CIS226- 400 Computer Science III

Spring 2023

Instructor Name	Chris Szorc	**Credit Hours**	4
Instructor Email	cszorc@elgin.edu	**Room Number**	F125 OR Online https://elgin-edu.zoom.us/j/94636676397?pwd=dGVRZUZPWGIrNnRKeWNNa0dkVnNKdz09
Alternate Email	None	**Start Date**	January 18, 2023
Instructor Phone	630-888-5376	**End Date**	May 17, 2023
Alternate Phone	none	**Meeting Days**	Wednesday
Office Location	Online	**Class Time**	10 AM – 11:50AM

Office Hours – Student Assistance

DAY	HOURS	LOCATION
Monday	7-8PM	https://elgin-edu.zoom.us/j/96417488968?pwd=SEVTcC9kcktKRFNDY2dTTm1IRUlBQT09
Tuesday	7 – 8 PM	**https://elgin-edu.zoom.us/j/96417488968?pwd=SEVTcC9kcktKRFNDY2dTTm1IRUlBQT09**
Wednesday	None	**None**
Thursday	None	**None**
Friday	None	**None**
Saturday	None	**None**
Sunday	None	**None**

Course Requirements

Textbook Required	Data Structures and Algorithm Analysis in C++, Mark Allen Weiss, Etter & Ingber, ISBN:978-0-13-284737-7
Course Pre-Requisites	Grade of C or better in CIS223, or equivalent college credit or consent of instructor
Computer / Software Requirements	MS Windows and MS Visual Studio or DevC++. Access to a computer is required in order to visit the D2L course site. Students will receive regular update via their student.elgin.edu email account.
D2L Requirements	Class information, all assignments, and required course content will all be posted on D2L. Students are expected to regularly check D2L and submit all assignments via D2L. You will use your AccessECC username and password to log on to

	D2L.
Other Required Materials	NA
Other Requirements	NA
IAI Code	NA

Course Description

This course concentrates on algorithms, algorithm analysis, and advanced data structures. Algorithm approaches such as divide-and-conquer, dynamic, greedy, and back-tracking are considered. Complexity analysis is used to compare algorithm efficiency. Students will learn further use of object-oriented programming to implement ADTs such as graphs, sets, heaps, and hash tables.

Prerequisite

Grade of C or better in CIS223 Computer Science II, or equivalent college credit or consent of instructor

Course Learning Outcomes

By the end of this course, students will:

- Upon completion of the course, students will be able to intelligently test and compare the efficiency of various algorithms that accomplish the same task. They should be able to use this knowledge in designing new algorithms efficiently. Students will become more familiar with object-oriented programming and build further on data structures learned in Computer Science II.
- Algorithm paradigms
  - divide and conquer
  - greedy
  - dynamic
  - back-tracking
- Observational testing of algorithm efficiency
- Analytical testing of algorithm efficiency
  - big oh, big omega, big theta, and little oh notation
- Analysis of string processing, searching, sorting, and graph algorithms
- Further use of object oriented programming
- Further use of heaps, hash tables, and graphs
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Grading Standards

Grading Policies and Procedures

Your grade will be determined from your performance on the assessment activities described below.

Midterm Exam: The midterm exam will occur before the midterm grade reporting date.

Final Exam: The final exam will be on the last day of the semester.

Assignments: We will do a variety exercises that will count toward your grade. Some exercises may require coding with an IDE.

- **Programming Assignments:** A number of programming assignments, to be completed individually, will be given during the semester. These will be submitted for credit using D2L; specific details will accompany each assignment. Partial credit may be given for completed parts of the assignment so be sure to turn in all that you have done by the due time. You will be given (about) 7 calendar days to complete each assignment. You are responsible for planning ahead to allow yourself enough time to complete the assignments by the deadline. **Start your programs early.**

Software: All course programming work will be graded using the DevC++IDE; you may use any IDE you choose. Microsoft Visual Studio available in the computer lab. For home use students can download a free copy of DevC++ at https://sourceforge.net/projects/orwelldevcpp/

Attendance: Students are expected to attend each class and be on time;. Students who miss class are responsible for: material covered, assignments given and announcements made. You are strongly encouraged to use class time to your best advantage. This includes asking questions and coming to class prepared.

Grading Summary Table

Graded Items	Percent
Assignments	60%
Midterm and Final Exams	40%

Make-up Exam and/or Late Work

Late work is accepted until the last day of class

Grading Scale

Letter Grade	Minimum Points / Percentage	Maximum Points / Percentage
A	90	100
B	80	89
C	70	79
D	60	69
F	0	59

Mid-term & Withdrawal Dates

Mid-Term Date	Wednesday, March 15, 2023
The last day to withdraw from this course with a grade of W is:	Sunday, April 02, 2023

After the withdrawal date listed above, the only grades that will be assigned are A, B, C, D or F.

Classroom Policies

Attendance, Tardiness, and Student Illness Policy

Suggested components for this section include the number of days allowed to be missed or tardy and what consequences if any will be applied. What are students expected to do to get the information missed? Enter this information into the table below, where indicated. Outline the procedure of what is expected of a student who cannot attend and/or will arrive late.

Students are expected to attend all classes in which they are enrolled and to know the attendance policy of each of their instructors. Under no circumstances should a student stop attending class without formally withdrawing. This can result in a failing grade on the student's permanent record. Attendance at the first class is expected. Registered students who do not attend the first day and do not contact the instructor may be dropped from the class for non-attendance.

Instructor's Attendance Policy	Regular attendance is crucial to success in this class. While attendance is not strictly used in grading, if more than 4 absences are recorded, you may receive a failing grade in the course, at the instructor's discretion.
Instructor's Tardiness Policy	Two tardies = 1 absence
Instructor's Student Illness Policy	If you are ill and will not be able to attend class, please send me an email as soon as practical to let me know. Sick days will not count as absences; an excessive number of sick days may require documentation.

Behavioral Expectations

Professional classroom behavior is expected during class. Students are expected to abide by the Elgin Community College Student Code of Conduct (see www.elgin.edu/codeofconduct). Any behavior that violates the conduct norms will not be tolerated. Professionalism consists of demonstrating a public persona that is suitable for the classroom. This includes

- attending all classes
- arriving on time
- handing in work on time
- having consideration and respect for others.
- using phones and electronic devices for classwork only

Academic Integrity

Elgin Community College is committed to providing a learning environment that values truth, honesty, and justice. Academic integrity means being honest and responsible regarding any work submitted as one's own while in a college course. Failing to do so is considered academic dishonesty. Acts of academic dishonesty include cheating, plagiarism, fabrication, complicity, submitting same work in multiple courses, and/or misconduct in research. The purpose of academic assignments is to help students learn. The grade received shows students' own understanding and effort. It also indicates how well they have met the learning goals in a course. In order to demonstrate that learning, the work done must always be their own and if students consult others' work, this must be properly cited. Students who commit any act of academic dishonesty will be subject to sanctions imposed by their instructor, up to and including failure in the course. For more information on ECC's Academic Integrity policy see www.elgin.edu/academicintegrity.

For information on how to avoid academic integrity violations, see the Plagiarism Modules available from the main menu on your D2L homepage (under the Student Support tab) or visit the ECC Library Tutorials Research Guide at http://ecclibrary.elgin.edu/tutorials/WritingYourPaper. Students may also seek assistance from Librarians as well as the Write Place staff.

Enter instructor's Academic Integrity policies if applicable

Safety Requirements

Enter instructor's safety requirements and policies if applicable

Course Outline and Schedule

Evaluation/Assessment Methods – Course Assignments

Grading rubrics will be provided for all programming assignments.

Topical Outline – Class Schedule

Week	Topics	Assignments
Week1	Chapter 1: Programming General Overview	See D2l
Week2	Chapter 2: Algorithm Analysis- Efficiency, run time calculations and testing	See D2l
Week3	Chapter 3 Lists Stacks and Queues	See D2l
Week4	Chapter 4 – Tree Implementation – Binary, Search, AVL, Splay, Traversals, B trees	See D2l
Week5	Chapter 5 – Hashing tables	See D2l
Week6	Chapter 6 – Heaps Implementation – Binary, Priority, d-Heaps, Leftist, Skew, Binomial	See D2l

Week7	Chapter 7 – Sorting Implementation – String processing	See D2l
Week8	Mid Term	See D2l
Week9	Chapter 9 – Graph Algorithms	See D2l
Week10	Chapter 9 – Graph Algorithms	See D2l
Week11	Chapter 10 – Algorithm Design Techniques – big oh, big omega, big theta, and little oh notation	See D2l
Week12	Algorithm paradigms, divide and conquer, greedy, dynamic, and back-tracking	See D2l
Week13	Chapter 11 – binomial queue operations, skew heaps, Fibonacci heap splay trees	See D2l
Week14	Project Work	See D2l
Week15	Final Exam	See D2l
Week16	Submit Project	See D2l

Resources

Tutoring and Study Labs

Tutoring and study labs are available to students. For more information, visit www.elgin.edu/tutoring.

Student Resource Guide

To view the Student Resource Guide PDF document click here: Student Resource Guide

Emergency Closing Information

For information regarding emergency closing situations at ECC please visit: Rave Alert - Emergency Notification System

ECC Library

For information regarding the ECC Library please visit: ECC Renner Library

Disability Accommodations

ECC welcomes students with disabilities and is committed to supporting them as they attend college. If a student has a disability (visual, aural, speech, emotional/psychiatric, orthopedic, health, or learning), s/he may be entitled to some accommodation, service, or support. While the College will not compromise or waive essential skill requirements in any course or degree, students with disabilities may be supported with accommodations to help meet these requirements. The laws state a person does not have to reveal a disability, but if support is needed, documentation of the disability must be provided. If none is provided, the college does not have to make any exceptions to standard procedures. To request accommodations, contact the Student Disabilities Services office to schedule an intake appointment and submit documentation. If you have questions, please call Pietrina Probst at 847-214-7417, email pprobst@elgin.edu or visit the office located in Building B, room 125. (See www.elgin.edu/disability for additional information).

Wellness Services

Focuses on health and well-being to maximize personal and academic growth and development. The mission of wellness services is to provide support for personal well-being so students can focus on academic success. We offer students one-on-one sessions about psychosocial issues that impact academic performance. Students may drop in and/or make an appointment in the Student Success office, Building B, room 120. Office hours at Mon-Thurs: 8 am - 7 pm and Friday: 8 am - 4 pm.

Veterans' Assistance Policy

Elgin Community College would like to thank you for your military service! Whether you are starting college for the first-time or re-entering college, we have services to make your transition from troop to student a little easier. If you have any questions, or for additional information please contact Anitra King, Career and Veterans Specialist, at (847) 214-7531 or email: aking@elgin.edu. https://elgin.edu/admissions/veterans-services/

* Note: This syllabus is subject to change, as needed, by the instructor at any time.

Frequently Asked Questions

Best way to contact me is via my cell. You are fee to text me questions during the hours of 8AM – 9 PM. Please do not use my student email to send me an email. Please use cszorc@elgin.edu.

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