Northwest Arkansas Community College

Business and Computer Information Systems Division

Discipline Code
PROG

Course Number
2204

Course Title
Programming Foundations II

Catalog Description
(S) This course is a continuation of PROG 1204 and develops problem solving techniques by focusing on fundamental data structures and associated algorithms. Topics include: abstract data types, object-oriented programming, linked lists, stacks, queues, hash tables, binary trees, recursion, and searching and sorting algorithms using C++. This course transfers to the University of Arkansas as CSCE 2014. (Outside lab time will be required.) Prerequisites: PROG 1204.

Prerequisites
PROG 1204

Credit Hours
4 Credit Hours

Contact hours
60 Lecture/Lab Contact Hours

Load hours
4 Load Hours

Semesters Offered
Spring

ACTS Equivalent
None

Grade Mode
A-F

Learning Outcomes

The student will:

- Select appropriate data structures to represent problems to be solve in programs.
- Design and implement programs using efficient data structures and algorithms.
- Utilize dynamic memory management to allow data structures grow with problem size.
- Evaluate recursive programs, understand recursive definitions, and apply recursion.
- Apply the outside (interface) and create an inside (implementation) view of a data structure class.
- Test and document moderately-size programs.

General Education Outcomes Supported

None

Standard Practices

Topics List

- Object Oriented Programming
- Big O notation
- Classes: design, creation, and use
- Use of Templates to create generic classes
- Complex manipulation of objects using Arrays, Linked Lists, Stacks, Queues, Trees and Graphs
- Manipulation of dynamically-created data structures using pointers

Learning activities

- Assignments and Projects
- This course requires some in class, hands-on work and also additional hands-on work in a virtual or on-campus computer lab.

Assessments

Homework, Projects, Quizzes, and Exams

Grading guidelines

- A = 90-100%
- B = 80-89%
- C = 70-79%
- D = 60-69%
- F = 0-59%

Last Revision Date: Spring 2022