**SAN ANTONIO CAMPUS - MATH AND SCIENCES**
**Syllabus for CSCI 2313 – Data Structures**

1. Mission Statement: Wayland Baptist University exists to educate students in an academically challenging, learning-focused and distinctively Christian environment for professional success and service to God and humankind.

2. Course: **CSCI 2313** – 01, Data Structures

3. Term: Summer 2016

4. Instructor: Dr. Paul Parker, Asst. Professor of Computer Science

5. Contact information: **paul.parker@wbu.edu (best way to contact me).** You may **call and text me at 210-460-0499** (which uses Google Voice). Calls and texts will be forwarded from Google Voice from 10 am to 5 pm weekdays and 10 am to 3 pm on Saturdays, and otherwise will be silently dropped. The Remind service will also be used for communication.

6. Office Hours and Location: Times available by appointment, and can usually include screensharing/Skype/FaceTime/etc. Note also the phone number for text messaging above. San Antonio students may also visit during regular scheduled office hours in Callaghan Tower; contact instructor for times.

7. Class Location: Virtual Campus. Primarily Blackboard and with possible supplementation (tutorial and review sessions) via live webcam, probably with Zoom video conferencing. Timings of any supplementary sessions are TBD and will attempt to accommodate most students, with recordings available for those unable to attend. Physical attendance in Callaghan may be possible for those who wish.

8. Catalog Description: Study of the interaction of data and procedural abstractions. Data structures, lists, stacks, queues, trees, graphs, sorting and searching.

9. Prerequisites: CSCI 2365

10. Required Textbook and Resources: Java Software Structures, 4th edition, John Lewis and Joseph Chase, Addison-Wesley; 2013, ISBN: 0133250121.

You must have access to a computer on which you can install the Java development software, including both the JDK and a development environment such as DrJava, BlueJ, or IntelliJ. Participating in supplementary meetings will require reasonable Internet and a webcam. Contact instructor for details on requirements.

11. Optional Materials: There are several excellent books on algorithms that go into more detail. Introduction to Algorithms, 3rd ed, Cormen, Leiserson, Rivest and Stein is the canonical textbook but very dense. Data Structures and Problem Solving Using Java (4th ed) by Weiss is more accessible. Old editions of these optional texts may be cheaper.

**12. Course Outcome Competencies:**

Upon completion of this course the student should be able to:

- Basic understanding of measuring runtime with big O notation
- Understand stacks and queues and know when to use which
- Basic understanding of linked lists and operations on them
- Understand operation of multiple sorts, including quick sort
- Basic understanding of using data structures available in Java library

13. Attendance Requirements: You are expected to participate on Blackboard each week. Attendance will be calculated from weekly quizzes and Discussion Boards. Any student missing more than 25% of the class will fail the class.

14. Course Requirements and Grading Criteria:

**Exams - 20% each**. Multiple-choice and open-ended questions for mid-term and comprehensive final. You may be expected to write code on the exams. All exams will be proctored.

**Weekly Quizzes - 10%** of grade. Each week of class will begin with a quiz to measure student comprehension of material and encourage you to absorb your reading and weekly videos. The lowest 2 grades will be dropped; this is the provision for days you are sick or miss the quiz or whatever. There is no makeup for missed quizzes and reference materials are not allowed.

**Labs - 40%** of grade. Submit via Blackboard each week by Saturday night, per schedule. **10% reduction per day for late**, not accepted after Wednesday night, so you don't fall behind on the next week's material. For the labs, you may refer to your book and discuss difficulties with your classmates but may not use code from anyone nor from the Internet.

**Discussion Boards and homework - 10%** of grade.

**Grading Criteria**: A standard grading scale shall be used in the course: A = 90-100%, B=80-89%, C=70-79%, D=60-69%, F= <60. There is no guarantee of any rounding.

15. Tentative Schedule:

**COURSE OUTLINE/CALENDAR**

| Week | Starts | Material | Quiz Due | DB Due | Lab |
|---|---|---|---|---|---|
| 1 | 5/22 | Ch 1, start 2 | 5/29/16 | 5/29/16 | |
| 2 | 5/29 | Ch 2: Analysis of Algs | 6/5/16 | 6/5/16 | |
| 3 | 6/5 | Ch 3: Collections and Stacks, Ch 4: Linked Structures | 6/12/16 | 6/12/16 | ArrayStack, LinkedList |
| 4 | 6/12 | Ch 5 (Queues) and 6 (Lists), Review | 6/19/16 | 6/19/16 | Linked Queue |
| 5 | 6/19 | **Midterm** | | | |
| 6 | 6/26 | Ch 8: Recursion (also read 7) | 7/3/16 | 7/3/16 | Recursion |
| 7 | 7/3 | Ch 9: Sorting and Searching | 7/10/16 | 7/10/16 | BinarySearch |
| 8 | 7/10 | Ch 10: Trees (start 11) | 7/17/16 | 7/17/16 | EndEarly Bubble Sort |
| 9 | 7/17 | Ch 11: Binary Search Trees | 7/24/16 | 7/24/16 | BinarySearchTree |
| 10 | 7/24 | Ch 13: Graphs (except 13.6), Review | 7/31/16 | 7/31/16 | |
| 11 | 7/31 | **Final Exam** | | | |

16. Additional important information:

Any directives concerning class will be sent to your Wayland email account. It is imperative that you monitor that throughout the semester.

There are several things you need to do each week. You should do them in this order:
1. Make sure you have completed everything from the prior week, because the material is fundamentally cumulative.
2. Do the assigned reading for this week and watch the VideoNotes and any additional videos I have posted for the week. You may find you need to watch some of the videos more than once to really understand them.
3. Start the lab for this week. Get as far as you can on it so you can contact me before Saturday if you have problems.
4. Post any questions you have on the discussion board so they can get answered before you take the quiz. Then take the quiz.
5. Be sure to get your lab turned in before Saturday night. I recommend finishing it no later than Saturday morning so you can have a relaxing Saturday evening.

Each week builds on the prior week, so you need to make sure you've finished the prior week. Read the chapter first and watch the videos. Then work on the lab for the week. All of these will help you do well on the quiz.

Other information:

Disability Statement**:** In compliance with the Americans with Disabilities Act of 1990 (ADA), it is the policy of Wayland Baptist University that no otherwise qualified person with a disability be excluded from participation in, be denied the benefits of, or be subject to discrimination under any educational program or activity in the university. The Coordinator of Counseling Services serves as the coordinator of students with a disability and should be contacted concerning accommodation requests at (806) 291- 3765. Documentation of a disability must accompany any request for accommodations.

Students shall have protection through orderly procedures against prejudices or capricious academic evaluation. A student who believes that he or she has not been held to realistic academic standards, just evaluation procedures, or appropriate grading, may appeal the final grade given in the course by using the student grade appeal process described in the Academic Catalog. Appeals may not be made for advanced placement examinations or course bypass examinations. Appeals are limited to the final course grade, which may be upheld, raised, or lowered at any stage of the appeal process. Any recommendation to lower a course grade must be submitted through the Executive Vice President/Provost to the Faculty Assembly Grade Appeals Committee for review and approval. The Faculty Assembly Grade Appeals Committee may instruct that the course grade be upheld, raised, or lowered to a more proper evaluation.