



**VIU**  
summer  
SCHOOL  
**exploring**  
**nucleic acids:**  
**From BIOPHYSICS**  
**To molecular**  
**BIOLOGY**

**Exploring Nucleic Acids:  
from biophysics to molecular biology**

**September 22-26, 2025**

**Venice International University  
Isola di San Servolo, Venice**

# VIU Summer School

## Exploring Nucleic Acids: from biophysics to molecular biology (ENA)

September 22-26, 2025

Venice International  
University

Scientific Coordinator:  
Claudia Sissi,  
University of Padova

A few decades ago, the role of nucleic acids was thought to be limited to maintaining and passing down genetic inheritance during cell replication, as well as enabling the synthesis of functional proteins. However, it is now acknowledged that nucleic acids play a myriad of pivotal roles in various biological processes. To name a few, these functions include shaping chromatin architecture, enabling the formation of various types of membrane-less organelles, and serving as molecular receptors on the cell surface.

Even from a purely chemical and nano-engineering perspective, nucleic acids have recently generated significant interest. Indeed, they are highly flexible polymers capable of adopting various conformations, the stability of which largely depends on environmental conditions. This characteristic makes them ideal for the development of (bio)sensors and nanosystems for various bio- and nano-technological applications.

In the pharmaceutical field as well, nucleic acids are gaining momentum. Notably, during the pandemic, the first mRNA-based vaccines were approved. Additionally, last year, a new aptamer received approval for clinical use, and shortly before that, the FDA released the first drug targeting an RNA molecule. Not to mention the antisense drugs based on modified oligonucleotides already on the market or in advanced clinical stages.

Altogether, these developments demonstrate how the scientific community is progressively focusing the attention on the various facets of nucleic acids. Despite this striking evidence, the time dedicated to nucleic acid studies in academic programs is very limited and confined.

The summer school herein presented aims to fill this gap by offering participants a comprehensive overview of the different aspects that define the field of nucleic acids.

As the title implies, the proposed course will be highly interdisciplinary, covering topics from various research areas to inspire participants and encourage innovative, out-of-the-box thinking. Topics will range from biophysics to nanotechnology, and from molecular biology to medicinal chemistry.

## Faculty

Claudia Sissi, University of Padova  
Riccardo Rigo, University of Padova  
Francesco Mantegazza, University of Milano-Bicocca  
Elisabetta Groaz, KU Leuven  
Jurij Lah, University of Ljubljana  
Caterina Carraro, German Center for Neurodegenerative Diseases (DZNE)  
Lukas Trantirek, Central European Institute of Technology of Masaryk University (CEITEC)  
Leonard Prins, University of Padova

## Who is it for?

Applications are open to PhD students, postdocs and junior researchers with a background in chemistry, medicinal chemistry, biotechnology, molecular biology, and biophysics related to nucleic acids.

## Topics

- The biophysics of nucleic acids: Participants will tackle the main approaches for structure determination, as well as the analysis of the thermodynamic and kinetic aspects of nucleic acid folding.
- Nucleic acid-based nanotechnologies: Experts in the field will guide attendees through the latest advancements in biosensors and nanosystems based on nucleic acids, discussing their principles, advantages, and criticisms.
- New approaches in nucleic acids molecular biology: The course will cover the main sequencing techniques, and their applications, and it will provide an introduction to data analysis.
- Nucleic acids - a pharmaceutical perspective: These macromolecules will be examined from a dual perspective, both as pharmaceutical targets and as potential drugs.

## Learning outcomes for participants

Throughout the course, attendees will be exposed to perspectives and knowledge from various research areas. The speakers will contribute to presenting the most advanced approaches in their respective fields of expertise, applied to the study of these biomolecules. Moreover, the learning process of the attendees will be promoted by one-to-one interaction with the experts. At the end of the summer school, participants will obtain a comprehensive

knowledge of the current state of scientific research in the nucleic acid field.

## Credits

A Certificate of attendance will be issued at the end of the course.

Number of ECTS credits allocated: **2**

The Program will admit 25 participants.

## Fees

Students of VIU member universities:  
€ 300 incl. VAT.

Students of other universities:  
€ 600 incl. VAT.

The fees will cover tuition, course materials, lunches in the VIU cafeteria and social events. Student participants will be responsible for covering their own travel expenses to and from Venice, accommodation and local transportation. VIU Alumni are eligible for a reduced fee.

PhD candidates and post-docs from universities in EU universities may be eligible for Erasmus+ mobility grant support. Candidates should consult the International Office in their own university for information about the calls for applications for funding as well as for possible scholarships. VIU will provide any supporting documentation requested for such applications. Contact VIU Erasmus office: [erasmus@univiu.org](mailto:erasmus@univiu.org)

## Accommodation on campus

In shared rooms (triple/quadruple) with other participants: € 308 VAT included for 6 nights with breakfast (municipal tax included). Further information will be available in the Application form.

## Applications

**January 15– May 15, 2025**  
**via the VIU website**

Students will be notified shortly after the submission of their application and asked to pay the tuition fee and accommodation fee (if applied for) within ten days after being advised.

Applicants must submit the application form, a letter of motivation – which should include a brief description of the candidate's research interests, a curriculum vitae and a photo.

**Venice International University** is a consortium of 23 institutions, representing 14 countries throughout the world.

The mission of VIU is to foster cooperation among VIU member institutions while facilitating the exchange of knowledge and ideas, by developing, promoting and organizing joint academic, research and training/capacity-building program. Students from non-member universities may participate in selected academic programs. The academic programs at VIU are distinguished by a markedly interdisciplinary approach to the topics, and by the international perspectives that the participants contribute to the discussions. The VIU campus is on the island of San Servolo in Venice, Italy.

#### **Location**



#### **Venice International University**

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