CSCI 331 (Section 1) [002774]
Software Systems
Fall 2023 SYLLABUS

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E-MAIL: aanda@stcloudstate.edu (please use **"CSCI331: "** 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 *Hyflex* 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 D2L.
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 (unless commenting or asking a question).
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 F: 14:00 - 15:15 in ECC 135 Section **1**

Section **1** lecture Zoom meeting link & invitation:
https://minnstate.zoom.us/j/99431712466; Section **1** Lecture Zoom Invitation

{Lectures will be posted to the D2L Discussion forum}

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:

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:

1. gain experience working in a group in various roles on a technical project.
2. gain knowledge updating sequential files as related to data base systems.
3. gain experience designing software systems through a software engineering process including designing algorithms, coding, and testing.
4. write programs and software systems involving trees, blocking/deblocking, sort/merge, updating sequential files, and B+trees.

I Student Outcomes as defined by ABET (CAC):

a) An ability to apply knowledge of computing and mathematics appropriate to the discipline.
c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.
d) An ability to function effectively on teams to accomplish a common goal.
e) An understanding of professional, ethical, legal, security and social issues and responsibilities.
f) An ability to communicate effectively with a range of audiences.
i) An ability to use current techniques, skills, and tools necessary for computing practice.
j) An ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices.
k) An ability to apply design and development principles in the construction of software systems of varying complexity.

II Student Outcomes (Sos) for the Computer Science Program (applicable to this course):

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:

* Apply structured principles and good practices to the task of developing software systems.
* Communicate both technical and non-technical aspects of their work in formal and informal situations.
* Apply common formal methods to the process of constructing a system and an appreciation of the need to study and develop such methods.
* Analyze various aspects of the process used when designing a system and employ established frameworks to evaluate the completed work.

PREREQUISITES:

[Prereq.: CSCI 220 or ECE 221; CSCI 301 (301 coreq: Math 271)]

I assume that all students in this class have passed the prerequisite CSCI and MATH courses, or their equivalents.

We also assume that you have an operational facility with Unix.

If you have not had ALL of these courses you should drop this course until you have passed all of the prerequisites.

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

PROGRAMMING ASSIGNMENTS HOMEWORK AND IN CLASS WORK:

There will be a sequence of programming assignments.

These must be submitted by the time and date as indicated on the respective D2L DropBox.

No allowances will be made for computer down time, so I suggest you begin each assignment as soon as you receive it.

Programs not submitted by their deadline will be penalized.

A program must compile to receive any credit.

(Which implies that a successful strategy is to always maintain available the last successfully compiling version as you are developing incrementally)

Keep in mind that I expect all programs to produce correct output given error-free input.

Check your output before submitting your final copy (The grader will ignore all but your final submission.

Don't assume that a program which produces any output, without terminating abnormally, is correct.

Are the output and test results what you expected?

Test your program carefully and extensively.

You have not fully tested your program if you have not executed every line of code.

Preconditions and postconditions must be consistent and well-defined.

The code should satisfy the postconditions if the preconditions are met.

Conversely, if a precondition is violated, that exception should be detected and handled.

The grade you get on a program is based on the code, the documentation and how well it is tested. To receive better than a C on a program it must do

more than produce correct output given correct input. By this I mean your program must be robust, well documented, well tested and well written.

Your grade on the group projects will also be based on how well you cooperate with, contribute to, and participate in the group you are assigned to. Your contributions to your group's efforts will be assessed by your peers.

* "Boat anchors" will be significantly penalized up to a whole letter grade.
* "Heroes" will be significantly rewarded up to a whole letter grade.

Missing class on days that we have in-class assignments or quiz will result in a zero for that assignment. These assignments cannot be made up. If you have trouble getting to class drop now so that someone else can use the spot. I will be dropping the lowest quiz score from the quiz score total.

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 Student Code of Conduct - specifically the Prohibited Student Conduct section, and the Academic Integrity policy within.

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.

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

* Do not wear clothing that includes images or text that could be offensive to a classmate.
* Ensure that your devices are in silent mode
* 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, enter and seat yourself stealthily.
* If you are early, sit toward the middle of a row.
* Do not start packing up before class ends.

SAFETY:

What to do if you have experienced sexual assault, rape, domestic violence, sexual harassment or stalking:

Please read this resource:

[https://www5.stcloudstate.edu/Policies/SCSU/Viewer.aspx?id=60]

Your professors fulfil the role of mandatory reporters. If you want to speak confidentially, see the above link for

a list of confidential options.

ATTENDANCE:

You are responsible for knowing what happens at each class meeting. You should expect to spend a lot of time on this class. It is not an easy class. If you are having trouble in class I expect to see you in my office. If you don't tell me you are having troubles how do you expect me to know? If you can't come during my office hours, make an appointment for another time.

QUIZZES:

There will be a sequence of quizzes of assigned readings (usually prior to that chapter's coverage in class).

EXAMS:

* There will be one or two midterm exams 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 the 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.
Makeup of tests, quizzes, and exams are by prior arrangement only.

APPROXIMATE POINTS:

Assignments	35%
Sectional Exam(s)	25%
Final Exam	40%

FINAL EXAM: Section 1: Thursday, December 14, 12:20 - 14:35 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.
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Peer Wellness Coaching

https://www.stcloudstate.edu/healthwellness/get-healthy/peer-coaching.aspx
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Accommodations Statement

St. Cloud State is an affirmative action, equal opportunity employer and educator.

SCSU is committed to a policy of nondiscrimination in employment and education opportunity and works
    to provide reasonable accommodations for all persons with disabilities.

Accommodations are provided on an individualized, as-needed basis,
    determined through appropriate documentation of need.

Please contact Student Disability Services, sds@stcloudstate.edu, or 320.308.4080, office CH 202
    to meet and discuss reasonable and appropriate accommodations.

The accommodations authorized may be discussed with your instructor.

All discussions will remain confidential.
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Violence Statement

In the event that you choose to write or speak about having survived sexualized violence,
including rape, sexual assault, dating violence, domestic violence, or stalking,
and specify that this violence occurred while you were an SCSU student,
federal and state education laws require that, as your instructor,
I notify the Title IX officer, Ellyn Bartges.

She (or her designee), will contact you to let you know about accommodations and
support services at SCSU and possibilities for holding accountable the person who harmed you.

If you do not want the Title IX Officer notified, instead of disclosing this information to your instructor,

you can speak confidentially with the following people on campus and in the community.

They can connect you with support services and discuss options for holding the perpetrator accountable.

SCSU's Gender Violence Prevention Program 320.308.3995 Lee LaDue

Central Mn Sexual Assault Center (Community program) 320.251.4357 24-hour hotline

SCSU's Counseling and Psychological Services 320-308-3171

If you are a survivor or someone concerned about a survivor and need immediate information on what to do, please go to:
http://www.stcloudstate.edu/womenscenter/