

# **Biology 3S03**

# **Bioinformatics**

ELEMENTARY SEQUENCE ANALYSIS

## Contact Us

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## Course description

- Lectures - Tues/Wed/Fri 12:30-1:20pm BSB 119
- Tutorials - Tues 9:30-11:20 Location BSB 241  
Wed 8:30-10:20, 11:30-12:20 Location BSB 241
- Website - <http://helix.mcmaster.ca/courses.html>
- Text - <http://helix.mcmaster.ca/3S03.pdf>

# Tutorials / Assignments

- ▶ Tutorials:
  - ▶ Try to go to your tutorial
  - ▶ Help in the completion of the assignments
- ▶ Assignments (9 in total)
  - ▶ Questions related to the lectures, requiring the knowledge and use of bioinformatics tools
  - ▶ The assignments are due on Thursday any time before 5:00 pm
  - ▶ Answers will be posted Thursday at 5:01pm
  - ▶ Late assignments cannot be accepted
  - ▶ New assignments are posted Thursday after 5pm.
  - ▶ NOTE: the last assignment is due day **after** classes end
  - ▶ Completed assignments (paper copy) should be put into Boxes 75-78 (first floor LSB)

## Course Evaluation

- ▶ Quiz 1 (50 minutes) 20%
- ▶ Quiz 2 (50 minutes) 20%
- ▶ Tutorials / Problems 40%
- ▶ Quiz 3 (2 hours) 20%

Quizzes and Problems are cumulative.

You can work jointly on problem sets but the report is yours alone and must not be copied from another student. Plagiarism will result in a grade of zero and potentially dismissal from the course.

# Schedule (What will be covered – subject to change)

		Tue 12:30		Wed 12:30		Fri 12:30	(PS due) Thu 5:00
Sept	5	Introduction	6	Genomics 1	8	Paper 1	
	12	Genomics 2	13	Genomics 3	15	Genomics 4	
	19	Databases 1	20	Databases 2	22	Entrez	(PS1)
	26	File Formats	27	Alignments 1	29	Alignments 2	(PS2)
Oct	3	Alignments 3	4	Alignments 4	6	Quiz 1	(PS3)
	10	—	11	—	13	—	
	17	Postmortem	18	Paper 2	20	Distances 1	
	24	Distances 2	25	Distances 3	27	Distances 4	(PS4)
Nov	31	FASTA	1	BLAST	3	Phylogeny 1	(PS5)
	7	Phylogeny 2	8	Phylogeny 3	10	Phylogeny 4	(PS6)
	14	Quiz 2	15	Paper 3	17	Patterns 1	
	21	Postmortem	22	Patterns 2	24	Patterns 3	(PS7)
Dec	28	Gene finding 1	29	Gene finding 2	1	Gene finding 3	(PS8)
	5	Review	6	-?-	8	—	(PS9)

(PS = problem set)

# Learning objectives

Genomic data is now found in nearly all biological industries and biological endeavors, a basic understanding on how to exploit this data has become indispensable for scientists as well as other technical professionals. A familiarity with genomic data how to gather, analyze, and interpret it, is needed to succeed in most sectors of the life sciences, biotech and biomedical industry.

From this course, you will:

- ▶ Receive a basic introduction to the field of bioinformatics
- ▶ Learn how sequence data is generated, where it is stored, and how to obtain it.
- ▶ Learn the basics behind the major methods and tools used in bioinformatics
- ▶ Be prepared to use elementary sequence analysis in your own work
- ▶ Have built a solid foundation and vocabulary to communicate with others who use these tools and to learn more about bioinformatics.

## All is subject to change

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*"The instructor and university reserve the right to modify elements of the course during the term. The university may change the dates and deadlines for any or all courses in extreme circumstances. If either type of modification becomes necessary, reasonable notice and communication with the students will be given with explanation and the opportunity to comment on changes. It is the responsibility of the student to check their McMaster email and course websites weekly during the term and to note any changes"*

— required by the university.