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:
2018-19

REQUIRED TEXTBOOKS AND INSTRUCTIONAL MATERIALS:

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 all instructors 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 affect 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. Chipola College’s Honor Code 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 with regard 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 Pippen, Associate Vice President of Human Resources, Equity Officer and Title IX Coordinator, 3094 Indian Circle, Marianna, FL 32446, Building A, Room 183, 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 by using the LINCCWeb 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 eLearning. The Canvas support hotline is available online in live chat and on the phone, toll-free, at 855-3082812 for any issues in accessing or 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, Chipola College has contracted Smarthinking, a Pearson Company, for online tutoring services, accessible especially from 5 p.m. to 8 a.m. and weekends. Smarthinking can be accessed through 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

<table>
<thead>
<tr>
<th>COURSE-LEVEL STUDENT LEARNING OUTCOMES FOR COP 2535</th>
<th>DISCIPLINE-SPECIFIC GENERAL EDUCATION COMPETENCIES</th>
<th>ASSESSMENT METHODS FOR COURSE LEVEL STUDENT LEARNING OUTCOMES</th>
<th>LEARNING ARTIFACTS FOR AA PROGRAM ASSESSMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upon successful completion of this course, the student will be able to: 1. Perform data file activities. 2. Perform analysis activities. 3. Perform program design activities. 4. Perform coding activities. 5. Perform testing activities. 6. Perform implementation activities. 7. Perform evaluation activities. □ Perform database operations.</td>
<td>CIT-3 &amp; NIT-3</td>
<td>H or Proj. or Q or T</td>
<td>H or Proj. or T</td>
</tr>
</tbody>
</table>

CIT-3 & NIT-3
**Assessment Codes**

- **T** = Tests  
- **Pre/Post** = Pre- and Post-Tests  
- **OT** = Objective Tests  
- **Q** = Quizzes  
- **F** = Final Examination  
- **CF** = Cumulative Final  
- **EX** = Departmental Exam  
- **SE** = Nat’l or State Standardized Exam  
- **RPT** = Report/Presentation  
- **SP** = Skills Performance  
- **SD** = Skills Demonstration  
- **W** = Writing Assignments  
- **E** = Essays  
- **DE** = Documented Essays  
- **RP** = Research papers  
- **J** = Jury  
- **R** = Recital  
- **Proj.** = Projects  
- **Exp.** = Experiments  
- **Cap. Proj.** = Capstone Project  
- **Cap. Course** = Capstone Course  
- **Proj.** = Projects  
- **Exp.** = Experiments  
- **Cap. Proj.** = Capstone Project  
- **Cap. Course** = Capstone Course  
- **BO** = Behavioral Observation  
- **Clin.** = Clinicals  
- **CS** = Case Study  
- **CP** = Case Plan  
- **Port.** = Portfolio  
- **Obs.** = Teacher Observation  
- **Sk. Check** = Skills Check-off  
- **JP** = Judged  
- **Curriculum Frameworks**  
- **Proj.** = Projects  
- **Exp.** = Experiments  
- **Cap. Proj.** = Capstone Project  
- **Cap. Course** = Capstone Course  
- **RP** = Research papers  
- **J** = Jury  
- **R** = Recital  
- **H** = Homework  
- **PS** = Problem Solving  
- **DB** = Discussion Board  

**MEANS OF ACCOMPLISHING STUDENT LEARNING OUTCOMES:**

1. Attend and participate in class regularly.  
2. Read all assigned material before class.  
3. Study in-class notes and online (Canvas) materials.  
4. Complete assigned projects in a timely manner to enable reflections and revisions on the final product.  
5. Participate in discussions.  
6. Demonstrate your mastery of the required skills on quizzes, exams, etc.  
7. Complete all assignments with promptness and accuracy.  
8. All written documents as well as online assignments must be completed using correct grammar, spelling, and structure.

The grading breakdown is subject to change at the discretion of the instructor.  
Quizzes up to 40%  
Test (which includes Midterm and Final) up to 60%  
Assignments, Projects and/or Labs up to 40%  
Participation up to 20%

Please see your first day handout for individual instructor grading schemes.

**Academic Honesty:** Do not attempt to get assistance on exams from any other individual; or to complete assignments or gain answers for quiz questions or assignments dishonestly. Please refer to the *Chipola College Catalog* and the *Chipola College Student Handbook* for information on the Academic Honor Code and the Academic Honor Code – Consequences. Academic dishonesty includes but is not limited to plagiarism, cheating, and misrepresentation on assignments, quizzes and/or exams.

**ASSIGNMENT AND/OR COURSE OUTLINE**

The following topics will be covered 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+

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