Texas A&M University-Texarkana  
CS-310 Analysis of Algorithms / EE-310 Algorithms Analysis  
Spring 2012

Class Meeting:  
4:00-6:45pm, Wednesday

Instructor:  
Dr. Igor Aizenberg  
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Phone (903 334 6654)  
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Office hours:  
Wednesday, Thursday Noon – 4:00 p, Friday Noon - 2:00p

Class Web Page: http://www.eagle.tamut.edu/faculty/igor/CS-EE-310.htm

The purpose of this course is:  
- to touch upon various branches of the study of algorithms. This includes data structures, algorithms,  
algorithm design, algorithm analysis, and complexity theory. Upon completion of this course, students  
will be able to analyze the efficiency/complexity of algorithms, to design efficient algorithms for  
solving different problems, to prove the correctness of algorithms.

Text Book (optional):  
262-53305-8 (pbk)

Tests (open book, open notes):  
Test 1: February 22, 2012  
Test 2: March 28, 2012  
Test 3: May 2, 2012

Grading Method  
Homework and preparation: 25%  
Test 1: 25%  
Test 2: 25%  
Test 3: 25%

Grading Scale:  
90%+ → A  
80%+ → B  
70%+ → C  
60%+ → D  
less than 60% → F
### COURSE OUTLINE AND CLASS SCHEDULE

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<th>Week</th>
<th>Topics</th>
<th>Text Book and Lecture Notes References</th>
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<td>1</td>
<td>Introduction. Algorithms as technology.</td>
<td>Sections 1.1, 1.2; &quot;Lecture-1&quot;</td>
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<td>3</td>
<td>Analyzing Algorithms. Types of Algorithms. Efficiency</td>
<td>Sections 2.2, 2.3, 3.1; &quot;Lecture-3&quot;</td>
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<td>4</td>
<td>Growth of functions. Asymptotic notation.</td>
<td>Section 3.1; &quot;Lecture-3&quot;, &quot;Lecture-4&quot;</td>
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<td>5</td>
<td>Solving problems</td>
<td>&quot;Lecture-5&quot;, Notes</td>
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<td><strong>Test 1</strong></td>
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<td>7</td>
<td>Standard notations and common functions.</td>
<td>Section 3.2; &quot;Lecture-4&quot;</td>
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<td>8</td>
<td>Recurrences.</td>
<td>Section 4.1, 4.2; &quot;Lecture-6&quot;, &quot;Lecture-7&quot;</td>
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<td>9</td>
<td>Recurrences. Solving problems.</td>
<td>&quot;Lecture-7&quot;, Notes</td>
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<td>10</td>
<td><strong>Test 2</strong></td>
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<td>11</td>
<td>Roots of unity. Discrete Walsh and Fourier Transforms (DWT and DFT).</td>
<td>Section 30.2; &quot;Lecture-8&quot;</td>
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<td>12</td>
<td>Fast Walsh Transform (FWT) algorithm</td>
<td>&quot;Lecture-9&quot;</td>
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<td>13</td>
<td>Fast Fourier Transform (FFT) algorithm</td>
<td>Section 30.3; &quot;Lecture-10&quot;</td>
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<td>14</td>
<td>Applications of FFT and FWT</td>
<td>Section 30.3, Notes</td>
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<td>15</td>
<td><strong>Test 3</strong></td>
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**Disability Accommodations:** Students with disabilities may request reasonable accommodations through the A&M-Texarkana Disability Services Office by calling 903-223-3062.

**Academic Integrity:** Academic honesty is expected of students enrolled in this course. Cheating on examinations, unauthorized collaboration, falsification of research data, plagiarism, and undocumented use of materials from any source constitute academic dishonesty and may be grounds for a grade of ‘F’ in the course and/or disciplinary actions. For additional information, see the university catalog.

**Statement on email usage:** Upon application to Texas A&M University-Texarkana an individual will be assigned an A&M-Texarkana email account. This email account will be used to deliver official university correspondence. Each individual is responsible for information sent and received via the university email account and is expected to check the official A&M-Texarkana email account on a frequent and consistent basis. Faculty and students are required to utilize the university email account when communicating about coursework.

**University Drop Policy:** To drop this course after the 12th class day, a student must complete the Drop/Withdrawal Request Form, located on the University website [http://tamut.edu/Registrar/droppingwithdrawing-from-classes.html](http://tamut.edu/Registrar/droppingwithdrawing-from-classes.html) or obtained in the Registrar’s Office. The student must submit the signed and completed form to the instructor of each course indicated on the form to be dropped for his/her signature. The signature is not an “approval” to drop, but rather confirmation that the student has discussed the drop/withdrawal with the faculty member. The form must be submitted to the Registrar’s office for processing in person, email Registrar@tamut.edu, mail (P. O. Box 5518, Texarkana, TX 75505) or fax (903-223-3140). Drop/withdraw forms missing any of the required information will not be accepted by the Registrar’s Office for processing. It is the student’s responsibility to ensure that the form is completed properly before submission. If a student stops participating in class (attending and submitting assignments) but does not complete and submit the drop/withdrawal form, a final grade based on work completed as outlined in the syllabus will be assigned.