CSC 448 – Bioinformatics Algorithms

1. CSC 448 – Bioinformatics Algorithms

2. credit units 4  contact hours 6

3. Course Coordinator: Alex Dekhtyar


5. a. Course Description:
   Introduction to the use of computers to solve problems in molecular biology. The algorithms, languages, and databases important in determining and analyzing nucleic and protein sequences and their structure. 3 lectures, 1 laboratory.
   
   b. Prerequisite: CSC 349.
   
   c. Required/Elective/Selective Elective for CPE, CSC, EE, SE
   
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6. a. Course Learning Objectives
   The student will be able to:
   
   - Explain the main problems in the field of bioinformatics and computational molecular biology
   - Articulate and implement the key algorithms used to solve computational biology and bioinformatics problems
   - Model computational biology problems
   - Apply algorithmic techniques to solve problems in computational biology and bioinformatics
   - Work on software projects in multidisciplinary teams

   b. Level at which Student Outcomes are addressed
   (“B” = Basic level, “I” = Intermediate level, “A” = Advanced level)
7. **Major Topics Covered: (number of lecture hours per)**
   - Introduction to Bioinformatics (3 hours)
   - Statistical Analysis of DNA (3 hours)
   - Exact Sequence Matching (6 hours)
   - Palindrome detection (2 hours)
   - Genome Alignment (6 hours)
   - Clustering (3 hours)
   - Gene Prediction (3 hours)
   - Review and advanced topics (4 hours)