

Module description:

The OMICSS Molecular Biology module covers the fundamental concepts of Molecular Biology required to conduct research in the field of Bioinformatics. Paired with the other modules in the OMICSS course, students will have a solid foundation not only in the field of Molecular Biology, but Bioinformatics as a whole.

Module duration:

4 weeks, average 2.5 hours per week

Module Outline:

Week 1	Topics Covered	<ol style="list-style-type: none"> 1. Introduction to Biology 2. Macromolecules: Carbohydrates, Lipids, Proteins 3. Nucleic Acids: DNA 4. DNA and RNA: Replication, Transcription, Translation 5. Cell division
	Learning Activities	<ul style="list-style-type: none"> • Online lecture videos • Online lecture texts
	Estimated duration	5 hours
Week 2	Topics Covered	<ol style="list-style-type: none"> 1. DNA Proofreading and repair 2. Telomeres and Telomerase 3. Genes 4. Transcription 5. Translation
	Learning Activities	<ul style="list-style-type: none"> • Online lecture videos • Online lecture texts
	Estimated duration	3 hours
Week 3	Topics Covered	<ol style="list-style-type: none"> 1. tRNAs and ribosomes 2. Stages of translation: Protein targeting 3. Heredity 4. Probabilities in genetics
	Learning Activities	<ul style="list-style-type: none"> • Online lecture videos • Online lecture texts
	Estimated duration	3 hours

Week 4	Topics Covered	<ol style="list-style-type: none"> 1. Pleiotropy and lethal alleles 2. Genetical linkage and mapping 3. Phenotypic plasticity 4. Variation in a species
	Learning Activities	<ul style="list-style-type: none"> • Online lecture videos • Online lecture texts
	Estimated duration	1.5 hours