1. **Course number and name**
   CptS 233: Advanced Data Structures Java

2. **Credits and contact hours**
   3 credits, 3 lecture hours

3. **Instructor’s or course coordinator’s name**
   Bolong Zeng

4. **Textbook, title, author, and year**

5. **Specific course information**
   a. **Catalog description:** Advanced data structures, object oriented programming concepts, concurrency, and program design principles taught in C/C++ programming language.
   b. **Prerequisites or corequisites:** C or above in CPT_S 132; MATH 216 (concurrent enrollment OK)

6. **Specific goals for the course**
   At the end of
   - Analyze and compare a variety of data structures. (1b, 1c, 1d, 6b, 6c, 6d)
   - Design efficient algorithms. (6a, 6b, 6c, 6d)
   - Apply the knowledge gained in the class in order to solve real-world problems using different data structures and design techniques. (1a, 1b, 1c, 1d, 1e, 6a, 6b, 6c, 6d)
   - Implement these solutions in Java and using Git for version control (7b, 7c, 7d, 7g)

7. **Brief list of topics to be covered**
   - Using version control tools.
   - Algorithm complexity
   - Data structures and algorithms:
     - Hashtable
     - Tree: BST, AVL, Red-Black, B+, Huffman
     - Heap
     - Sorting
     - Graph