**Department of Mathematics and Computer Science**

**College of Health, Science, and Technology**

**University of Central Missouri**

**Course Syllabus**

**CS 5300-Advanced Algorithms**

**Course:** CS 5300 **Instructor:** Dr. Mahmoud Yousef **Office:** MIC D159 & WCM 217 **Phone Number:** 543-8892

**Office Hours:** 10:30 - 12:00 MW (WCM 217), 11:15 – 12:15 T & 2:15 – 3:15 R (D159) and by appointment

**Email:** [yousef@ucmo.edu](mailto:yousef@ucmo.edu)

**Meeting Time:** 11:30 -2:10 S D251 **Delivery Format:** Face to Face

**Textbook:** 1.Foundations of Algorithms, Fifth Edition, Richard E. Neapolitan, Jones & Bartlett Learning 2015

2. Introduction to Algorithms 3nd edition, by Cormen, Leiserson, Rivest, and Stein,

McGraw Hill, 2009.

**Objectives and Desired Student Competencies:** Upon completion of this course the student should be able to:

* Analyze worst-case and average-case running times of algorithms using asymptotic analysis.
* Derive and solve recurrences describing the performance of divide-and-conquer algorithms.
* Describe and analyze dynamic-programming algorithms.
* Describe and analyze greedy algorithms.
* Describe and analyze backtracking algorithms.
* Explain the major graph algorithms and their analyses.
* Compare algorithms using established analysis techniques
* Understand the notions of class P and class NP problems

**Students Learning Outcomes:**

* Apply algorithmic principles and computing theories to solve advanced problems in Computer Science.
* Apply design and development principles in construction of computer-based systems of varying complexity.

**Prerequisite:** CS 4300 or consent of the instructor

**Tests (225 pts.):**There will be two tests, a midterm, and a comprehensive final. The midterm is worth 100 points, and it will be on October 21, 2017.  The final exam is worth 125 points, and it will be held on Saturday, December 9, 2017. Make-up tests will be given only for absences determined by the instructor to be acceptable. Scheduling of the make-up test is the student’s responsibility.

**Quizzes (100 pts.):** Quizzes will be given throughout the semester. All of the quizzes will be worth 100 points. **NO MAKE UP FOR QUIZZES.**

**Grading Scale:** The grading scale is as follows:

A: 90%-100%, B: 80%-89.9%, C: 70%-79.9%, D: 60%-69.9%, F: 0%-59.9%

***Accessibility***

Students with documented disabilities who are seeking academic accommodations should contact the Office of Accessibility Services, Union 220, (V)(TTY) 660-543-4421.

**Academic Dishonesty Policy:** <http://www.ucmo.edu/student/documents/honest.pdf>