

ECS129: Computational Structural Bioinformatics

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Information sheet

Class Web page: <http://koehllab.genomecenter.ucdavis.edu/teaching/ecs129/>

Check here for announcements, handouts (pdf and ppt), recommended readings, quizzes, assignments, etc.

Lectures: TTh 16:40 – 18:00, 90 SocSci

Discussion: F 14:10 – 15:00, 1130 Bainer

Office hours: F 15:00 – 17:00 Kemper Hall, Room 3005; also by appointment (send me an e-mail)

Contacts: koehl@cs.ucdavis.edu

I answer to ALL e-mails. I do NOT guarantee however that I answer PROMPTLY...

Attendance:

- You are expected to attend lectures, and you are responsible for the material discussed in class.
- Discussions are optional. I will be there, to correct and discuss homeworks, and to discuss papers.

Homework:

There will be homework almost every week, in the form of online quizzes.

General notes regarding the quizzes:

- Quizzes will be posted on Monday, and you should submit your answers before Thursday, midnight.
- Each quiz is a set of multiple choice questions. For obvious reasons, you are allowed to submit only one set of answers!
- As for many multiple choice questions, there may not be a single correct answer. Always choose the answer that makes more sense.
- There will be 9 homeworks/quizzes; all will be graded, but I will only keep your 7 best scores. Remember that a missing or late homework counts as 0 or Fail...

Exams:

There will be one mid-term project. The final will be an exam.

Grading: 30% homework, 30% midterm, 40% final.

Course Description:

- I. Introduction: top challenges in Bioinformatics
- II. Bio-molecular structures
 - Nucleic acids
 - Proteins
- III. Comparing sequences and structures
 - Sequence alignment
 - Structure alignment
- IV. Protein Structure databases
 - Protein domains
 - Protein structure classification
- V. Stability of bio-molecules
 - Semi-empirical energy functions
 - Statistical potentials
- VI. Protein structure prediction
 - Comparative modeling
 - Ab initio prediction
- VII. Bio-molecular simulations
- VIII. Drug design
- IX. Databases and web services