CS 153: Computer Science III

1. Course number and name: CS 153: Computer Science III
2. Credits and contact hours: 3.000 Credit Hours, 3.000 Lecture hours
3. Instructor or course coordinator: Bradley Kjell
4. Text book, title, author, and year
   a. other supplemental materials
      o Supplementary material is available online:
        [http://chortle.ccsu.edu/CPuzzles/CpuzzlesMain.html](http://chortle.ccsu.edu/CPuzzles/CpuzzlesMain.html).
      o The course uses Blackboard/Vista for course notes, programming exercises, quizzes, grade book, and sample programs.
5. Specific course information
   a. brief description of the content of the course (Catalog Description):
   b. prerequisites or co-requisites: CS 152
   c. indicate whether a required, elective, or selected elective course in the program: Required
6. Specific goals for the course
   a. specific outcomes of instruction, ex. The student will be able to explain the significance of current research about a particular topic.

   The course prepares the student for upper level courses where intermediate programming skills are needed. Students who complete this course will be able to:
   
   • write medium sized programs using all features of ANSI C
   • use common functions in the standard, math, and I/O libraries
   • create projects composed of several source files, header files, and libraries
   • use memory allocation and pointers to create fundamental data structures such as linked lists, queues, and trees
   • implement basic algorithms such as searching and sorting and understand basic algorithm analysis
   • understand basic imagery and use PGM and PPM image formats
b. Explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course.

The department’s outcomes (a) an ability to apply knowledge of computing and mathematics, (b) an ability to analyze a problem, (c) an ability to design, implement, and evaluate a computer-based system, (d) an ability to function effectively on teams (i) an ability to use current techniques, (j) an ability to apply mathematical foundations and (k) an ability to apply design, and (h) recognition of the need for professional development are supported in the course outcomes.

7. Brief list of topics covered

- ANSI C statements and control structures
- Scope, linkage, and storage class
- Arrays, structs, strings, and dynamic memory allocation
- Standard I/O
- Basic Imagery, PPM and PGM image structures, basic image processing
- Classic Abstract Data types: sets, lists, trees, graphs
- Implementation of lists and trees in C
- Contemporary professional issues

8. Expected Performance Criteria

Students will write weekly C programs of increasing complexity. At least one assignment will be a large project where different parts of the project are done by different students. Students will utilize dynamic memory allocation to create dynamic data structures. Understanding of professional issues and algorithm analysis will be demonstrated in written answers to questions on tests and in classroom discussion of articles from ACM and IEEE publications.