Class Syllabus
CSE 5211 Analysis of Algorithms
School of Computing
Florida Tech
Spring 2018 (January 10, 2018)
**Course Schedule**

<table>
<thead>
<tr>
<th>CRN</th>
<th>Course Number/Section</th>
<th>Title</th>
<th>Days</th>
<th>Times</th>
<th>Place</th>
</tr>
</thead>
<tbody>
<tr>
<td>24674</td>
<td>CSE 5211/01</td>
<td>Analysis of Algorithms</td>
<td>MWF</td>
<td>13:00-13:50</td>
<td>Crawford 210</td>
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**Course Description**

**CSE 5211 Analysis of Algorithms** (Credit Hours: 3) Presents time and space complexity of computer algorithms. Includes algorithm classes, such as divide-and-conquer, greedy, dynamic programming and backtracking; techniques for solving recurrence equations; graph algorithms; searching and sorting; and deterministic and non-deterministic polynomial time problem classes. Recommended: Background knowledge equivalent to CSE 2010 and MTH 1002

**Prerequisites by Topic**

Algorithmic paradigms, efficiency measures, rates of growth and asymptotic behavior, graph theory, recursion, data structures, and discrete mathematics.

**Students, Professor & Assistants**

**Students**

Get to know your fellow classmates. Help each other.

**The Professor**

William David Shoaff  
Room 324, Harris Center for Science and Engineering  
wds@cs.fit.edu  
(321) 674-8066  
MWF 9:30 – 10:45 or by appointment, walk-ins welcome

**Assistant**
Calendar

A detailed course calendar is here. An short calendar of key dates is on the course management system. Florida Tech’s Spring calendar can be accessed here.

Material

• The course management system stores the syllabus, class notes, the textbook (Corman et al., 2009), project descriptions, grades, and other material.

• My URL for the class is

   http://cs.fit.edu/~wds/classes/aa

• Slides tied to the (Kleinberg and Tardos, 2006) text can be found online.

• There are many excellent sources on algorithms, (Bentley, 1982, 1986, 1988; Graham et al., 1989; Knuth, 1997a,b, 1998).

Policy

Attendance

The class meets on Monday, Wednesday and Friday from 1:00 to 1:45. The location is Crawford 210. Attendance is required. If, for some reason 1, you cannot attend class inform your professor as soon as possible. Written documentation is necessary for an absence to be excused.

Rules for quizzes and exams

1. In-class: No notes, books, conversations, peeking at a neighbor’s answers, note-passing, sign language, mechanical/electrical devices: abacus, camera, telephone, calculator, etc. First-time violators of the rule will receive a 0 for the test. Second-time violators of the rule will receive an F for the course.

2. Take-home: Provide attributions to your sources. Do not turn in answer you do not understand.

Rules for homework

1. You are encouraged to work with others.

2. Ask for guidance instead.

Academic integrity

1 Religious holiday, illness or accident, family emergency, …
The department enforces an honor code. This honor code establishes a recommended penalty and reporting structure for academic dishonesty.

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<tr>
<th>Offense</th>
<th>Recommended Penalty</th>
<th>Report to</th>
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</thead>
<tbody>
<tr>
<td>First</td>
<td>Zero on work</td>
<td>Dean of Students</td>
</tr>
<tr>
<td>Second</td>
<td>F in course</td>
<td>Dean of Students</td>
</tr>
<tr>
<td>Third</td>
<td>Expulsion from Program</td>
<td>UDC</td>
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Florida Tech provides guidelines to help students understand plagiarism, its consequences, and how to recognize and avoid academic dishonesty. Lipson describes three principles for academic integrity (Lipson, 2004).

1. “When you said you did it, you actually did.”
2. “When you use someone else’s work you cite it, When you use their word, you quote it openly and accurately.”
3. “When you present research materials, you present them fairly and truthfully. That’s true whether the research involves data, documents, or the writing of other scholars.”

Issues and Concerns

1. If you have a disability, inform your teacher. Accommodations can be provided.
2. If you have an academic problem, your teacher can link you to support services.
3. If you have a personal issue, without revealing private information, your teacher can link you to support services.
4. No forms of discrimination or harassment will be tolerated.

Where to Get Help

1. Your professors (For this class: MWF 9:30 to 10:45 or by appointment)
2. Your academic advisor
3. Your teaching assistants
4. The Computer Sciences Help Desk
5. The Academic Support Center
6. Counseling and Psychological Services
**Topics**

1. Mathematics for Algorithm Analysis
2. Divide and conquer
3. Dynamic programming
4. Greedy algorithms
5. Graph algorithms
6. Complexity theory

**Outcomes**

By the end of the course, each student will be able to:

1. Design and analyze algorithms. (1: Fundamental knowledge)
2. Find algorithmic solutions to computational problems. (2: Scientific, computing, and engineering problem solving)
3. Design space-time efficient algorithms. (4: Trade-offs in design choices)
4. Analyze through experimentation algorithms they have programmed. (2: Scientific, computing, and engineering problem solving and 3: Skillful software construction)
5. Skillfully present their work to peers. (5: Communicate effectively)
6. Work on a small team to complete a project. (6: Effective teamwork)

**Grades**

Your final grade will be based on your performance on quizzes and projects. Projects will be submitted electronically using the submit server.

<table>
<thead>
<tr>
<th>Grades and their relation to performance</th>
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<tbody>
<tr>
<td>Grade</td>
</tr>
<tr>
<td>Performance</td>
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</table>

Student performance is measured in the following ways.

1. One individual project (25% of grade)
2. Team project (25% of grade)
3. Midterm examination (25% of grade)

4. Final examination (25% of grade)

Your score $S$ will be a number between 0 and 100 computed by the formula

$$ S = \frac{25}{100} \sum (\text{individual project} + \text{team project} + \text{midterm} + \text{final}) $$

Final letter grades will be assigned based on the range in which your score $S$ falls:

$$(90 \leq S \leq 100) \Rightarrow A, \quad (80 \leq S \leq 89) \Rightarrow B, \quad (70 \leq S \leq 79) \Rightarrow C, \quad (60 \leq S \leq 69) \Rightarrow D, \quad (0 \leq S \leq 59) \Rightarrow F$$

The last day to withdraw for the class with a final grade of $W$ is Friday, March 17.

Checking Grades

Check your grades on the course management system. Contact your professor when you find an error in your recorded grades. Be able to document the error.

Measure of Success

The target achievement levels for the class are:

- 70% of students will score at or above average (70%) on the final comprehensive examination. The questions on the final measure attainment of course outcomes.
- 80% of students will rate their teammates as good to excellent as measured by a rubric completed by teammates.
- 80% of students will be rated as good to excellent communicators as measured by a rubric completed by classmates and the instructor.

References

Bentley, J. L. (1986). *Programming Pearls*. Addison-Wesley. [page 3]