CENTRAL UNIVERSITY OF KERALA
केरल केन्द्रीय विश्वविद्यालय

DEPARTMENT OF COMPUTER SCIENCE

SCHOOL OF MATHEMATICAL AND PHYSICAL SCIENCES

Minutes of BOS in Computer Science Held on 09 July 2016 at 11.00 AM

Agenda: To discuss about the Syllabus, feedback of students, previous question papers, evaluation strategies

The following members were present during the meeting.

1. Dr. P. S. Hiremath, Professor, KLE Technological University
2. Dr. Rajesh R.
3. Dr. T.M. Thasleema
4. Mr. Ragesh N.K., Specialist, DSP & Multimedia, Tata Elxsi Ltd., Thiruvananthapuram
5. Mr. Fasil O.K., Software Engineer, NuCore Software Solutions

1) The BOS members have gone through the previous syllabus and current syllabus. The BOS observes the improvement in the curriculum/syllabus. The BOS members also suggested to include some industry related electives. The BOS approved the syllabus.
2) The feedback of 2014-16 batch students and 2015 admitted students were obtained. The BOS members has gone through the measures taken by the Faculty Council and approved the same.
3) The BOS members has gone through the previous question papers. The BOS members also verified (i) whether the question paper covers the entire syllabus, (ii) whether the question papers are upto the mark, (iii) whether the evaluation strategies of the answer papers are good. The BOS members were satisfied with procedures for the same.

Dr. P. S. Hiremath

Dr. Rajesh R.

Dr. T.M. Thasleema

Mr. Ragesh N.K.

Mr. Fasil O.K.

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CENTRAL UNIVERSITY OF KERALA
DEPARTMENT OF COMPUTER SCIENCE
M.Sc. COMPUTER SCIENCE

ELECTIVE COURSE					
COURSE CODE	COURSE TITLE	CONTACT HRS/WEEK			CREDITS
		LEC	LAB	TUT	
CSC5008	Computational Biology	2	2	1	4

Lec = Lecture, Tut = Tutorial, Lab = Practical

This is a participatory, experimentally and problem solving **skill development course**.

Course Objective:
The objective of the course is to provide theoretical and practical aspects of developing computational techniques needed for biology.

By completing this course, students will obtain the following course/learning outcomes:
1. Knowledge gained:
   (i) mathematical concepts of computational biology
2. Skill gained:
   (ii) Critical analyzing and logic skills in developing computational algorithms.
3. Competency gained:
   (iii) Computational biology modelling and applications

Prerequisites: Basic knowledge of programming

Grading:

Lab implementation	– 15%
Participatory based group Project	– 10%
Assignment/Quiz/presentation	– 5%
Class Test	– 10%
Final Exam	– 60%

CSC5008 – Computational Biology

Module 1
Introductory Molecular Biology, DNA Analysis, Regulatory Motifs in DNA Sequences, Finding Motifs, Greedy Approach to Motif finding, Longest Common Subsequences, Global and Local Sequence Alignments, Multiple Alignment

Module 2
Gene Prediction, Constructing Algorithms in sub quadratic time, Shortest Superstring Problem

Module 3
Sequencing by Hybridization, Protein Sequencing and Hybridization, Spectrum Graphs, Spectral Convolution, Repeat Finding, Hash Tables, Keyword Trees, Suffix Trees and its Applications

Module 4
Approximate Pattern Matching, Hierarchical Clustering, Evolutionary Trees, Parsimony Problem, Hidden Markov Models, Applications of HMM.

Text books:
1. N. C. Jones, P. A. Pevzner, An Introduction to Bioinformatics Algorithms, MPI Press, 2004.
2. D. W. Mont, Bioinformatics: Sequence and Genome Analysis, CSHL Press, 2004.

Reference Books:
3. D. Gusfield, Algorithms on Strings, Trees, and Sequences: Computer Science and Computational Biology, Cambridge University Press, 1997.