Computer Science 311

Spring 2019

Staff

Instructors

- David Fernández-Baca, 111 Atanasoff Hall, fernande@cs.iastate.edu.
- Kevin Liu, 209 Atanasoff Hall, jialiu@iastate.edu.

Teaching Assistants

- Trent Muhr, muhr@iastate.edu
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- Xiaoyun Fu, xfu@iastate.edu
- John Wahlig, jlwahlig@iastate.edu
- Bojun Lin, blin@iastate.edu

Lectures

- Section A: Tuesday, Thursday 2:10–3:30 p.m., Design 0101. David Fernández-Baca.
- Section B: Tuesday, Thursday 4:10–5:30 p.m., Gilman 1002. Kevin Liu.

Recitations

- Section 1: Tuesday, 9:00–9:50AM, Carver 0232, TBD.
- Section 2: Tuesday, 10:00–10:50AM, Carver 0232, TBD.
- Section 3: Monday, 10:00–10:50AM, Town 0205, TBD.
- Section 4: Monday, 10:00–10:50AM, Carver 0232, TBD.
- Section 5: Tuesday, 1:10–2:00PM, Curtis 0108, TBD.
- Section 6: Wednesday, 9:00–9:50AM, Black 1028, TBD.
- Section 7: Wednesday, 10:00–10:50AM, Physics 0038, TBD.
- Section 8: Wednesday, 1:10–2:00PM, Sweeney 1116, TBD.
- Section 9: Tuesday 11:00–11:50AM, Sweeney 1116, TBD.

Office Hours

1. **Monday.** 11–12 (TBD); 2–3 (TBD), 3–4 (TBD), 4–6 (TBD), 6–7 (TBD)
2. **Tuesday.** 9–10 (TBD), 11–12 (TBD), 12–1 (TBD), 12:40–2 (TBD), 2–4 (TBD)

3. **Wednesday.** 11–1 (TBD), 2–4 (TBD), 4–6 (TBD), 6–7 (TBD)
4. **Thursday.** 9–10 (TBD), 9:30–11 (TBD), 12:30–2:30 (TBD)
5. **Friday.** 9–10 (TBD), 10–11(TBD), 11–12(TBD)

Location

- Kevin's office hours are in Atanasoff 209.
- David's office hours are in Atanasoff 111.
- TA office hours are in Pearson 0145.

Course Objectives

- Know a set of standard algorithms (and data structures) and be able to model a problem to use them.
- Gain a strong foundation in designing algorithms based on common techniques, including greedy, divide and conquer, dynamic programming, etc.
- Be able to reason about correctness of algorithms, either by proof or providing a counterexample.
- Be able to recognize intractable problems and have an idea on how to develop approximation algorithms.
- Be able to implement algorithms given their description.

Course Topics (Tentative)

1. Basics of algorithm analysis, including Big-O and other asymptotic notation
2. Common data structures, including hash tables, trees, and containers, and algorithms on these data structures
3. Sorting and searching
4. Graphs and graph algorithms
5. Greedy algorithms
6. Dynamic programming
7. NP completeness
8. Approximation algorithms and heuristics

Exams

There are two midterm exams and a final exam. Midterm exams are on February 28 and April 9. Please note that these are night exams.

Homework and Programming Assignments

Homework and programming assignments will be assigned over the semester. There will be around 5–8 Homework assignments and 2–3 programming assignments.

A programming assignment and a homework might be assigned at the same time.

All programming assignments must be written in Java and submitted electronically to Canvas. Homework assignments can be either handwritten or typed. They should be submitted electronically to Canvas.

Grading

	Weight	Date
Homework	20%	Variable
Programming Projects	20%	Variable
Midterm 1	15%	8:15–9:45 p.m., February 28
Midterm 2	20%	8:15–9:45 p.m., April 9
Final	25%	TBD

References

Our textbook is the following:

Jon Kleinberg and Éva Tardos, *Algorithm Design*, Addison-Wesley, 2006. Slides.

The following text is optional:

Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest and Clifford Stein, *Introduction to Algorithms* (3rd edition), MIT Press, 2009.

Academic Dishonesty Policy

The class will follow Iowa State University's policy on academic dishonesty. Anyone suspected of academic dishonesty will be reported to the Dean of Students Office. Please see http://www.dso.iastate.edu/ja/academic/misconduct.html

Disabilities

Iowa State University complies with the Americans with Disabilities Act and Sect 504 of the Rehabilitation Act. If you have a disability and anticipate needing accommodations in this course, please contact your instructor to set up a meeting within the first two weeks of the semester or as soon as you become aware of your need. Before meeting with the instructor, you will need to complete the Student Accessibility Services (SAS) office's online registration form. The SAS office is located in Room 1076 on the main floor of the Student Services Building (phone: 515-294-7220; email: accessibility@iastate.edu). Retroactive requests for accommodations will not be honored.

Dead Week

This class follows the Iowa State University DeadWeek policy as noted in section 10.6.4 of the Faculty Handbook.

Harassment and Discrimination

Iowa State University strives to maintain our campus as a place of work and study for faculty, staff, and students that is free of all forms of prohibited discrimination and harassment based upon race, ethnicity, sex (including sexual assault), pregnancy, color, religion, national origin, physical or mental disability, age, marital status, sexual orientation, gender identity, genetic information, or status as a U.S. veteran. Students concerned about such behavior should contact their instructor, Student Assistance at 515-294-1020 or email dsosas@iastate.edu, or the Office of Equal Opportunity and Compliance at 515-294-7612.

Religious Accommodation

If an academic or work requirement conflicts with your religious practices and/or observances, you may request reasonable accommodations. Your request must be in writing, and your instructor or supervisor will review the request. You or your instructor may also seek assistance from the Dean of Students Office or the Office of Equal Opportunity and Compliance.

Contact for Information on University Policies

If you are experiencing, or have experienced, a problem with any of the university policies (on academic dishonesty, dead week, harassment and discrimination, religious accommodation, etc.), please email academicissues@iastate.edu.