

CSCI [604](#) [000538] Section 1
Advanced Data Structures
Fall 2023 SYLLABUS

INSTRUCTOR: Andrew A. Anda, Ph.D., Professor of Computer Science
OFFICE: ECC-223 Telephone: (320) 308-2044
E-MAIL: aanda@stcloudstate.edu (please use "CSCI604: " in the Subject field)

Web Site: <http://web.stcloudstate.edu/aanda/cs331.html>

Instructor Schedule: <http://web.stcloudstate.edu/aanda/Wkly-sched-f23.pdf>
(and by appointment)

Student Office Hours: <https://minnstate.zoom.us/j/91845917984>

Invitation: [Student Office Hours Zoom invitation text](#)

{I sometimes won't be available for an office hour - this will usually be because I'm attending a meeting}

Resource Links:

- [D2L Brightspace](#)
-
- [SCSU Student Resources for Online Learning](#)
-
- [SCSU Zoom Resources](#)
-
- [SCSU Student Information for Attending Classes Off-Campus](#)
-
- [SCSU: The Write Place](#)
-
- [SCSU Information Technology Services](#)
-
- [SCSU Medical Clinic](#)
-
- [SCSU Counseling and Psychological Services](#)
-
- [SCSU Library](#)
-
- [SCSU Student Code of Conduct](#)
-

Additional SCSU student resources, curated and compiled by the Academic Affairs office, are presented in:

[Fall 2023 Student Instructional Resource and Support Guide](#)

Hyflex Content Delivery and Accessibility:

I plan to teach using a blend of synchronous and asynchronous delivery via Zoom and D2L,

where it should make no effective and essential difference whether at any time you are F2F or remote.

I intend to record all lectures. And, most materials will be available through D2L.
Student submissions of quizzes, assignments, notes, etc. will be via a D2L dropbox.
This plan should maximize flexibility for both you and me to adapt to whatever factors change progressively or suddenly for either you or me.
You will never be expected to be F2F in our classroom.
My default mode of presentation is synchronous.
Your default Zoom mode of access should be with your camera on, and your mute *must* be on.
If you are connecting synchronously through Zoom, you are encouraged to contribute at any time by unmuting, or by Zoom text.
Here's the SCSU definition of Hyflex (from the Provost's Fall 2021 Instructional Resource and Support Guide):
Hyflex Course - Course activity is both online and in-person, at the same time, offering students flexibility with their learning.
In a hyflex course, all learning activities are delivered via asynchronous online, synchronous online, and in-person.
With faculty consultation, a student may choose which mode of learning works best for their circumstance.
Although there are asynchronous learning activities, the course is not self-paced.
Meetings are online (both synchronous (scheduled) and asynchronous) and in-person.
Exams are typically in-person and synchronous online (not asynchronous).
In-person and synchronous meeting/exam dates and times are often scheduled in ISRS (registration system) and in the syllabus.
Media code 14.

CLASS TIME AND LOCATION:

Class: T Th: 9:30 - 10:45 in ECC 116

Lecture Zoom meeting link & invitation:

<https://minnstate.zoom.us/j/91244348983>; [Lecture Zoom Invitation](#)

REQUIRED TEXT: * Data Abstraction & Problem Solving with C++,
Carrano, Pearson, 6th or 7th Ed.

SUPPLEMENTARY TEXTS: * File Structures: An Object-Oriented Approach with C++,
M.J. Folk, B. Zoellick, G. Riccardi, Addison Wesley Longman, 1998.

[A PDF copy of this text (which is out-of-print) accessible is on our course D2L page in Materials/Content/Primary Textbook: FZR. (Please use this copy only for this course)]

* Applied Data Structures with C++, Peter Smith, Jones and Bartlett, 2004.

* your CSCI 201 textbook

COURSE DESCRIPTION: (for CSCI 604)

Advanced techniques for data representation and manipulation and their analysis.

Implementation of algorithms that use these techniques.

COURSE DESCRIPTION: (for CSCI 331)

Problem solving strategies and concepts applied in the context of issues associated with the design and implementation of software systems using a combination of current software packages/environments. Subjects addressed include file processing, data modeling and mapping to storage structures, data base systems, and software design and implementation.

STUDENT LEARNING GOALS: (for CSCI 331)

1. gain knowledge updating sequential files as related to data base systems.
2. gain knowledge about programs and software systems involving trees, blocking/deblocking, sort/merge, updating sequential files, and b-trees.

II Student Outcomes (Sos) for the Computer Science Program:

Students will be able to:

1. apply structured principles and good practices to the task of developing software systems.
4. communicate both technical and non-technical aspects of their work in formal and informal situations.
5. apply formal methods to the process of constructing a system and an appreciation of the need to study and develop such methods.
7. analyze various aspects of the process used when designing a system and employ established frameworks to evaluate the completed work.

TOPICS (not necessarily in order of coverage):

- * Sequential file processing
- * Indexed Files
- * Hashed Files
- * Tree Structured Files
- * Secondary storage media
- * Introduction to database
- * Software Design Processes and Principles
- * Software Development Processes and Principles
- * and more...
- * (I will expect students to learn the complexities {bigO} of the operations on the data structures we discuss and to be able to select, based on those complexities, the most appropriate ADT considering the nature of the data and how it will be accessed.)

SLOs:

None stated in the current [CSCI 604 SCSU course description](#)

PREREQUISITES:

[Prereq.: CSCI 591 or equivalent (A course in data structures using C++)]
We also assume that you have an operational facility with Unix, hardware, and OS theory.

We do not have time for an extensive recapitulation of topics covered in the prerequisite courses.

ACADEMIC HONESTY:

You are expected to do your own homework. If you copy someone else's work or allow someone else to copy your work, you are being academically dishonest and will be subject to severe disciplinary action which may

include any or all of: no credit for the work in question, a failing grade for the course, notification to the university that you have violated your Code of Conduct. Use of recording devices during exams is prohibited. If you must quote or paraphrase another source, citation is essential, otherwise plagiarism has been committed. You are expected to be familiar with your rights and obligations as outlined in the "Code of Conduct"

[http://www.stcloudstate.edu/studenthandbook/documents/2013_14_codeofconduct.pdf] See also:

[<http://www.stcloudstate.edu/studenthandbook/code/prohibited.asp>]

[http://www.stcloudstate.edu/studenthandbook/code/rights_responsibilities.asp]

STUDYING IN GROUPS:

I encourage you to study with someone else in the class, but when you prepare the final documents to turn in be sure that it is your own work and that you understand it.

If you represent someone else's work as your own (without citing them as a source), or allow someone else to turn your work in as theirs (without citing you as a source), you will have committed academic dishonesty and will receive an F.

DECORUM: Conduct yourself so as not to distract others. In particular

- * Silence all cell phones, watch alarms, and similar devices.
- * Do not engage in distracting activities like reading a newspaper or sleeping. [the snoring can be so distracting... :^)]
- * Arrive for class on time, and be ready to begin.
- If you must be late, be quiet.
- * If you are early, sit toward the middle of a row.
- * Do not start packing up before class ends.

ATTENDANCE:

You are responsible for knowing what happens at each class meeting.

EXAMS:

- * There will be a midterm exam and a **comprehensive** final exam.
- * Exams will be based on the notes; that is, on the presentations in class as well as on the assigned readings and assignments.
- * Calculators will be neither necessary nor allowed.
- * For each exam, a new review sheet (8.5"x11" front & back) will be allowed;
 - ** Make a prior photocopy of your review sheet as it will be collected with the exam.
 - ** Two review sheets will be allowed on the final exam.
 - ** Only material from lecture notes (slides and written in lecture), instructor provided supplements, or the course textbooks are allowed on each review sheet.
 - ** Each review sheet must be a unique hand-written original copy.
 - ** Any answers to questions from exams for this course given in previous semesters which appear on your

review sheet are considered to be examples of academic dishonesty.

* Make-up exams will be given in only in extreme (or university sanctioned) circumstances and only with prior notification to the instructor.

GRADING:

Your grade will be determined by the contributions of your scores on assignments, quizzes, intermediate and final exams, term papers and their presentations.

Makeup of tests, quizzes, and exams are by prior arrangement only.

(Exception handling: If you have received undergraduate credit for CSCI 331 (you were a SCSU CSCI undergrad),

instead of taking the exams, you will write and present additional term papers on significantly different topics, and pass a Quiz on the other presented term papers)

APPROXIMATE POINTS:

Term Paper	35%
Midterm Exam(s)	25%
Final Exam	40%

FINAL EXAM: Tuesday, December 12, 09:55 - 12:10 as a D2L Quiz.

(Take this final exam in the assigned classroom using your laptop if you are able to.)

CAVEAT:

I reserve the right to amend the contents of this syllabus with notification.

**