



CHIPOLA COLLEGE

COURSE SYLLABUS

Chipola's website: www.chipola.edu

COURSE TITLE:

Introduction to Data Structures and Algorithms

COURSE NUMBER:

COP 2535

COURSE DESCRIPTION (with prerequisites):

This is the third course in computer programming. Topics will include standard data structures, such as lists, queues, stacks, trees, graphs; associated algorithms; and an introduction to algorithm analysis techniques. A comparison of pointer-based implementations and array-based implementations will be made. Prerequisite: COP 2224. Prerequisite may be waived by consent of department for students with previous appropriate coursework or work experience. Contact the course instructor for details. 3 semester hours credit

NAME(S) OF INSTRUCTORS:

As assigned

EFFECTIVE ACADEMIC YEAR:

2023-2024

REQUIRED TEXTBOOKS AND INSTRUCTIONAL MATERIALS:

No textbook or course materials are required to purchase for this course.

GRADING POLICY:

The standing of a student in each course is expressed by one of the following letters and corresponding grading system:

A – 90 – 100

B – 80 – 89

C – 70 – 79

D – 60 – 69

F – 59 or less

The Chipola Catalog provides policies and procedures regarding the grading system. A student's Grade Point Average is derived from the grading system/quality point scale.

ATTENDANCE AND WITHDRAWAL POLICIES:

Chipola College expects regular attendance of all students and for all instructors to record attendance daily. Students who are absent from classes for any reason other than official college activities must satisfy the instructor concerned that the absence was due to illness or other clearly unavoidable reasons. Otherwise, the student may suffer grade loss at the discretion of the instructor. Chipola policy allows each instructor to specify in the Instructor First

Day Handout whether or not an absence is excusable and what effect the absence or tardy may have on the grade.

A student is allowed to repeat a course a maximum of three (3) times. **On the third attempt a student (1) must bear the full cost of instruction (unless waived by Student Services), (2) cannot withdraw, and (3) must receive a grade.**

MAKE-UP POLICY:

Chipola allows each instructor to specify in the Instructor First Day Handout the makeup policy.

ACADEMIC HONOR CODE POLICY:

Students are expected to uphold the Academic Honor Code, which is based on the premise that each student has the responsibility to (1) uphold the highest standards of academic honesty in his/her own work; (2) refuse to tolerate academic dishonesty in the college community; and (3) foster a high sense of honor and social responsibility on the part of students. Further information regarding the Academic Honor Code may be found in the Chipola Catalog, Student Governance section.

STUDENTS WITH DISABILITIES POLICY:

Chipola College is committed to making all programs and facilities accessible to anyone with a disability. Chipola's goal is for students to obtain maximum benefit from their educational experience and to effectively transition into the college environment. Students with disabilities are requested to voluntarily contact the Office of Students with Disabilities to complete the intake process and determine their eligibility for reasonable accommodations.

NOTICE OF EQUAL ACCESS/EQUAL OPPORTUNITY AND NONDISCRIMINATION:

Chipola College does not discriminate against any persons, employees, students, applicants or others affiliated with the college in regards to race, color, religion, ethnicity, national origin, age, veteran's status, disability, gender, genetic information, marital status, pregnancy or any other protected class under applicable federal and state laws, in any college program, activity or employment.

Wendy Phippen, Associate Vice President of Human Resources, Equity Officer and Title IX Coordinator, 3094 Indian Circle, Marianna, FL 32446, Building A, Room 183C, 850-718-2269, pippenw@chipola.edu.

LIBRARY AND ON-LINE REFERENCE MATERIALS:

The library is a comprehensive learning resource center providing information in print, electronic, and multimedia format to support the educational objectives of the College. On-line catalogs, e-books, and electronic databases can be accessed through the Library Resources link within your course in Canvas or by using the *Search* icon on the Chipola Library website at www.chipola.edu/library. If you have questions about database usage, consult the "How to Use the Chipola Databases" on the Library website or call the Library at 850/718-2274 during regular hours. Library hours are posted each semester at the building entrance and on the Library website. See your Instructor First Day Handout for individual instructor recommendations and resources.

TECHNOLOGY RESOURCES:

The college's learning management system is **Canvas**. Classes become available on Canvas on the first day of the semester. It is the student's responsibility to log onto the Canvas system the first day of class to establish the first day of attendance and to check announcements. All official class communication must be through Canvas. For further information, contact your instructor or the Director of Learning Resources. The Canvas support hotline is available online in live chat and on the phone, toll-free, at 855-308-2812 for any issues utilizing Canvas. The **Technology Center**, located in the library, is equipped with computer workstations. Lab hours are posted each semester at the building entrance and on the Library website.

FREE TUTORING RESOURCES:

The Academic Center for Excellence (**ACE**) Lab, located in Building L, offers free tutoring from 8 a.m. to 5 p.m. and is equipped with computer workstations. ACE lab hours are posted each semester at the room entrance and on the website. Additionally, live online tutoring conferences and individual tutoring sessions are available for a variety of courses through ACE@Home. For a conference schedule or to schedule an individual appointment, visit "ACE Tutoring" in the left navigation from any course in Canvas.

ELECTRONIC DEVICE USAGE STATEMENT:

Classrooms should be free of all unnecessary distractions from the task of learning. Therefore, as a general rule, students should silence and avoid use of all electronic devices (laptops, phones, tablets, etc.) not being used for coursework. Consult first-day handouts for any specific policies related to the use of electronic devices in the classroom, as they may vary depending upon the nature of the course or the guidelines of the instructor. Faculty reserve the right to regulate the use of electronic devices and their accessories in class.

DISCIPLINE SPECIFIC COMPETENCIES / LEARNING OUTCOMES:

Associate in Science degree in Computer Information Technology Learning Outcomes:

- CIT-1 Understand, install, configure, monitor, use, and troubleshoot computer hardware and software. [1.0, 2.0, 3.0, 4.0, 6.0, IT Support 12.0, 13.0]
- CIT-2 Understand, install, configure, monitor, use, and troubleshoot network hardware and software. [8.0, 9.0]
- CIT-3 Demonstrate general computing workplace competencies, including employability skills, interpersonal & customer service skills, and user support skills. [11.0, IT Support 12.0, 13.0, 14.0, 15.0]
- CIT-4 Demonstrate project management skills. [10.0]
- CIT-5 Perform database management and design tasks. [7.0]

Associate in Science degree in Network Systems Technology Learning Outcomes:

- NST-1 Understand, install, configure, monitor, use, and/or troubleshoot computer hardware and software. [1.0, 3.0]
- NST-2 Understand, install, configure, monitor, use, and troubleshoot network hardware and software. [2.0, 4.0]
- NST-3 Demonstrate general computing workplace competencies, including

employability skills, interpersonal & customer service skills, and user support skills. [5.0, Server Admin 18.0]

NST-4 Demonstrate project management skills. [6.0] NST-5

Depends on Specialization:

- A) Server Administration (Program Code 2181): Demonstrate advanced understanding of networked environments and perform network administration activities. [Server Admin Specialization 7.0-8.0]
- B) Network/Cybersecurity (Program Code 2182): Demonstrate proficiency in securing networks and data, including performing penetration testing and responding to cybersecurity incidents. [Network/Cybersecurity Specialization 7.09.0]
- C) Digital Forensics (Program Code 2183): Demonstrate understanding of forensic casework procedures and perform computer and mobile device forensic investigations. [Digital Forensics Specialization 7.0-14.0]

Linking Course-level Student Learning Outcomes with Discipline-Specific Competencies, Assessment Methods, and Artifacts		
COURSE-LEVEL STUDENT LEARNING OUTCOMES FOR COP 2535	DISCIPLINE-SPECIFIC GENERAL EDUCATION COMPETENCIES	ASSESSMENT METHODS FOR COURSE LEVEL STUDENT LEARNING OUTCOMES (see Notes below)
<p>Upon successful completion of this course, the student will be able to:</p> <ul style="list-style-type: none"> • 1. Synthesize advanced C++ computer programming activities. • 2. Develop advanced C++ programming design activities. • 3. Formulate advanced C++ coding activities. • 4. Appraise advanced C++ testing activities. • 5. Evaluate advanced C++ implementation activities. • 6. Propose advanced C++ computer programming evaluation activities. • 7. Develop advanced C++ data file activities. • 8. Synthesize professional development activities. • 9. Formulate advanced organizational computing workplace competencies. 	<p>CIT-1, CIT-2, CIT-3, NST-1, NST-2, NST-3 CIT-1, CIT-2, CIT-3, NST-1, NST-2, NST-3 CIT-1, CIT-2, CIT-3, NST-1, NST-2, NST-3 CIT-1, CIT-2, CIT-3, NST-1, NST-2, NST-3 CIT-1, CIT-2, CIT-3, NST-1, NST-2, NST-3 CIT-1, CIT-2, CIT-3, NST-1, NST-2, NST-3 CIT-1, CIT-2, CIT-3, NST-1, NST-2, NST-3 CIT-1, CIT-2, CIT-3, NST-1, NST-2, NST-3</p>	<p>H, T, Q H, T, Q H, T, Q H, T, Q H, T, Q H, T, Q H, T, Q H, T, Q H, T, Q</p>

Notes: Assessment Codes

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|------------------------------------|-------------------------------|--------------------------|-----------------------------|
| BO - Behavioral Observation | CP - Case Plan | E - Essays | H - Homework |
| Cap Proj - Capstone Course | CS - Case Study | EX - Dept Exam | Intern - Internship |
| CF - Cumulative Final | DB - Discussion Board | Exp - Experiments | J - Jury |
| Clin - Clinicals | DE - Documented Essays | F - Final Exam | JP - Judged Perf/Exh |

Obs - Teacher Observ
OT - Objective Tests
Port - Portfolio
Prac - Practicum
Pre/ Post - Pre-/Post-Tests

Proj - Projects
PS - Problem Solving
Q - Quizzes
R - Recital
RP - Research Papers

RPT - Report/Presentation
SD - Skills Demonstration
SE - Natl or State
Standardized
Sk - Ck Skills Check-Off

SP - Skills Performance
T - Tests
UT - Unit Tests
W - Writing Assignments

MEANS OF ACCOMPLISHING STUDENT LEARNING OUTCOMES:

In-Person

The instructor will:

- Lecture and lead class discussions.
- Assign readings from textbooks and/or other sources to supplement lectures.
- Provide supplemental materials that align with the material presented in the textbook as appropriate.
- Design assignments, quizzes, discussions, etc., to help students engage with the course material.
- Use other teaching strategies to assist students in examining and understanding course materials as needed.
- Provide timely feedback on assignments.
- Hold weekly office hours to address questions and student needs outside of class time.

The students will:

- Attend class regularly and be attentive to lectures.
- Engage with class discussion.
- Participate in student discussion groups.
- Read assigned readings.
- Complete assignments, quizzes, discussion boards, etc., as assigned by the instructor.

Online

The instructor will:

- Lead class discussions.
- Assign textbook and/or other readings.
- Provide supplemental materials that align with the material presented in the textbook as appropriate.
- Design assignments, quizzes, discussions, etc., to help students engage with the course material.
- Use other teaching strategies to assist students in examining and understanding course materials as needed.
- Provide timely feedback on assignments.
- Hold weekly virtual office hours to address questions and student needs.

The students will:

- Engage with the course regularly.
- Engage with class discussions.
- Participate in student discussion groups.
- Read assigned readings.
- Complete assignments, quizzes, discussion boards, etc. as assigned by instructor. |

ASSIGNMENT AND/OR COURSE OUTLINE

The following topics will be covered in this course at the discretion of the instructor:

Searching, Sorting, and Algorithm Analysis

Pointers

Classes and Object-Oriented Programming

C-Strings and the string Class

Advanced File and I/o Operations

Recursion

Polymorphism and Virtual Functions

Exceptions, Templates, and the Standard Template Library

Linked Lists

Stacks and Queues

Binary Trees+

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See your Instructor First Day Handout for individual instructor assignment schedule.