BIOI2230 Introduction to genetics – Course outline in 2008 – 21.10.2008

The course aims to give the students an understanding of heritability and evolution and an elementary knowledge of experimental methods of genetics. We will cover the basics of classical genetics, cytogenetics, population genetics, and medical genetics. A basic understanding of DNA is expected, otherwise there are no requirements in previous studies of biosciences.

The lectures will be given live in Tampere in the second period, on Wednesdays 10:15-13:00, in FinnMedi 1, 5th floor Red Room or FinnMedi 2, 4th floor White Room (on 5.11, 19.11, and 3.12), and recorded on web videos for Turku (and for revision for anyone). Turku students will have a chance to ask questions from each lecturer on following Friday, 9.15 to 10.00 over a video connection. Exam is planned to be in early January.

The course consists of lectures (21 h), small assignments (in Moodle), a home essay and an exam. Essay topics will be selected or assigned individually during the first 3 weeks of the course, and the deadline for essays is 15.12.2008.

The examinable content comes from the content of the lectures, most of which can be studied from the book, Klug-Cummings-Spencer (2006) Concepts of Genetics (8th edition) Pearson Education, chapters 1-9, 21, 24-26.

29th Oct GEN1, Katri Lindfors: Cell divisions: mitosis and meiosis; classical Mendelian genetics
5th Nov GEN2, Katri Lindfors: Mendelian genetics continued; genetic linkage; X-linkage
12th Nov GEN3, Martti Tolvanen: Genomics, model organisms; Epigenetics: methylation, non-coding RNAs
19th Nov GEN4, Anchit Khanna: Human chromosomes; cytogenetics; DNA rearrangements and other aberrations of the chromosome set
26th Nov GEN5, Martti Tolvanen: Population genetics: allele frequencies; Hardy-Weinberg equilibrium, fitness
3rd Dec GEN6, Anchit Khanna: Evolution genetics: Selection, evolution, speciation, phylogenetics
10th Dec GEN7, Crina Samarghitean: Medical genetics: disease-causing mutations, multigene diseases, genetics of immunity, linkage studies