

BIO-471

**Cancer biology I**

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<b>Cursus</b>	<b>Sem.</b>	<b>Type</b>
Life Sciences Engineering	MA1, MA3	Opt.
Minor in life sciences engineering	H	Opt.

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

**Summary**

The course covers in detail molecular mechanisms of cancer development with emphasis on cell cycle control, genome stability, oncogenes, tumor suppressor genes, signaling pathways involved in cancer, genomic cancer analysis and rational cancer therapies.

**Content**

The 2x5 credit course starts in the fall semester and continues throughout the spring semester as Cancer Biology II. In the fall semester (Cancer Biology I), the following topics are covered:

- Oncogenes and tumor suppressors
- Cell cycle regulation
- Apoptosis and senescence
- Signalling pathways in cancer
- Genome maintenance and segregation
- DNA repair
- Functional genomic screens and targeted cancer therapies
- Genomic cancer analysis

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

Basic knowledge of molecular biology and genetics.

**Learning Outcomes**

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

- Describe the biological concepts that were discussed during the course.
- Analyze the experiments and conclusions that were covered in the discussed papers and the exercises.
- Design experimental approaches to tackle scientific questions.

**Teaching methods**

Ex cathedra and exercises

**Assessment methods**

written exam during the winter session

## Supervision

Others                      Office hours by appointment only.

## Resources

### Bibliography

Robert A. Weinberg: The Biology of Cancer, 3rd edition 2023, Norton & Company, ISBN 978-0-393-88766-2

### Ressources en bibliothèque

- [Find the reference at the Library](#)

### Moodle Link

- <https://go.epfl.ch/BIO-471>