Based on ABET ETAC Student Learning Outcomes

1. **Course Number and Name:**
   CSET 3150 Introduction to Algorithms
2. **Credits and Contact hours:**
   Credits: 4 hours, Contact: 3 lecture hours; 1 lab hour
3. **Instructor's or course coordinator's name:**
   Weiqing Sun
4. **Text book, title, author, and year:**
   Introduction the Algorithms, 4th Edition, Thomas H. Gorman, 2022
   a. **Other supplemental materials:**
      - Various web references assigned by the instructor
      - "Data Structures and Algorithm Analysis in C++," 4th Edition, Mark Alan Weiss, Addison-Wesley, ISBN 0-321-37531-9
      - "C++ Primer Plus," 5th Edition, Stephen Prata, Sams. October 2011 ISBN-13 978-0321776402
5. **Specific Course Information:**
   a. **Brief description of the content of the course (catalog description):**
      This course covers object oriented programming and advanced algorithms. Topic includes C++ and OO concepts, algorithms and data structures as implemented in the C++ and Java programming languages. The final project is implemented in Java. This course is programming intensive and lays a firm foundation for student's OO programming skills.
   b. **Pre-requisites, or co-requisites:**
      EET 2230
6. **Specific goals for the course:**
   a. **Specific outcomes of instruction:**
      1. Be able to find an algorithm to solve the problem,
      2. Be able prove that the algorithm solves the problem correctly,
      3. Be able to prove that we cannot solve the problem any faster,
      4. Be able to implement the algorithm
   b. **Explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course: 1, 3**
      1. An ability to apply knowledge, techniques, skills, and modern tools of mathematics, science, engineering, and technology to solve broadly defined engineering problems appropriate to the discipline.
      3. An ability to apply written, oral, and graphical communication in broadly defined technical and non-technical environments; and an ability to identify and use appropriate technical literature.
7. **Brief list of topics to be covered:**
   1. Introduction

2. Introduction to Sorting Algorithms

3. Asymptotic notation

4. Recurrences

5. More on Sorting Algorithms (chapters 6-9)

6. Searching Algorithms (chapters 11-13)

7. Selection Algorithms

8. Advanced Data Structures

9. Dynamic Programming

10. Greedy Algorithms

11. Graph Algorithms (chapters 22-25)

12. String matching

13. NP-Complete Problems.