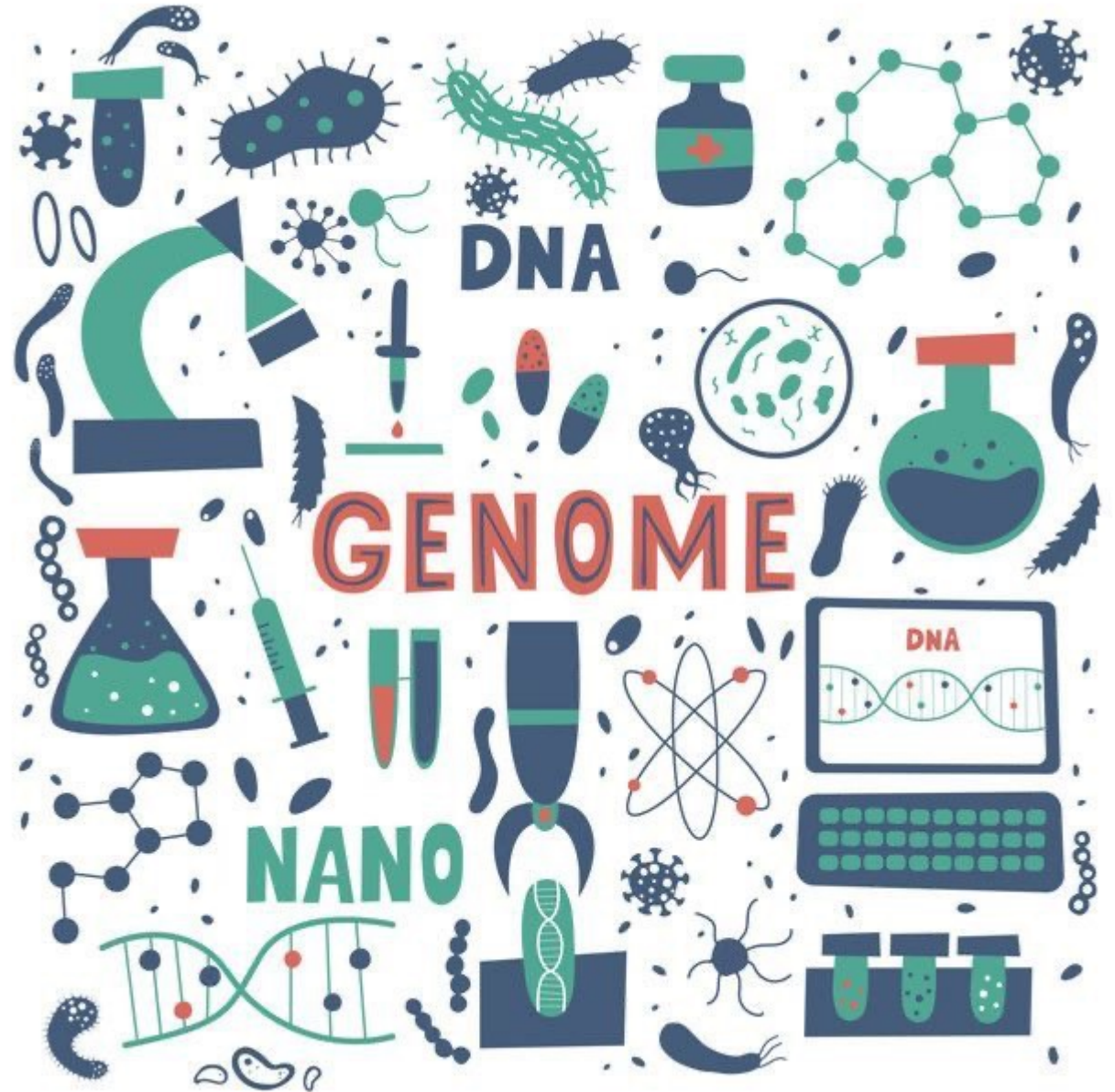


Elements of Chemical and Molecular Biology

Course outline



Course outline



- **Introduction to the course**
- **Pre-course assignment**
- **The molecules of life**
 - Lesson 1 – Water, pH and buffers
 - Lesson 2 – Recognizing macromolecule
 - Lesson 3 – Nucleic acid polarity and structure
 - Lesson 4 – Protein polarity and structure
- **The cell and how it works**
 - Lesson 5 – Cellular chemistry, reaction thermodynamics and metabolic pathways
 - Lesson 6 – Enzymes and reaction kinetics
 - Lesson 7 – Cellular organization
 - Lesson 8 – Cell division
- **Information transfer in biology**
 - Lesson 9 – Genes and DNA rules
 - Lesson 10 – DNA replication
 - Lesson 11 – DNA transcription
 - Lesson 12 – RNA translation
- **Inheritance and Genetics**
 - Lesson 13 – DNA mutations and their outcome
 - Lesson 14 – Allele segregation
 - Lesson 15 – Punnett squares
 - Lesson 16 - Pedigrees

Course outline



- **Genetic engineering – Recombinant DNA technology**
 - Lesson 17 – Restriction enzymes
 - Lesson 18 – Vectors and ligation enzymes
 - Lesson 19 – Polymerase chain reaction (PCR)
- **Final considerations and end of the course first part**
- **Laboratory techniques and hands-on sessions (with Dr. Suzana Aulic)**

Course outline



- Each lesson has a self-check assignment
- Assignments can be uploaded on Moodle any time (optional):
 - The suggestion is to take the assignments during course (between one class and the following one) as understanding of each lesson is propaedeutic to understanding the next one
- You should commit yourself to the assignments, as they are part of your final preparation
 - Cheating is not allowed, do the assignments for your own professionalism, training and culture (you are grown enough)

Course outline

- Take pre-course assignment