

Language Algorithms and Tools

1. Introduction to Perl
 - Statements
 - Numeric, string literals, variables
 - Arrays and hashes
 - Control statements
 - Functions
 - File handling
 2. Intermediate Perl
 - File handling
 - Regular expressions
 - References
 3. Advanced Perl
 - Packages
 - Object oriented programming
 - BioPerl
 4. Advanced Perl
 - Packages
 - Object oriented programming
 5. BioPerl
 - BioPerl API
 - Protein and nucleic acid sequences processing
 - Using databases and molecular structures
 6. Sequences
 - Amino acid substitution matrices
 - Dynamic programming
 - Local and global alignment
 - Needleman and Wunsch algorithm
 - Smith-Waterman algorithm
 - PAM and BLOSUM matrices
 - Derivation of Dayhoff matrices
 - Profiles and motifs
 7. General tools and techniques
 - ClustalW
 - BLAST
 - FASTA
- Books:**
1. Learning Perl (5th Edition)
Randal Schwartz, Tom Phoenix, drian d foy (O'Reilly, 2008)
 2. Molecular Modeling: Principles and Applications (2nd Edition)
Andrew R. Leach (Prentice Hall)
 3. Proteins: Structures and Molecular Properties
Thomas E. Creighton (Freeman)