

BIO-472

**Cancer biology II**

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Cursus	Sem.	Type
Life Sciences Engineering	MA2	Opt.
Sciences du vivant	MA2, MA4	Opt.

Language of teaching	English
Credits	5
Session	Summer
Semester	Spring
Exam	During the semester
Workload	150h
Weeks	14
<b>Hours</b>	<b>5 weekly</b>
Lecture	3 weekly
Exercises	2 weekly
<b>Number of positions</b>	

**Summary**

The course covers in detail the interactions of cancer cells with their environment with an emphasis on tumor-angiogenesis, inflammation, adaptive and innate immunity and cancer-induced immune suppression. Additional topics are cancer metabolism, cancer stem cells and metastasis.

**Content**

The 2x5 credit course Cancer Biology I+II starts in the winter semester and continues throughout the summer semester.

**Cancer Biology II covers:**

- complex oncogenic signaling networks and hierarchical tumor organization
- tumor metabolism
- cell death signaling and apoptosis
- cancer histology with practical training
  
- inflammatory signaling in cancer
- tumor angiogenesis
- tumor cell dissemination and metastasis
- innate immunity: pro-tumorigenic roles of inflammation, NK cells
- adaptive immunity: immuno editing, immune evasion, immunotherapy

The weekly lectures will be followed by exercises. The task for these exercises will be student presentations of scientific articles which illustrate the course in order to consolidate the knowledge of the course topics.

**Learning Prerequisites****Recommended courses**

Cancer Biology I  
Immunology

**Learning Outcomes**

By the end of the course, the student must be able to:

- Systematize major mechanisms of tumor-stroma interactions
- Interpret published experimental studies

- Propose new models based on experimental results
- Design experiments to solve scientific questions in the area of cancer research
- Integrate information from various levels to evaluate signs of tumor progression

### **Transversal skills**

- Make an oral presentation.
- Summarize an article or a technical report.
- Evaluate one's own performance in the team, receive and respond appropriately to feedback.
- Communicate effectively with professionals from other disciplines.
- Access and evaluate appropriate sources of information.

### **Assessment methods**

Continuous evaluation during the semester with two intermediate exams

### **Resources**

#### **Bibliography**

The Biology of Cancer, Robert A. Weinberg

#### **Ressources en bibliothèque**

- [The Biology of Cancer / Weinberg](#)