CIS 269
Data Structures
Proposed Start: Fall 2015

Instructor's Name:

Office Location:

Office Hours:

Office Phone:

E-mail:

Course Description:
This course will cover advanced topics in data structures. Abstract data types include lists, pointers, stacks, queues, trees, and graphs. Recursion, memory management, and complexity analysis will also be covered in this course.

Illinois Articulation Initiative (IAI) number
Majors IAI Number(s): CS 912

Credit and Contact Hours:

  4 Lecture/Demonstration  
  _ Lab/Studio  
  4 Credit Hours

Prerequisite: CIS 246 or CIS 261 or consent of department and COMPASS placement into MATH 127 or higher level MATH course, or minimum grade of C in MATH 098.

Books, Supplies, and Supplementary Materials:

- Textbooks/Reading list
  Required
  Optional - None
• **Manuals/Study Guides**
  Required - None
  Optional - None

• **Periodicals**
  Required - None
  Optional - None

• **Software**
  Required - None
  Optional - None

• **Supplementary materials**
  - None

**Methods of Instruction:**

**Student Learning Outcomes:**

Course Content Outcomes
1. Apply the concept of Object-Oriented Programming in the programming assignments.
2. Use the complexity analysis in the program codes.
3. Implement programs using class objects with inheritance and polymorphism.
4. Create programs using linked lists and pointers.
5. Create programs using stacks and queues.
6. Create programs using trees, heaps, and graphs.
7. Apply the concept of recursion in creating the abstract data types.
8. Develop the memory management in the program design.

**General Education Student learning outcomes:**

Students will demonstrate an ability to think critically and analytically.
Students will demonstrate competence in using academic technology including finding, evaluating and utilizing appropriate information sources.

**Graded assignments and policies:**

**Graded Assignments**
- Projects: Students will be expected to develop large-scale programming projects.

**Grading policy**
- A = 90 - 100%, B = 80 - 89%, C = 70 - 79%, D = 60 - 69%, F =

**Major Tests and Quizzes**
- Quizzes, Midterm Exam and Exam

**Classroom Policies and Procedures**
A. General Information

B. Attendance Policy

C. Make-up Policy

D. Extra-credit Policy

E. Final Exam Information

F. Academic Honor Code
   The objective of the academic honor code is to sustain a learning-centered environment in which all students are expected to demonstrate integrity, honor, and responsibility, and recognize the importance of being accountable for one's academic behavior.

G. College Statement about grades of 'F' and withdrawal from class
   - Students may withdraw from a course by processing an add/drop form during regular office hours through the Registration and Records Office at Main Campus or Romeoville Campus, or by phone at 815-744-2200. Please note the withdrawal dates listed on your bill or student schedule. Every course has its own withdrawal date. Failure to withdraw properly may result in a failing grade of "F" in the course.
   - At any time prior to the deadline dates established, an instructor may withdraw a student from class because of poor attendance, poor academic performance or inappropriate academic behavior, such as, but not limited to, cheating or plagiarism.

H. Intellectual Property
   Students own and hold the copyright to the original work they produce in class. It is a widely accepted practice to use student work as part of the college's internal self-evaluation, assessment procedures, or other efforts to improve teaching and learning and in promoting programs and recruiting new students. If you do not wish your work to be used in this manner, please inform the instructor.

I. Student Code of Conduct
   Each student is responsible for reading and adhering to the Student Code of Conduct as stated in the college catalog.

J. Sexual Harassment
   Joliet Junior College seeks to foster a community environment in which all members respect and trust each other. In a community in which persons respect and trust each other, there is no place for sexual harassment. JJC has a strong policy prohibiting the sexual harassment of one member of the
college community by another. See Catalog or Student Handbook.

K. Student Support http://jjc.edu/services-for-students/pages/default.aspx
   a. Disability Services: http://jjc.edu/services-for-students/disability-services/Pages/default.aspx. Student Accommodations and Resources (STAR): If you need disability-related accommodations, specialized tutoring, or assistive technology in this class, if you have emergency medical information you wish to share with me, or if you need special arrangements in case the building must be evacuated, please inform me immediately. Please see me privately after class or at my office. New students should request accommodations and support by scheduling an appointment with the Student Accommodations and Resources (STAR) Office, Campus Center 1125, (815) 280-2230.
   b. Tutoring: http://jjc.edu/services-for-students
   c. Counseling and Advising: http://jjc.edu/services-for-students/counseling-advising
   d. Academic Resources: http://jjc.edu/services-for-students/academic-resources
   e. Support Programs: http://jjc.edu/services-for-students/support-programs-services
   f. Technology Support: http://jjc.edu/services-for-students/Pages/technology-support.aspx

L. Safety

M. College Documentation Styles

Course Outline
Week  Unit, Topic, Class Activity

(Indicate approximate time allotment for each topic/unit)
1  Applying the Object-Oriented Programming concept. (6.25%)
2  Integrating the Complexity Analysis and computing the Big-O. (6.25%)
3  Creating objects with inheritance. (6.25%)
4  Developing functions overloading and operator overloading with scope rules. (6.25%)
5  Applying polymorphism to class objects. (6.25%)
6  Storing and writing to data files (6.25%)
7  Implementing linked lists and pointers. (6.25%)
8  Developing doubly linked lists and circularly linked lists. (6.25%)
9  Creating stacks and queues. (6.25%)
10 Applying recursion with functions. (6.25%)
11 Creating binary trees and heaps. (6.25%)
12 Creating multiway trees. (6.25%)
13 Implementing ADT graphs. (6.25%)
14 Applying search and sort algorithms. (6.25%)
15 Implementing the Hashing. (6.25%)
16 Developing memory management with pointers. (6.25%)

Comprehensive Final Exam

Effective Date:
14-Aug-06

Signature of Department Chair:______________________________

CID: 3231