strong evidence of original thinking; good organization, capacity to analyse and synthesize; superior grasp of subject matter; evidence of extensive knowledge base.

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Part III Other Information

Keyword Syllabus

- Hallmarks of human cancer;
- Oncogenes and Tumour suppressor genes;
- Cancer stem cell;
- Tumor invasion and metastasis;
- Mutisteps of tumor progression;
- Cell cycle and apoptosis;
- Genomic instability of cancers;
- Epigenetic mechanism;
- Drug resistance;
- Modern cancer therapeutic approaches

Reading List

Compulsory Readings

	Title
1	Nil

Additional Readings

	Title
1	Nil