

LSM2241

Introductory Bioinformatics

Administrative Introduction

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Outline

Overview

Teaching and learning activities

Assessment

Learning materials

Topic

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Structure

- Lectures and associated online material
 - ▶ Each week's material builds on the previous week
 - ▶ Lectures will include interactive activities and group exercises
 - ▶ Slides are provided, but the slides alone will not substitute for attending the lectures
 - ▶ Using the on-line material is a must
- Working laboratory practical sessions in computer lab
 - ▶ Weekly computer-based practical sessions applying concepts learned using bioinformatics tools
- A series of assessments, and one final exam

Syllabus

Week	Practical work	Lecture Topic
1	SG50!	First steps and database resources
2	Exploring bioinformatics databases	Sequence alignment I
3	Manipulating biological sequences	Sequence alignment II
4	Visualizing sequence comparisons	The BLAST database search tool
5	BLAST: Searching for unknown sequences using known ones	Biological patterns and profiles
6	Hunting for patterns and profiles	<i>Mid-term test</i>
7	<i>Inquiry-based project revision</i>	Basic Phylogenetic analysis
8	Exploring evolutionary relationships	Molecular evolution
9	<i>Inquiry-based project review</i>	Basics of structural biology and databases
10	Viewing and annotating 3D structures from the PDB	Modeling structure from sequence
11	Homology modeling	Bioinformatics of networks and pathways
12	Exploring networks and pathways	Personal genomics and the future of bioinformatics
13	Personal Genomics	Revision for final exam

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Lectures

- Lectures introduce topics with a conceptual framework to link them to each other
- A small amount of mathematics (Σ)
- Lectures are synchronized with hands-on practical sessions
 - ▶ You apply the concepts soon after they are introduced
 - ▶ You use the tools used by professional bioinformaticists

Practical sessions

- Every Monday afternoon from 2:00 until no later than 6:00, in two sessions
- Held in a computer-based laboratory classroom.
- Assignments into groups will be provided by the teaching staff

On-line materials

- Both "lecture-like" and "practical-related" materials will be introduced on line
- Classroom time should be active, on-line delivery and review of material can be more passive.

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Teaching and learning activities

Assessment

Learning materials

Assessment structure

Component	%
CA1. Inquiry-based laboratory studies, with written assignments.	30
CA1a (team)	(15)
CA1b (team)	(15)
<i>Midterm test (CA2)</i>	20
<i>Final Exam</i>	40
Participation through the semester	10
Total assessment	100

Written inquiry-based assignments

- Before practical 3, each team will each be given a sequence
- The teaching staff don't know what that sequence is
- No two sequences are alike
- You will investigate that sequence through the course of the term
- You will write two short papers on your findings. These projects will be done in teams.
- These two assignments form your CA1

If we don't know the answers, how can the work be assessed?

The assessment criteria will be completely clear

- Do you explain your choices well?
- Do you defend your choices well?
- Do you provide appropriate references?
- Is your writing clear and correct?

We will provide the marking rubric with the assignment itself

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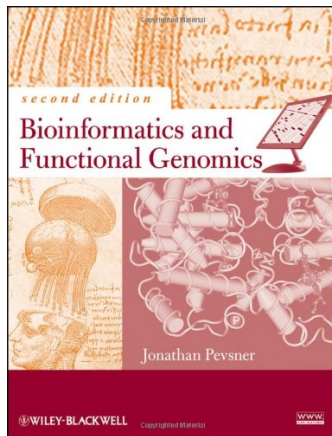
Assessment

Learning materials

Module Textbook

Bioinformatics and Functional Genomics

- by Jonathan Pevsner
- 2nd Edition (2009)
- Additional info at bioinfbook.org
- This course follows much of the material from the first half of the text



Resources on IVLE

Lectures

- Lecture notes will be posted
- Additional notes and written answers to questions from students

Video materials

Practical materials

- Handouts posted in advance
- Answers to questions in practical sessions

Discussion forum

- Please use the discussion forum
- If you email me a question, I may ask you to post it in the discussion forum to benefit all students

What to expect of yourself in this class

- Set your expectations high, this is your opportunity to enter into an exciting and rapidly growing area of science
- NUS has an honor code; abide by it
- Participate in in-class activities and on-line discussions

Honesty in academic communication

Plagiarism – submission of ideas, phrases, paragraphs or figures of **others'** as your own

- **Others'** include books, journals, internet sources and classmates – they must be acknowledged
- The university considers plagiarism an offence and will subject students to disciplinary action

What is plagiarism and how to avoid it?

- Short note
 - ▶ <http://www.cdt1.nus.edu.sg/success/sl7.htm>
- E-tutorials on plagiarism
 - ▶ <http://emodule.nus.edu.sg/ac>
 - ▶ <https://connect.le.ac.uk/p72155629/>

Respecting the rights of others

Not infringing the learning process of fellow students

- Distractions, e.g. talking, mobile phone browsing, arriving late
- Uncooperative or failure to listen to others during group work
- Improper attire for field/lab work – resulting in others having to work alone

Allowing one's work to be copied deprives others the opportunity to learn

Open communication can solve problems (i.e., don't be a STOMPer)



What should this STOMPer do? (9 Jan 2013)

Feedback on Instruction

Help me improve my teaching!

- You will have an opportunity to provide feedback for each and every lecture
- All feedback will be anonymous
- All feedback will be read
- All feedback will be made available
- Feedback will be used