STUDENT INFORMATION SHEET

CPSC 505, COMPUTING CONCEPTS FOR EDUCATORS, FALL 2025

Course Information

- **Days/Times/Place**:
  CPSC 589 810 MW 6:45 PM – 8:00 PM CAS 134
- **Web page** : *https://timoneilu.github.io/teaching/cs505/*
  Consult the "Info Sheet" link there for content regarding diversity, the ethical use of AI tools, accessibility, Title IX and sexual harassment and violence.
- **Prerequisites**: EDCI:575 or instructor permission.

Course Description

Course Description :

Prerequisite: EDCI:575 or instructor permission. Comprehensive review of the undergraduate computer science curriculum for K-12 educators seeking licensure.

Course Rationale :

Due to the increasing importance of technology in the last few decades, the Ohio Department of Higher Education seeks to train K-12 teachers to teach computer science in their classrooms. Such instructors must be computer literate, able to supplement computer activities in the classroom, and engage students in developing their computer science literacy. Teachers with this licensure in turn become much more marketable in the competitive field of education. This course presents educators with the concepts tested in the OAE Computer Science (054) Exam required for such licensure.

Course Personnel

Instructor : Dr. Tim O'Neil
Contact Info : *Office* : CAS 221A *Phone* : (330) 972 – 6492 E-*mail* : *toneil@uakron.edu*
Office Hours : MTWRF 11:30 – 12:30 AM. I am also available by appointment.

Course Outline

Textbook : Momentrix Test Preparation. *OAE Computer Science (054) Secrets Study Guide: OAE Exam Review and Practice Test for the Ohio Assessments for Educators*. Momentrix Media LLC, 2024.

Topics :

Programming Concepts
Concepts in Object-Oriented Design
Concepts in Algorithmic Design
Concepts in Computer Organization
Concepts in Internet Programming
Operating Systems Concepts
Networking Concepts
Overview of Advanced Topics

Course Grading

Items :

18% each	Quizzes/exams (5)
10%	Class participation

Approximate Scale :

A 88 – 100, B 75 – 87, C 62 – 74, D 49 – 61. Plus/minus grades assigned at my discretion.

Course Objectives

Course goals and objectives for this class are aligned to these CSTA (Computer Science Teachers Association) Standards; see https://csteachers.org/teacherstandards/interactive/.

Objective	CSTA Standard	Assignments/ Assessments
Students will understand the fundamentals of basic computer organization, efficient problem solving and structured programming.	1A, 1B, 1E	Miscellaneous Culminating Activities (i.e. Quizzes)
Students will demonstrate a sound understanding of many of the fundamental algorithms and data structures that lie at the heart of computer science.	1A, 1B, 1E	
Students will show the ability to reason clearly and understand why and under what conditions one algorithm may be superior to another.	1A, 1B, 1E	
Students will understand the object-oriented paradigm and how it relates to other models.	1A, 1B, 1E	
Students will understand fundamental principles and techniques for the design and analysis of computer algorithms.	1A, 1B, 1E	
Students will investigate and understand the properties of basic logic gates and flip-flops, as well as the design of arithmetic and sequential logic circuits and fundamentals of CMOS devices and circuits.		
Students will demonstrate a basic knowledge of the abstractions and services presented by an operating system as the basic building blocks of applications.	1A, 1B, 1E	
Students will exhibit a basic knowledge of the architectural features of present-day serial, scalar computing systems.	1A, 1B, 1E	
Students will exhibit a basic knowledge of the fundamental theory of automata and formal languages.	1A, 1B, 1E	
Students will exhibit a basic knowledge of some of the more significant languages which have been derived from the von Neumann model.	1A, 1B, 1E	
Students will understand basic concepts of parallel algorithm design and analysis, notably Flynn's taxonomy.	1A, 1B, 1E	
Student will display knowledge of the fundamental concepts of data networks in terms of the ISO layered architecture.	1C	
Students will understand the theoretical and practical aspects for the design and implementation of database systems.	1D	

Other Class Policies, Fall Semester 2025

Registration/Drop/Withdrawal

- Students whose names do not appear on the university's official class list by **Sunday August 31** will not be permitted to participate (attend class, take exams or receive credit).
- Students may drop a course online (without my signature) through **Sunday September 7**. Courses dropped by this date will not appear on a student's transcript.
- Students may withdraw from a course online (without my signature) through **Sunday October 12**. A "WD" will appear on the student's transcript.

Scholastic Honesty and Professional Integrity

- All work turned in for grade is to be exclusively the work of the student(s) whose name(s) appear(s) on the work. Incidents of academic dishonesty (such as cheating or plagiarism) will be handled in accordance with university policy by the Office of Student Conduct. In particular, the use of sources other than the textbook without citation, including other books, AI tools like ChatGPT and the World Wide Web, will be viewed as plagiarism. (If you're unsure of what constitutes plagiarism, consult the links on my home page.)
- Some of the materials in this course are possibly copyrighted. They are intended for use only by students registered and enrolled in this course and only for instructional activities associated with and for the duration of this course. They may not be retained in another medium or disseminated further. They are provided in compliance with the provisions of the TEACH Act (2002).

In-Class Conduct During Lectures

- Students are expected to attend all class meetings prepared (i.e. carrying the textbook, note paper, writing instruments, etc.) and participate. You may be dropped from this course and receive an "F" on your transcript for repeated absences (BOT Rule 3359-20-05D, effective 2/14/2013).
- All cell phones, etc., are to be turned off or switched to manner mode during class. Portable computers will be permitted until this privilege is abused.

In-Class Quizzes and Exams

- Written resources (i.e. textbook and printed notes) may be used during in-class quizzes; *electronic ones may not*. In-class quizzes may not be made up if absent, late or unprepared.
- On the other hand, the use of electronic devices is forbidden during in-class exams. Food and drink are also banned.
- Students who leave the room during an exam, or who use electronic devices during an exam, may not continue working on that exam.
- Make-up exams will be given only under extraordinary circumstances. Arrangements should be made prior to the exam and proof furnished.

Homework and Programming Assignments

- There will be no extra credit assignment or do-overs so don't even ask.
- Homework assignments and projects are to be submitted electronically in the manner specified in class. Submissions to my personal e-mail account will be ignored.
- Late assignments will be accepted but penalized according to the following scale: 10% penalty for one calendar day late, 25% for 2, 50% for 3, 75% for 4, and 100% (i.e. no credit) for 5 calendar days (i.e. one week) late. An exception will be made only for medical emergencies.
- All programming assignments must be completed within 10 calendar days of the original due dates to be eligible for a passing grade.
- All programming assignments will be graded according to how well they execute on the computers in CAS 241 or 254. It is your responsibility to check your work on our equipment prior to submission.
- All class assignments must be submitted by 5:00 PM on **Friday December 5**. Nothing will be accepted after this time.
- Students have one week from the return of a graded assignment (quiz, exam, homework or programming assignment) to seek corrections from me regarding grading; after that no changes will be made to scores.

DISCLAIMER: Save for changes that substantially affect implementation of the evaluation (grading) statement, this document is a guide for the course and is subject to change with advance notice.

SCHEDULE, HYBRID CPSC:505, FALL 2025

Day	Date			Agenda
1	**Monday**	**8/25/2025**	**Live**	**Administration and Introduction** **Lecture 2: Binary Addition**
2	Wednesday	8/27/2025	Remote	Lectures #1, 3-7; see below
	Monday	**9/1/2025**		**Labor Day, UA Closed**
3 4 5	Wednesday Monday Wednesday	9/3/2025 9/8/2025 9/10/2025	Remote	Lecture 1: Intro to Computers and Programming (27:18) Lecture 3: How Programs Work (18:36) Lecture 4: Software Development (22:32) Lecture 5: I/O and Processing (33:14) Lecture 6: Expressions (15:15) Lecture 7: Case Study (26:57)
6	**Monday**	**9/15/2025**	**Live**	**In-class Quiz #1**
7 8 9 10 11	Wednesday Monday Wednesday Monday Wednesday	9/17/2025 9/22/2025 9/24/2025 9/29/2025 10/1/2025	Remote	Lecture 8: Making Decisions (35:27) Lecture 9: Loops (25:01) Lecture 10: Principles of Software Quality (19:45) Lecture 11: Functions (29:09) Lecture 12: Arrays (18:22) Lecture 13: Structured Data (10:12) Lecture 14: Algorithm Analysis (36:45)
12	**Monday**	**10/6/2025**	**Live**	**In-class Quiz #2**
13 14 15 16	Wednesday Monday Wednesday Monday	10/8/2025 10/13/2025 10/15/2025 10/20/2025	Remote	Lecture 15: Intro to Computer Programming (33:26) Lecture 16: Searching and Sorting (30:34) Lecture 17: Recursion (27:26) Lecture 18: High- and Low-Level Languages (16:54)
17	**Wednesday**	**10/22/2025**	**Live**	**In-class Quiz #3**
18 19 20 21 22	Monday Wednesday Monday Wednesday Monday	10/27/2025 10/29/2025 11/3/2025 11/5/2025 11/10/2025	Remote	Lecture 19: Object-Oriented Software Development (30:21) Lecture 20: Exception Handling (15:14) Lecture 21: Dynamic Data Types (23:53) Lecture 22: Finite-State and Turing Machines (18:24) Lecture 23: Databases (25:46) Lecture 24: Data Manipulation (9:21) Lecture 25: Intro to Computer Systems (**1:05:54**)
23	**Wednesday**	**11/12/2025**	**Live**	**In-class Quiz #4**
24 25 26	Monday Wednesday Monday	11/17/2025 11/19/2025 11/24/2025	Remote	Lecture 25: Intro to Computer Systems (cont.) Lecture 26: Intro to Operating Systems (9:13) Lecture 27: Process Synchronization (17:54) Lecture 28: Networks (21:14) Lecture 29: Internet Architecture (32:22) Lecture 30: Protection and Security (35:37)
	Wednesday	**11/26/2025**		**Thanksgiving recess, no class**
27	Monday	12/1/2025	Remote	Lectures #25 – 30; see above
28	**Wednesday**	**12/3/2025**	**Live**	**In-class Quiz #5**
29	Monday	12/8/2025		Scheduled final exam time, 7:30 – 9:30 PM