CS 3353: Data Structures and Algorithm Analysis I
Term: Fall 2022
Meetings: Wednesday: 4.30-7.10 pm, NCB 261

Contact Information
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TA Information
Name:
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Office Hours:

General Course Information
Pre-requisites, Co-requisites: CS 2133, CS 3653

Course Description:
Storage, structures, data and information structures, list processing, trees and tree processing, graphs and graph processing, searching, and sorting.

Required Text:

Course Objectives:
Upon the successful completion of the course, the students will be able to:
- understand basic data structures and abstract data types including stacks, queues, lists, sets, maps and graphs.
- use recursion as a powerful problem solving technique in design and development of data structures and understand when it is not appropriate to use.
- gain an appreciation of the variety, theoretical nature, and practical uses of data structures.
- analyze the efficiency of data structures and select the most appropriate data structure for applications.
- build data structures and use them as building blocks to form more complex and advanced data structures in a hierarchical manner.
## Assignments & Academic Calendar

<table>
<thead>
<tr>
<th>Week #</th>
<th>Day/ Date</th>
<th>Material to be Covered</th>
<th>Text</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Aug 24</td>
<td>The Role of Algorithms in Computing, Insertion sort</td>
<td>Chap 1, Chap 2</td>
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<td>2</td>
<td>Aug 31</td>
<td>Asymptotic notation, Divide and Conquer</td>
<td>Chap 3, Chap 4</td>
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<td>3</td>
<td>Sept 7</td>
<td>Sorting: Heap sort</td>
<td>Chap 6</td>
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<td>4</td>
<td>Sept 14</td>
<td>Sorting: Quick sort, Sorting in Linear time, <strong>Quiz</strong></td>
<td>Chap 7, Chap 8</td>
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<td>5</td>
<td>Sept 21</td>
<td>Data Structures: - Stacks and queues, - Linked lists</td>
<td>Chap 10</td>
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<td>6</td>
<td>Sept 28</td>
<td>Data Structures: - Stacks and queues, - Linked lists</td>
<td>Chap 10</td>
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<td>7</td>
<td>Oct 5</td>
<td>Hash tables</td>
<td>Chap 11</td>
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<td>8</td>
<td>Oct 12</td>
<td>Binary Search Trees, <strong>Exam 1</strong></td>
<td>Chap 12: 12.1-12.3</td>
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<td>10</td>
<td>Oct 26</td>
<td>Dynamic Programming -knapsack problem</td>
<td>Chap 15</td>
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<tr>
<td>11</td>
<td>Nov 2</td>
<td>Greedy Algorithms, Elementary graph algorithms</td>
<td>Chap 22</td>
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<td>12</td>
<td>Nov 9</td>
<td><strong>Exam 2</strong></td>
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<td>13</td>
<td>Nov 16</td>
<td>Minimum Spanning Trees: Kruskals algorithm, Prim’s algorithm</td>
<td>Chap 23</td>
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<td>14</td>
<td>Nov 23</td>
<td>Fall Break</td>
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<td>15</td>
<td>Nov 30</td>
<td>Shortest paths: Dijkstra's algorithm</td>
<td>Chap 24</td>
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<td>16</td>
<td>Dec 7</td>
<td>Information Management: How B-trees differ from Red-Black trees, height of B-tree, search for a key and insert a key into a B-tree.</td>
<td>Chap 18</td>
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<td>Dec 14</td>
<td><strong>Final Exam</strong></td>
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**Exams**

There will be two tests, one Quiz and a Final exam.

**Quiz:** Sept 14, 2022  
**Exam 1:** Oct 12, 2022  
**Exam 2:** Nov 9, 2022  
**Final Exam:** Dec 14, 2022
Grading Criteria

The grade will be determined as described below.

Exam 1: 15%
Exam 2: 20%
Quiz: 5%
Final Exam: 20%
Attendance: 5%
Assignments[8]: 35%

Grades are assigned according to the following scale:

[>=90%] A
[80-89%] B
[70-79%] C
[60-69%] D
[0-59%] F

Make-up Exams

Make-up exams are only given to those students who coordinate the missing of an exam prior to the originally scheduled exam date and time.

Extra Credit

Assignments are due online on the dates given. If a student submits an assignment after the due date without having made arrangements with the instructor, a minimum of 15 points (based on an assignment grading scale of 100 points) or 15 percent of the total points will be deducted for each day, or part thereof, that the assignment is late.

Late Work

Class Attendance

Class attendance will be documented.

OSU Academic Integrity Policy:

OSU is committed to maintaining the highest standards of integrity and ethical conduct. This level of ethical behavior and integrity will be maintained in this course. Participating in a behavior that violates academic integrity (e.g., unauthorized collaboration, plagiarism, multiple submissions, cheating on examinations, fabricating information, helping another person cheat, unauthorized advance access to examinations, altering or destroying the work of others, and altering academic records) will result in an official academic sanction. Violations may subject you to disciplinary action including the following: receiving a failing grade on an assignment, examination or course, receiving a notation of a violation of academic integrity on your transcript, and being suspended from the University. You have the right to appeal the charge. Go to http://academicintegrity.okstate.edu/ for a video on OSU’s academic integrity policy and additional information.