

A New Interdisciplinary Class (open to students from all options)

# Methods of Computational Science

(Ay/Bi199ab, Winter & Spring 2009)

Tue & Thu, 1 – 2:30 pm, in rm. 100 Powell-Booth (CACR)

**First meeting: Thursday, Jan. 8**

The goal of this class is to introduce students to a number of increasingly important tools and concepts in computationally enabled and data intensive science and engineering.

The class is aimed at upper division undergrads and graduate students, who wish to learn the tools that are becoming increasingly important in research in all disciplines. The grading will be P/F only. Postdocs (and anyone else interested) are welcome to attend.

Prerequisites: some familiarity with computational science or engineering, programming; a working knowledge of unix; or a consent of the instructors. The class will be in form of topical lectures, and practical exercises associated with them. Topics to be covered in the Winter 2009 term include:

- Scientific communication and collaboration tools (wikis, blogs, etc.)
- Databases, their design, uses, etc.
- Flavors of programming languages, and intro to Python
- Data mining: general principles, supervised & unsupervised classifiers, etc.
- Scientific visualization: principles and practice
- Bayesian data modeling and analysis, Bayesian networks

(Note: we are not covering traditional CS topics, numerical methods, or programming, as these subjects are already well covered by other classes.)

Lecturers for both terms include: M. Aivazis, J. Bunn, A. Cunha, G. Djorgovski, C. Donalek, M. Graham, J. Jewell, S. Lombeyda, A. Mahabal, S. Pepke, M. Stalzer, M. Turmon, E. Upchurch, R. Williams, and probably other visiting lecturers. The class is coordinated by Profs. G. Djorgovski (Ay) and M. Kennedy (Bi).

For more info, please contact Prof. Djorgovski: [george@astro.caltech.edu](mailto:george@astro.caltech.edu)