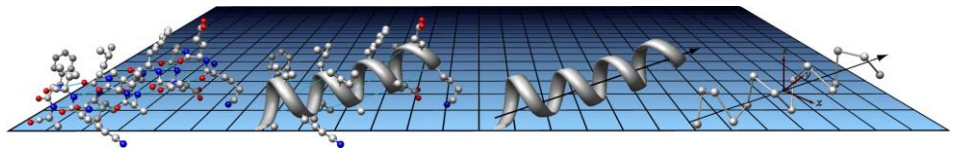


Computational Techniques in Structural Bioinformatics

CS483 / CS683

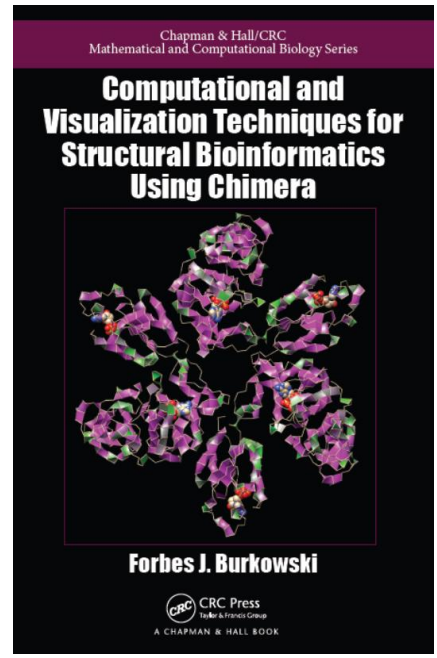
Instructor:
Forbes Burkowski

Objectives

- The course will cover algorithms and techniques used in the study of structure and function of cellular proteins.
  - Structure of proteins will be investigated with an emphasis on binding sites supporting computational approaches for protein-protein interactions, ligand-proteins interactions, and drug design.
  - There may also be some material on RNA.

Text

- Course notes to be provided on the website:
  http://www.student.cs.uwaterloo.ca/~cs483/
- Required text:
  print ISBN: 978-1-4398-3661-3
  eBook ISBN: 978-1-4398-3662-0
- Text website:
  http://structural-bioinformatics.com



References

- Other book references:
  - **Title**: Structural Bioinformatics
  - **Eds**: P. Bourne and H. Weissig
  - **ISBN:** 0-471-20199-5
  - **Publisher:** Wiley-Liss, 2003

  - **Title**: Protein Bioinformatics
  - **Authors**: I. Eidhammer, I. Jonassen and W.R. Taylor
  - **ISBN:** 0-470-84839-1
  - **Publisher:** Wiley, 2004

  - **Title**: The Ten Most Wanted Solutions in Protein Bioinformatics
  - **Author**: Anna Tramontano
  - **ISBN:** 1-58488-491-6
  - **Publisher:** Chapman & Hall/CRC, 2005

Workload

- 3 hours of lectures per week
- There will be five assignments corresponding to the major topics of the course.
- Marking scheme CS483:
  - Assignments 40%, Midterm 20%, Project 40%.
- Marking scheme CS683:
  - Assignments: 25%, Midterm: 25%, Project: 50%.
    - The project will include a 30 minute class presentation on the date of the final exam.
    - You must submit a project proposal for approval and constructive criticism prior to the end of February.
    - To allow more time for project preparation, 683 students are to hand in 4 of the 5 assignments.
- Note: To pass CS483/683, the weighted average of the Midterm and Final must be more than 50%. If this average is below 50%, then that average becomes the final grade (project or assignments are not included in the final grade).

Academic Honesty

- The usual penalties for academic dishonesty will apply: -100% on an assignment if there is evidence of copying or plagiarism.
- So that there are no future misunderstandings, please read the following:
  - In any program you write, each line of code should come from your effort only.
  - If you are writing text that is part of the assignment, **each sentence that you write will fall into one of the following categories**:

1. The sentence is expressed in your own words and expresses your own ideas.
2. The sentence is expressed in your own words but the ideas or concepts are from somebody else.

   In this case you must **supply a reference** at the end of your document and a pointer to that reference must be associated with that sentence (for example, the pointer is either within the sentence or immediately after the paragraph if the entire paragraph contains your sentences but are describing someone else's ideas.
3. The sentence is copied from work done by somebody else.

   In this case you must use **indentation and quotation marks** to clearly specify the limits of the copied material. You must then provide a pointer to a reference as described in the previous point.