1. **Instructor**

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<tr>
<th>Instructor</th>
<th>Room</th>
<th>Extension</th>
<th>E-mail address</th>
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</thead>
<tbody>
<tr>
<td>Joyce P.Y. MAK</td>
<td>6279</td>
<td>x8718</td>
<td><a href="mailto:jpymak@ust.hk">jpymak@ust.hk</a></td>
</tr>
<tr>
<td>(Course Coordinator)</td>
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2. **Teaching Assistant**

NA

3. **Meeting Time and Venue**

Date/Time:
- Monday: 13:30–14:50 Lecture
- Wednesday: 13:30–14:50 Lecture

Venue: Room 6591

4. **Course Description**

Cancer is one of the most important causes of death in our society and has been the driving force behind major research discoveries. A better understanding of the basic biology of cancer has led to more effective treatments, enhanced detection methods, and the development of prevention strategies. This advance undergraduate course will provide a comprehensive overview of the biology of cancer. Through interactive lectures, fundamental concepts in the mechanisms of carcinogenesis, epidemiology, etiology, detection, and treatment of cancer will be introduced. Emphasis will be placed on the current understanding of common cellular and molecular mechanisms that contribute to the development of cancer. In-depth discussion and analysis of original literature of selected topics will also give students an appreciation of the complexity and state-of-the-art of current research.

**Prerequisites:** LIFS3020 or LIFS3140

4th year UG students

5. **Intended Learning Outcomes**

On successful completion of this course, students are expected to be able to:

1. Describe in detail the key concepts and principles of current cancer biology.
2. Apply key concepts and principles to the analysis of cancer-related issues, including cancer epidemiology, etiology, detection, and treatment.
3. Appraise original biomedical literature to analyse experimental design and critically evaluate the interpretations.
4. Organise biomedical information and communicate it effectively both orally and in writing.
5. Work and coordinate effectively in a team to develop collaborative projects.

6. **Assessment Scheme**

Take home literature review (50%, for assessing ILOs 1 & 2) (instructor-assessed)

Group literature review (50%, for assessing ILOs 1, 2, 3 & 4) (peer-assessed)

Poster (25%)

Oral presentation (25%)
7. **Student Learning Resources**  
Lecture notes  
Primary literature and review articles

8. **Learning Activities**  
1. Attending and participating in lectures (for attaining ILO 1).  
2. Reading and discussing assigned research articles (for attaining ILOs 1 and 2).  
3. Participating in a group literature review, which includes an oral presentation and a written report, on a cancer-related topic (for attaining ILOs 1, 2, 3, and 4).

9. **Course Schedule**

**Cancer Defined**  
1. Characteristics of cancer  
   Multi-step tumorigenesis and the evolution of cancer

**Studying Cancer**  
2. Models for cancer research

**Causes and Risk Factors of Cancer**  
3. Cancer epidemiology  
   Heredity and cancer  
4. Chemicals and cancer  
   Radiation and cancer  
5. Infectious agents and cancer

**Cellular and Molecular Hallmarks of Cancer**  
6. Oncogenes and tumor suppressor genes  
7. Genetic and epigenetic alterations in cancer  
8. Growth factors and receptors in cancer  
9. Growth factors and receptors in cancer  
10. Cell cycle control and cancer  
11. Apoptosis and cancer  
12. DNA repair defects and cancer  
13. Senescence, cell immortalization and cancer  
14. Angiogenesis and cancer  
15. Angiogenesis and cancer  
16. Metastasis  
17. Cancer stem cells  
   Cancer immunology

**Cancer Detection & Treatment**  
18. Conventional surgery, chemotherapy, and radiotherapy  
19. Targeted therapy  
20. Targeted therapy  
21. Immunotherapy  
22. Current advances in cancer detection

**Presentation**  
23. Group presentation and discussion  
24. Group presentation and discussion

NB: Since the topics are highly integrated, all the estimated time and order are approximations.