Mississippi Valley State University
Mathematics, Computer & Information Sciences
Itta Bena, Mississippi 38941

Course Syllabus – Fall 2018

Course Number: CS 323 **Meeting Times:** MWF: 10:00 – 10:50
Course Title: Intro to Algorithms **Credit Hours:** 3 Semester Hours
Course Instructor: Dr. Qiang He **Course Coordinator:** Dr. Qiang He
Email: qianghe@mvsu.edu **Website:** http://bluebird.mvsu.edu/~qianghe/
Office: BEB404 **Classroom**: CRB 207
Office Tel #: (662) 254-8367

Catalog Description: Study of the design and analysis of algorithms and data structures. The topics include analysis techniques, sorting, searching, advanced data structures, graphs and string matching.

Course Prerequisites: CS 205

Textbook(s) and other Required Materials:
Algorithm Design, Jon Kleinberg and éva Tardos
Publisher: Pearson; 1 edition (March 26, 2005)
ISBN-10: 0321295358 ISBN-13: 978-0321295354

Program Outcomes:

1.1 Demonstrate proficiency in the design of software
1.2 Demonstrate proficiency in the implementation of software based on software design
1.3 Analyze algorithms to determine the most efficient implementation
3.1 Use CS, MA and science principles and computing practices to analyze and solve a computer science problem.
3.2 Demonstrate an understanding of mathematics and natural science

Course Outcomes:
Student will be able to:

1. Apply the basic techniques for algorithm analysis.
2. Use, compare and analyze graph algorithms.
3. Use, compare and analyze search algorithms.
4. Apply algorithmic techniques such as divide and conquer, brute force, greedy, dynamic programming and backtracking.
5. Compare and analyze different parallel algorithms.
6. Develop and test solutions to the problems using a high level programming.

Course Outcomes Mapped to Program Outcomes												
Course Title												
Course Outcomes	P0 1.1	PO 1.2	PO 1.3	PO 1.4	PO 2.1	PO 2.2	PO 2.3	PO 2.4	PO 3.1	PO 3.2	PO 4.1	PO 4.2
1	x	x	x						x	x		
2	x	x	x						x	x		
3	x	x	x						x	x		
4	x	x	x						x	x		
5	x	x	x						x	x		
6	x	x	x						x	x		

Prerequisite by Topic:
Arrays, pointers, object-oriented programming concepts, sorting algorithms, searching algorithms, recursion, basic analysis of algorithm topics

Major Topics Covered in Course:

Algorithmic basics	½ week
Analysis of algorithms	½ week
Review of data structures	1 week
Searching	1 week
Sorting	1 week
Graphs	1 ½ weeks
Text Searching	2 weeks
Balanced Trees	1 week
Brute Force	1 week
Divide and conquer	1 ½ weeks
Greedy algorithms	2 weeks
Dynamic Programming	2 weeks

Laboratory Projects: Students will be required to write programs that will touch all major topics covered in course. Some of the laboratory projects will include multiple topics when topics can be combined.

Estimated CSAB Category Content		
	Core	Advanced
Data Structures	0	1
Algorithms	0	2
Computer Organization & Architecture	0	0
Concepts of Programming Languages	0	0
Software Design	0	0

Oral and Written Communications:
None

Social and Ethical Issues:
None

Theoretical Content:
Algorithm design and object oriented design

Problem Analysis & Solution Design: Students will be given problem descriptions in which they have to come up with a correct design. They will also compare designs with known designs and determine most efficient.

Grading Scale:		**Course Evaluation:**	
90-100	A	Assignments	30%
80-89	B	Exams	20%
70-79	C	Midterm Exam	20%
60-69	D	Final Exam	20%
59- below	F	Paper	10%

Attendance Policy: Attendance and participation is required!

Late/Missed Assignments: Students absent for any reason whatsoever are expected to do the full work of the course, and are responsible to the instructor for work missed through late registration, illness, or any other cause. The instructor is not obligated to give any make-up work. Students absent from class for an extended period due to illness, family tragedy, or other legitimate reasons are to file appropriate documentation with the Dean of Students. When students must be absent from class, they are required to make arrangements satisfactory to the instructor with regard to work missed. When students know in advance that they will be absent from class, instructors should be notified and arrangements made to secure assignments. Each student must present a valid excuse for absences for which they wish to receive makeup work. ***If*** any work is accepted late, a 10% per day penalty will be assessed. Exams missed with an excused absence will be allowed to make up with special arrangements.

Student with Special Needs: Mississippi Valley State University is committed to providing reasonable accommodations for students with a documented disability. If you feel you are eligible to receive accommodations for a covered disability (medical, physical, psychiatric, learning, vision, hearing, etc.) and would like to request it for this course, you must be registered with the Services for Students with Disabilities (SSD) program administered by University College. It is recommended that you visit the Disabilities Office located inside the EMAP Computer Lab in the Technical Education (IT) Building to register for the program at the beginning of each semester.
For more information or to schedule an appointment, please contact Mr. Billy Benson, Jr. via phone or email at 662-254-3005 or billy.benson@mvsu.edu.

I reserve the right to make changes on this syllabus as needed. This document does not constitute a contract with the University. It contains guidelines.