CSCE 145 - Algorithmic Design I

- **Credit Hours**: 4 hours
- **Contact Hours:** 2 lecture hours and 2 two-hour labs
- **Instructor:** Dr. Jeremiah Shepherd
- **Required Textbooks:** Walter Savitch, *Java: An Introduction to Problem Solving and Programming*, 7th Edition. Prentice Hall, Inc., 2015. ISBN-13: 978-0133766264 ISBN-10: 0133766268.
- **Bulletin Description:** Problem-solving, algorithmic design, and programming.
- **Prerequisite or Corequisites**: MATH 111 or MATH 115
- **Required Course** in CE, CIS, and CS
- **Course Outcomes**: Students will be able to:
    1. Solve problems using a computer,
    2. Read and design algorithms,
    3. Design data structures,
    4. Demonstrate the ability to use a software development environment to construct, execute, test, and debug software,
    5. Demonstrate the ability to program a computer in a high-level language.

- **Student Outcomes addressed by course**

Program	Student Outcomes Addressed
Computer Engineering	2, 7
Computer Information Systems	2
Computer Science	2, 6

- **Topics covered:**
    1. Introduction to programming tools (1 hour)
    2. Primitive data types, including strings (4 hours)
    3. Flow of control (5 hours)
    4. Classes, methods, and encapsulation (7 hours)
    5. Method overloading and constructors (4 hours)
    6. Arrays (4 hours)
    7. Inheritance and polymorphism (6 hours)
    8. Exceptions and exception handling (4 hours)
    9. Input/output using streams and files (5 hours)
    10. Graphical user interfaces (4 hours)
    11. Applications such as robotics, digital signal processing, and website animation (7 hours)