

Program of Studies:	Master Program Bioinformatics
Name of the module:	Special-topic Lecture Bioinformatics: Structural Aspects in Bioinformatics of Viruses
Abbreviation:	BI-BM-1
Modules:	Lecture and tutorial
Semester:	2nd semester master / summer semester
Responsible lecturer:	Dr. Olga Kalinina
Lecturer:	Dr. Olga Kalinina
Language:	English
Level of the unit/ Mandatory or not	Graduate course / mandatory elective
Course type/weekly hours:	Lecture: 2h (weekly) Tutorial: 1h (weekly)
Total workload:	150 h = 48 h of classes and 102 h private study
Credits:	5
Entrance requirements:	Familiarity with Bioinformatics 1 and 2
Aims/Competences to be developed:	Studying viruses with methods bioinformatics is a growing field of research. Due to their unique structure, life cycle, and evolution, viruses present a significant challenge to established methods of analysis.
Content:	In this course we will first consider the basics of virology: what is known about virus particle structure, their replication, interactions with the host cell, and finally their origin. The course will also introduce the most important methods, algorithms and resources of structural bioinformatics, and put them into the context of virus research. The topics will include: protein structure determination and analysis; protein and nucleic acid structure prediction and comparison; structure-based evolutionary and functional analysis; drug design.
Assessment/Exams:	Exam
Used Media:	Power point presentation combined with presentations at the blackboard.
Literature:	The course is partly based on "Structural Bioinformatics", 2nd edition, eds. Jenny Gu, Philip E. Bourne. Additionally, I recommend to consult a basic virology textbook of your choice. A lot of material from the recent literature is used. These will be made available in the password protected area.