CSCI 331 (Section 1) [001348]
                    Software Systems
                    Fall 2024 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-f24.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}

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Resource Links:

- D2L Brightspace
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- 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
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- SCSU Counseling and Psychological Services
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- SCSU Library
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- SCSU Student Code of Conduct
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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 intend to record all lectures. And, most materials will be available through D2L.
Student submissions of quizzes, assignments, notes, etc. will be via D2L.

CLASS TIME AND LOCATION:
     Class: T F: 14:00 - 15:15 in CH 9 Section **1**

REQUIRED TEXT: * Data Abstraction & Problem Solving with C++,
                 Carrano, Pearson, 6th, 7th, or 8th 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 12, 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/