Basic information about the subject (independent of the cycle)

|  |  |
| --- | --- |
| **Module name** | **Introduction to Bioinformatics with ROSALIND** |
| Erasmus code |  |
| ISCED code |  |
| Language of instruction | English |
| Website |  |
| Prerequisites | None. Introductory course. |
| ECTS points hour equivalents | Contact hours (work with an academic teacher): 30 Total number of hours with an academic teacher: 60 Non-contact hours (students' own work): 120  Total number of ECTS points for the module: 6 ECTS |
| Educational outcomes verification methods | Project |
| Description | Bioinformatics can be defined as a scientific discipline using data processing algorithms for solving problems from the domain of biological sciences, with a particular emphasis on computational biology, molecular biology, genomics and neurobiology. ROSALIND is one of the free-to-use complex educational tools designed with the simultaneous development of both programming skills and biological knowledge in mind. Its smooth learning curve, the abundance of exercises and extensive online documentation makes it one of the best websites for learning bioinformatics.  Exemplary problems:  1) transcription modelling;  2) complementary nucleotide sequencing;  3) applications of Fibonacci Sequence;  4) computing protein molecular mass;  5) splicing modelling;  6) genetic drift modelling;  7) genetic algorithms |
| Reading list | 1) Ramsden, J. (2015). Bioinformatics. An Introduction  2) Stevens, T.J. & Boucher, W. (2015). Python Programming for Biology. Bioinformatics and Beyond  3) Choudhuri, S. & Kotewicz, M. (2014). Bioinformatics for beginners: genes, genomes, molecular evolution, databases and analytical tools |
| Educational outcomes | **KNOWLEDGE**  Student will acquire a detailed insight into the main research areas of bioinformatics, with particular reference to the molecular biology, genomics and neurobiology.  Student will gain a knowledge of scientific terminology in the field of bioinformatics.  **SKILLS**  Student is able to apply basic algorithms to solve bioinformatical problems  **ATTITUDES**  Student seeks to deepen his/her knowledge of bioinformatics by reading scientific journals and books, as well as discussing various topics with the teacher and peers. |
| Practice | None |