FALL 2011 SYLLABUS

CS 470/570: Introduction to Computer Algorithms (3-0) Three hours.
Construction of efficient algorithms for computer implementation.

Prerequisites: (CS 325 or 350 or 351 or 352), (CS 357 or 360), ECE 383, and Math 301.

<table>
<thead>
<tr>
<th>Instructor:</th>
<th>Instructor:</th>
<th>Teaching assistant:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Richard Borie</td>
<td>Brandon Dixon</td>
<td>Paul Kilgo</td>
</tr>
<tr>
<td><a href="mailto:borie@cs.ua.edu">borie@cs.ua.edu</a></td>
<td><a href="mailto:dixon@cs.ua.edu">dixon@cs.ua.edu</a></td>
<td><a href="mailto:paulkilgo@gmail.com">paulkilgo@gmail.com</a></td>
</tr>
<tr>
<td>348-1668</td>
<td>348-0597</td>
<td>(205) 210-9536</td>
</tr>
<tr>
<td>office 3417 SEC</td>
<td>office 3432 SEC</td>
<td>office 3419 SEC</td>
</tr>
<tr>
<td>MWF 8:30–10, 12–1</td>
<td>MW 10–11:30, 1–2</td>
<td>TRF 2–4</td>
</tr>
</tbody>
</table>

Course schedule: A tentative schedule of lecture topics, textbook readings, and exam dates will be given on the course web page, http://cs.ua.edu/470.


Topics:
- Algorithm analysis and divide-and-conquer (chapters 1–4).
- Sorting and selection (chapters 6–9).
- Dynamic programming and greedy method (chapters 15–16).
- Graph algorithms (chapters 22–25).
- Introduction to NP-completeness (chapter 34).
- Additional topics to be determined.

Goals and objectives:
- Improve problem-solving skills.
- Recognize standard problems embedded in real-world applications.
- Know standard algorithms and be able to analyze their efficiency.
- Analyze and compare several algorithms for the same problem.
- Modify known algorithms to solve new variations of familiar problems.
- Design efficient algorithms for newly encountered problems.
- Improve analytical skills and ability to think rigorously.

Exams and grade computation:
- Two midterm exams, 40%.
- Comprehensive final exam, 30%.
- Homeworks, programming projects, quizzes, attendance, participation, 30%.
- All exams are closed-book and closed-notes unless specified otherwise.

Course policies:
- Students are expected to attend all class meetings. If you are absent from a lecture, you should borrow a classmate’s lecture notes.
- A make-up exam will be given only if you miss an exam due to an excused absence. Valid excuses include pre-approved university-sponsored trips and medical emergencies.
- Please see the course website for additional general policies.
- As required by the Graduate School, students enrolled in CS 570 are expected to demonstrate a greater breadth and depth of understanding of the course content.