# Course Syllabus
# COP 3530 - Data Structures
## Fall 2021

## Course Information

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|---|---|
| Course Dates | 8/23/2021 - 12/17/2021 |
| Class Times | MW 12pm - 1:15pm |
| Class Location | Building 15 Room 1205 (**Remote option available on Zoom**) |
| Class Website | This class uses Canvas (`http://www.unf.edu/canvas/`) |
| Tutoring | `http://www.unf.edu/ccec/computing/Facilities/SOC_Computer_Lab___Tutor_Schedule.aspx` |

## Instructor Information

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|---|---|
| Instructor | Xudong Liu, Ph.D. |
| Office | Building 15, Room 3211 |
| Office Hours | MW 10:30am-11:30am, 3pm-4:30pm, and/or by appointment, on **Zoom** |
| Email | xudong.liu@unf.edu |
| Personal Website | `http://www.unf.edu/~xudong.liu` |

## Required Textbook

- LaFore, Robert, **Data Structures and Algorithms in Java, Second Edition**, SAMS Publishing, 2003, ISBN:0-672-32453-9.

It is available in the UNF bookstore, Amazon.com, half.com, and many other web sites that sell text books.

## Course Description

Prerequisite: COP 2551 and COT 3100. As a continuation of OO programming, this course addresses linear and non-linear data structures and techniques. Topics include arrays, stacks, queues, trees, indexing techniques, multikey structures, recursion, sorting, searching, and hashing techniques.

The course will cover:
1. The topics discussed above in chapters 1-15 of the text.
2. The Java programming language as a vehicle to implement abstract data types.
3. OO Design and programming concepts.
4. The Eclipse Integrated Development Environment (IDE).

Classes will include lectures, demonstrations, and hands-on in-class exercises. Reading will be assigned in **Data Structures and Algorithms in Java**. In addition, there will be programming projects assigned that will be completed primarily outside of class. All course materials will be posted on the Canvas.

## Tentative Course Schedule

The schedule is subject to change based on the progression of the course. Check the course Canvas site for the latest schedule.

| Week | Topics | Reading | Comments |
|---|---|---|---|
| 1 (8/23-8/27) | Syllabus/Course Overview, Canvas, Eclipse IDE, Arrays | Ch.s 1-2 | Attendance to first lecture required! |
| 2 (8/30-9/3) | Simple Sorting | Ch. 3 | |
| 3 (9/6-9/10) | Stacks and Queues | Ch. 4 | |
| 4 (9/13-9/17) | Linked Lists | Ch. 5 | Project 1 Due - 9/17 |
| 5 (9/20-9/24) | Exam Review, Exam 1 | | Exam 1 - 9/22 |
| 6 (9/27-10/1) | Linked Lists, Recursion | Ch.s 5-6 | |
| 7 (10/4-10/8) | Advanced Sorting | Ch. 7 | Project 2 Due - 10/8 |
| 8 (10/11-10/15) | Binary Search Trees | Ch. 8 | |
| 9 (10/18-10/22) | Red-Black Trees | Ch. 9 | Project 3 Due - 10/22 |
| 10 (10/25-10/29) | Exam Review, Exam 2 | | Exam 2 - 10/27 |
| 11 (11/1-11/5) | B-Trees and External Storage | Ch. 10 | |
| 12 (11/8-11/12) | Hash Tables | Ch. 11 | |
| 13 (11/15-11/19) | Heaps | Ch. 12 | Project 4 Due - 11/19 |
| 14 (11/22-11/26) | **Thanksgiving** | | No class |
| 15 (11/29-12/3) | Graphs | Ch. 13 | |
| 16 (12/6-12/10) | When to use what, Final Exam Review | Ch. 15 | Project 5 Due - 12/10 |
| 17 (12/13-12/17) | Final Exam | | 12/15, 11am-12:50pm |

**Important Dates** (https://www.unf.edu/catalog/academic-calendar/academic_calendar/):

- 8/23: Classes begin.
- 8/27: Deadline to Add or Drop Fall 2021 Classes.
- 9/6: Labor Day (No Class, University Closed)
- 9/17: Deadline to Withdraw (25% refund).
- 10/18: Weather Day (non-instructional)
- 10/19: Weather Day (non-instructional)
- 11/11: Veterans Day (No Class, University Closed).
- 11/12: Deadline to Withdraw (No refund).
- 11/22-11/26: Thanksgiving Holiday (No Classes).
- 12/10: Classes end.
- 12/17: Term ends.

**Before you consider withdrawing**, read the Satisfactory Progress Policy at http://www.unf.edu/ccec/computing/ on the Policies & Procedures page to review the "one repeat" rule for all School of Computing courses.

## Class Format

This semester I will follow the **flipped classroom** model. With this teaching model, you will read the chapters and watch pre-recorded videos on these chapters outside of our classes. During class time, we will focus on reviewing what was learned, problem solving, and Q&A. Typically you will be assigned at most two pre-recorded lecture videos to watch. Detailed weekly plans will be posted in Modules on Canvas.

That said, our lectures will be **weekly meetings on Wednesdays, except the first week and the Thanksgiving week**. For the first week, we will have lectures on both Monday and Wednesday, and the Monday lecture is required to attend. Though our course is f2f, thanks to the equipment our classroom has, remote participation still is possible that you can opt for. Therefore, you may choose to show up in the classroom to have the f2f lectures, or to attend the lectures remotely via Zoom. Should you intend the latter, email me to let me know at your earliest convenience.

Videos assigned in a week will be posted on Canvas before the week starts, so you will have enough time to watch before our Wednesday meetings. This way it provides you flexibility as to when/where to watch, and you always may watch as many times as you'd like.

## Documentation of Academic Activity for Financial Aid Purposes

**Attending the first lecture on Monday, Aug. 23,** will be used to document your academic activity for this course. Unless approved for absence for this class, students who failed to do so will **NOT** be marked as having completed an academic activity. **This failure could impact your ability to receive institutional or federal aid.** (This is in compliance with the US Department of Education.)

## Supplies and Equipment

In general, projects are submitted electronically through the Canvas, no special supplies are needed. Moreover, access to computers and Internet is required for online exams.

It is recommended that you use a cloud storage (e.g., your email accounts), flash drive, or some other method, to backup your files so that you have them in at least two places. Loss of your computer files is not an acceptable excuse for turning in your projects late.

## Class Communication

The best way to contact me is via email to **xudong.liu@unf.edu**. I will check my email daily. Feel free to email me with questions or other matters at any time.

You are expected to review emails sent to your UNF account regularly. If I need to contact you or send a notice to the class, I will do so via your UNF email address. It is your responsibility to check and use this account regularly. The Canvas site will also be used to post information and announcements and will also be used to post grades and collect assignments.

Please keep in mind:
1. I will only be sending all email messages about this course only to your UNF email address.
2. If you choose to forward your UNF mail to another system (e.g. AOL, BellSouth, HotMail, etc.), UNF cannot guarantee delivery and if you do not receive important news because that other mail system was not working you will not be excused.
3. It is important that you respond to my email messages using only your UNF email account. If you send email from another email system you will not receive a reply.
4. When sending me any email, you encouraged to include COP3530 in the subject line so that I can prioritize those emails.
5. I plan on responding to your emails within 24 hours, except on weekends or holidays.

## Grading

Your grade will be based on quizzes, projects and exams.

| Components | Points |
|---|---|
| Quizzes ($15 \times 10$) | 150 |
| Projects ($5 \times 90$) | 450 |
| Exam 1 | 100 |
| Exam 2 | 150 |
| Exam 3 | 150 |
| Total | 1000 |

Your letter grades for the class will follow the scale below. (Incomplete grades are rarely given.)

| Letter | Percent |
|---|---|
| A | 90% - 100% |
| B | 80% - 89% |
| C | 70% - 79% |
| D | 60% - 69% |
| F | $\leq 59\%$ |

## Quizzes and Attendance

There will be quizzes throughout the semester, and they will be based on the pre-recorded lecture videos. Each quiz will have some questions which mostly are multiple choices and fill-in-the-blanks. The quizzes usually are posted together with the lecture videos before the beginning of each week. Quizzes posted for a week are due at <u>Friday midnight of that week</u>, so that you may choose your own time to watch the videos and complete the quizzes.

Though attendance to lectures is not required, except the first meeting, I will check attendance sporadically on Wednesdays and give credits for that. When that happens, it will be shown on Canvas as a quiz, but it does not need your input and will be graded by me based on your attendance.

There will be at least **15** quizzes randomly spreadout throughout the course. In case of more than 15 quizzes, only the **highest 15** will contribute to your final grade.

This fast-paced course demands a lot of time, effort and hard work to get a high grade. Although lecture videos always are there throughout the semester on Canvas for you to watch as many times as you want, not watching a video or attending a weekly meeting may affect your performances in the projects or the exams. Especially, falling behind earlier in the course gives you a higher chance to fail.

## Project Late Penalties

**All projects are due by midnight on the days indicated in the course schedule, generally Friday.** Late projects will be accepted **up to 2 full days after due date with a 20% penalty**. **No** projects will be accepted more than one class period late. **No** extra credit projects or make-up projects will be given.

## Exams

Exams may include a combination of multiple choice,, short answers, and coding questions. Material covered in the reading assignments, whether covered in class or not, and any material discussed in class may be included in the exams. If you need any special accommodation, seek help from SAS, forward to me their suggestions, and let me know at least three days before any exam starts.

**You are expected to take the exams at the scheduled times. No makeup exams will be given except in cases of documented medical or family emergency.** If you expect to miss an exam and have a good reason (examples of acceptable reasons: medical procedure, reserve duty, a university

sanctioned event like a sports meet that you are participating in, etc.) you may arrange with the instructor **ahead of time** to take the exam at an alternate time. Exams missed for insufficient reason and without being cleared with the instructor before the exam time will be assigned a score of zero.

**Notes:** The grade of Incomplete (I) is uncommon and is used only in cases of a verifiable emergency that prevents a student from completing the class. All grades of Incomplete require departmental approval. If a student withdraws from a class by the published withdraw deadline, they receive the grade of W. The grades WP and WF are used if a student petitions to withdraw after the deadline and the petition is granted.

## Conduct

Please refer to the Student Conduct Code in the student handbook for details about how you are expected to conduct yourself while at UNF. `http://www.unf.edu/deanofstudents/student_handbook.aspx`

## Academic Integrity

Your project grades are a big part of your course grade. While there may be some time provided in class to work on the projects, they are completed primarily outside of class. You are encouraged to learn from each other and discuss the projects; however, you are expected to create each project yourself. **Do not share your source code or project files with others and do not use somebody elses source code or project files, including code found on the Internet. (Exception is the code in the textbook and in the class slides.) If that occurs, severe penalty will be given, such as a zero on the project, a misconduct report, and an unforgivable F on the course.**

Please review the complete UNF Academic Integrity Code found at `https://www.unf.edu/catalog/policies/academic_integrity/` and the Florida Computer Crimes Act found at `https://www.unf.edu/its/polproc/Computer_Crimes.aspx`.

## Student Accessibility Services (SAS)

Students with disabilities who seek reasonable accommodations in the classroom or other aspects of performing their coursework must first register with the UNF Student Accessibility Services (SAS) located in Building 57, Room 1500. SAS staff members work with students to obtain required documentation of disability and to identify appropriate accommodations as required by applicable disability laws including the Americans with Disabilities Act (ADA). After receiving all necessary documentation, the SAS staff determines whether a student qualifies for services with the SAS and if so, the accommodations the student requires will be provided. SAS staff then prepares a letter for the student to provide faculty advising them of approved accommodations. For further information, contact the SAS by phone (904) 620-2769, email (SAScenter@unf.edu), or visit the SAS website (`http://www.unf.edu/sas/`).

Military and veteran students who return from combat exposure may be utilizing the post 9/11 GI bill to continue post-secondary education goals and may need both physical and academic accommodations. Contact the Military and Veterans Resource Center (`http://www.unf.edu/military-veterans/`), by phone at (904) 620-2655 or by email at mvrc@unf.edu.

## Student Technology

Information Technology Services provides online information about technology topics including, Canvas, email, computer labs, etc. For more information, visit `http://www.unf.edu/its/For_Students.aspx`.

## Non-Discrimination, Equal Opportunity and Diversity Statement

The University of North Florida (UNF) is committed to providing an inclusive and welcoming environment for all who interact in our community. Please read the Non-Discrimination, Equal Opportunity and Diversity Statement at `https://www.unf.edu/eod/Non-Discrimination,_Equal_Opportunity_and_Diversity_Statement.aspx`.