

Title: Topics in Evolution [3-0-0-6]

Content :

Introduction, historical perspectives: pre-Darwinian, Darwinian and Neo-Darwinian theories of evolution, cosmic origins of earth, pre-biotic earth, from molecules to life, RNA world & transition to DNA world, evolution of genetic code, origins of cell and first organisms, fossils and evolution, Last Universal Common Ancestor (LUCA), tree of life, viruses and orphan replicons, endosymbiosis, evolution of eukaryotes, origin of species, natural selection, Mendelian genetics, chromosome segregation and sex determination, genetic variation, regulation and mutation, populations, gene frequencies and Hardy-Weinberg equilibrium, species and speciation, phylogeny and classification, diversity of life: evolution of plants and animals, human origins, viral evolution: influenza & HIV, functional genomics, horizontal gene transfer, introduction to game theory, unsolved mysteries of evolution.

Texts / References:

- Strickberger's Evolution. Brian K. Hall & Bendikt Hallgrímsson, Jones and Bartlett Publishers, 4th edition, 2007.
- Evolution. Nicholas H. Barton, Derek E. G. Briggs, Jonathan A. Elson, and Nipam H. Patel. ColdSpring Harbor Laboratory Press, 2007.
- Sequence - Evolution 302226 Function: Computational Approaches in Comparative Genomics. Eugene V. Koonin and Michael Y. Galperin. NCBI, NLM, NIH, Boston: Kluwer Academic, 2003.
- On the origin of species. Charles Darwin, 1859.
- Recent research articles, reviews, news, and views