The Structure of a Class
**Course Description**

**CSE 4081 Introduction to Analysis of Algorithms** (Credit Hours: 3) Covers time and space complexity of algorithms. Analyzes algorithms for sorting, searching, string processing and graph problems. Presents strategies such as divide-and-conquer, and greedy and dynamic programming as problem-solution techniques. Prerequisite: CSE 2010 or ECE 2552, ECE 3541

**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 10:00 – 10:50 & 1:00 – 1:50, by appointment, walk-ins welcome (most of the time)

**Assistant**

To be determined

**Calendar**

The course calendar is included in the handouts. Florida Tech’s Fall calendar can be accessed here.

**Material**

The textbook for this class is (Cormen et al., 2009). The URL for the class is
http://cs.fit.edu/~wds/classes/iaa

There you will find the following material

1. This syllabus
2. The class handouts
3. Grades stored on the course management system

There are many excellent sources that you can use to learn the topics about algorithms see (Bentley, 1982) (Bentley, 1986) (Bentley, 1988) (Knuth, 1997a) (Knuth, 1997b) and (Knuth, 1998). There is also some material on the course management system, but the main use of the CMS is communicating, posting grades, and linking back to the class URL.

Policy

Attendance

The class meets on Monday, Wednesday and Friday at 12:00 to 12:50. The location is Crawford 220. Attendance is required. If, for some reason, 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. No notes, books, conversations, peeking at a neighbor’s answers, note-passing, sign language, mechanical/electrical devices: abacus, camera, telephone, calculator, etc.
2. First violators of rule 1 will receive a 0 for the test. Second violators of rule 1 will receive an F for the course.

Rules for homework

1. You are encouraged to work with other students in the class or with others from whom you can learn.
2. The Academic Support Center is scheduling group study sessions for students in this class.
3. Do not turn in homework when you do not understand the answers. Ask for guidance instead.

Academic integrity

The department enforces an honor code. This honor code establishes a recommended penalty and reporting structure for academic dishonesty.

* Religious holiday, illness or accident, family emergency, …
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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>
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<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 10 & 1 or by appointment)
2. Your academic advisor
3. Your teaching assistants
4. Students staffing the Computer Sciences Help Desk
5. The Academic Support Center
6. Counseling and Psychological Services

**Topics**

1. Divide and conquer
2. Dynamic programming

The emphasis is on algorithmic problem-solving. Algorithmic efficiency, elegance, and generality are quality characteristics.
3. Greedy algorithms
4. Graph algorithms
5. Complexity theory

Course Learning 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>
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<tr>
<td>-------</td>
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<tr>
<td>Performance</td>
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Student performance is measured in the following ways:

1. Individual Projects (25% of grade)
2. Team project (25% of grade)
3. Midterm Exam (25% of grade)
4. Final examination (25% of grade)

1. An ability to apply knowledge of mathematics, science, computing, and software engineering
2. An ability to identify computing and engineering problems, identify and define the requirements, design and conduct experiments, analyze and interpret data appropriate to solving these problems
3. Achievement of skills necessary to construct complex software systems
4. Comprehension of the trade-offs involved in design choices
5. An ability to communicate effectively
6. An ability to function effectively on multidisciplinary teams to accomplish a common goal
Your score $S$ will be a number between 0 and 100 computed by the formula

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

Extra credit will not be given.

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

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

The last day to withdraw for the class with a final grade of W is Friday, October 21.

**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 classmates and the instructor.

**References**


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


