Syllabus: CSE 2813-02/H02, Discrete Structures, Fall 2014

Instructor	**Course, Time and Location**
Tanmay Bhowmik (Ph.D Candidate)	CSE 2813
Email: tb394@msstate.edu	Section 02/H02
bhowmikt@gmail.com	M W 02:00pm - 03:15pm
Office: Butler 325	Butler 103
Office Hours: MW, 3:30 pm - 5:00 pm.	
Other hours by appointment.	**Course Page**
	https://mycourses.msstate.edu/

Course Prerequisites
Grade of C or better in CSE 1284 (Introduction to Computer Programming) and MA 1313 (College Algebra) or equivalent.

Description
Three class hours lecture. Concepts of algorithms, induction, recursion, proofs, topics from logic, set theory, combinatorics, and graph theory fundamental to the study of computer science.

Course Objectives
- To develop students' mathematical reasoning, including formal logic and proofs.
- To provide students with the basic tools to compare relative efficiency of algorithms.
- To develop the basis for combinatorial analysis.
- To develop students' ability to manipulate abstract structures such as sets, graphs, trees, relations and functions.
- To introduce the mathematics of recurrences.

Required Text
- ***Discrete Mathematics and Its Applications*, Kenneth H. Rosen,** 6th/7th Edition, McGraw-Hill Book Company, 2007.
- Rosen, K., Discrete Mathematics and Its Application-Student Solution Guide, 6th/7th Edition.

Grading

Grading Scale	**Grading Activities**
90% - 100% A	Midterm I: 20%
80% - 89% B	Midterm II: 20%
65% - 79% C	Final Exam: 25%
50% - 64% D	Homework: 20%
0% - 49% F	Quizzes: 10%
	Class Participation: 5%
	Extra Credit: 1% - 5%

Note: Grading is on a 100-point scale. Students enrolled in the honors section need to complete a programming project which is discussed shortly.

Exams
- 2 in-class midterm exams during the semester.
- Mandatory final exam will be comprehensive, and will be given during the scheduled final exam time.

Homework
- Should be turned in as **hard copy.** Could be hand written.
- **Due at the beginning of the class** (2:00 pm) on the due date.
- Will be graded for effort and completeness, not exactly correctness (although best effort is expected)
- Working on the homework during the class lecture is not appreciated.
- Late turn-ins will receive a 10 point penalty for each calendar date. (For example, let a homework is due on Sep 17at 2:00 pm. The homework turned in after that time that day will receive a 10 point penalty, 20 point penalty if turned in on the next day, and so on).
- The due dates are detailed in the course calendar (also the last section of this syllabus)

Quizzes
- Will be given weekly (please see the course calendar for details).
- All quizzes will be announced (no pop-quizzes).
- Will cover the topics discussed in the last two classes.
- Short in-class quizzes (10 min) at the beginning of the class.
- At least 10 quizzes will be given. If 11+, the lowest grade will be dropped. If 12+, the two lowest grades will be dropped.

Class Participation
- Grade will be calculated as $g = 5*(n – a)/n$, where g is the class participation grade, n is the number of days on which attendance is taken, and a is the number of absences.
- Although attendance will be taken on most days, it may not be taken every day.
- If you are absent and do not want the absence to affect your class participation grade, discuss the absence with me. If the cause of absence seems reasonable (e.g., Legitimate emergency, medical, and university approved absences), then I will reduce n for you by one, which means that the absence will not affect your class participation grade.

Extra Credit
- Points may be available throughout the semester with homework and exams in the form of bonus questions.
- All extra credit opportunities will be open to everyone.

Honors Credit

Enrollment: Students taking the class for honors credit will have to enroll in the honors sections. After the last day to add a class, a student enrolled in an honors section cannot change to a non-honors section and vice-versa.

Honors Project: Students enrolled in the honors section will have to complete an independent programming project in addition to the regular class work. I must approve the project before the work commences, so please talk to me first. The textbook suggests many interesting projects. The course calendar details specific deadlines for the honors project.

Honors Project Grading: For the honors students, the honors project will count for 10% of the overall grade, while the remaining 90% of the grade will be calculated as described above. Note that failing to submit an honors project will result in a grade of 0 for the honors portion of the grade, which may drop the overall average by a letter grade. The grading policy for the honors project is as follows: 2% for project selection, 3% for project progress, and 5% for the complete project with final report. Please see the course calendar for the specific deadlines.

Missed Exams (Midterms)

Occasionally students miss examinations. Sometimes the student knows about these absences in advance, and sometimes they happen unexpectedly.

- If you know in advance that you will be absent during an exam, then you must meet with the instructor before the date of the exam and discuss the cause of the absence. If the cause seems reasonable (e.g., Legitimate emergency, medical, and university approved absences), then the absence will be excused and arrangements will be made for you to take the exam early.
- If you miss an exam unexpectedly and wish to have the absence considered excused, then you must meet with the instructor at the earliest opportunity possible after the absence, and provide documentation to support your claim that the absence should be considered excused. If the absence is excused, arrangements will be made for you to take the exam on some other date.
- Exams missed with an excused absence will be dealt with on an individual basis.

For unexcused absences from examinations you will unfortunately receive a score of zero points.

Missed Quizzes

As same as "Missed Exams".

Grading and Appeals

If you disagree with a grade, you need to discuss the grade with me and provide me with a written appeal. If no written appeal is provided, I generally won't make a decision regarding the grade based only on a discussion.

Grade of Incomplete (I)

Following MSU policy, incomplete grades may only be given in extreme circumstances, such as illness, death in a student's immediate family, or similar circumstances beyond a student's control.

Class Conduct

Interaction with a Professional Manner: All students are expected to conduct themselves in a professional manner. This includes, but not limited to, avoiding the use of language, dress, electronics that may pose a distraction to fellow students.

Personal Electronic Devices: Laptops and other electronic devices are allowed but should be used in a responsible manner that does not interfere with the lecture or other students' ability to learn. Cellular phones, pagers, Walkmans, Gameboys, mp3 players, PSP's, and other electronic devices that produce auditory stimuli should be turned off or silenced during the classes and exams.

No Food or Drinks in Class: It is the CSE department's policy that you can't eat or dink in Butler hall classrooms

Class Information

Every student will be required to use his/her official MSU email: netid@msstate.edu, in order to receive class announcements made outside of class. **Students will be responsible for any instructions sent by e-mail more than 24 hours in advance.** Students will also be responsible for checking the MyCourses course page for assignments and announcements.

Academic Honesty and Misconduct

In this course, students are expected to uphold the Mississippi State University Honor Code:
"As a Mississippi State University student I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do."
Upon accepting admission to Mississippi State University, a student immediately assumes a commitment to uphold the Honor Code, to accept responsibility for learning, and to follow the philosophy and rules of the Honor Code. Students will be required to state their commitment on examinations, research papers, and other academic work. Ignorance of the rules does not exclude any member of the MSU community from the requirements or the processes of the Honor Code.

Students are also expected to maintain the standards of academic honesty that are described in the CSE Department's Undergraduate Studies Academic Honesty Policy.
- Please Do Not cheat on a quiz or exam.
- Please Do Not turn in someone else's work, on a programming assignment or any other type of assignment, as if it were your own.

These are important policies. Not only will violators fail to learn the course material, but violators will receive an XF in this course, and will otherwise be handled according the CSE Department's Undergraduate or Graduate Studies Academic Honesty Policies, as well as the Academic Operating Policy and Procedure of Mississippi State University.

As the course instructor, I am required to report all incidents of academic misconduct.

Add/Drop Policy

This class follows Mississippi State University's Official Drop/Add Policy:

Add/drop without penalty: A student has through the fifth class day into the semester to add a course and through the tenth class day to drop a course without being assessed a fee or academic penalty.

Drop after the tenth class day through the 30th class day into the semester: A student who elects to drop a course during this period must receive the approval of his/her advisor, will be assigned a W on his/her academic record, and be assessed a fee. The advisor who permits the drop will specify its effective date.

Drop after the 30th class day into the semester: A student cannot drop courses after this period except in documented cases of serious illness, extreme hardship, or failure of the instructor to provide significant assessment of his/her performance. A request to drop a course during this period must be approved by the student's advisor and academic dean. The dean who permits the drop will specify its effective date. A student receiving permission to drop will receive a W on his/her academic record and be assessed a fee.

Faculty are expected to provide a student with significant evidence or assessment of his/her class performance within the first 30 days of the semester.

Right to Change

I reserve the right to change the course policies or schedule in order to facilitate instructions. Any such changes will be discussed in class and will be announced in a timely manner.

Detailed Course Calendar

All dates are tentative except the final exam date. **The instructor may adjust the schedule as the semester progresses.**

Week	Class Date	Events	Lecture Topics and Reading Assignments (6th/7th Ed of the text book)
1	Mon, Aug 18		Class Overview
	Wed, Aug 20		1.1 Propositional Logic
2	Mon, Aug 25	*No class - Tanmay out of town*	1.2/1.3 Propositional Equivalences
	Wed, Aug 27	*Taught by Dr. Song Zhang – Tanmay out of town*	
3	Mon, Sep 1	*No class – Labor day*	1.3/1.4 Predicates and Quantifiers 1.4/1.5 Nested Quantifiers 1.5/1.6 Rules of Inference 1.6/1.7 Introduction to Proofs

1.7/1.8 Proof Methods and Strategies |
	Wed, Sep 3	**Quiz 1** **Posted – Homework 1**	
4	Mon, Sep 8	**Quiz 2**	
	Wed, Sep 10	**Due – Homework 1** **Due on Thursday, Sep 11, 2014 (By 5:00 PM)**	
5	Mon, Sep 15	**Quiz 3**	
	Wed, Sep 17	**Posted – Homework 2**	2.1 Sets 2.2 Set Operations 2.3 Functions 2.4 Sequences and Summations
6	Mon, Sep 22	**Quiz 4**	
	Wed, Sep 24	**Due – Homework 2**	
7	Mon, Sep 29	**Quiz 5** **Due - Honors Project Proposal**	
	Wed, Oct 1	**Midterm I**	
8	Mon, Oct 6	**Quiz 6**	3.1 Algorithms 3.2 Growth of Functions 3.3 Complexity of Algorithms

3.4/(4.1+4.2) Integers and Division *3.5/4.3 Primes and Greatest Common Divisors* |
	Wed, Oct 8	**Posted – Homework 3**	
9	Mon, Oct 13	**Quiz 7**	
	Wed, Oct 15	**Due – Homework 3**	
10	Mon, Oct 20	**Quiz 8**	4.1/5.1 Mathematical Induction 4.2/5.2 Strong Induction 4.3/5.3 Recursive Definitions and Structural Induction
	Wed, Oct 22	**Posted – Homework 4**	
11	Mon, Oct 27	**Quiz 9**	
	Wed, Oct 29	**Due – Homework 4**	5.1/6.1 The Basics of Counting
12	Mon, Nov 3	**Quiz 10**	5.2/6.2 The Pigeonhole Principle

	Wed, Nov 5	**Midterm II**	5.3/6.3 Permutations and Combinations *5.4/6.4 Binomial Coefficients and Identities*
13	Mon, Nov 10	**Quiz 11**	7.1/8.1 Recurrence Relations, Tower of Hanoi *7.2/8.2 Solving Linear Recurrence Relations* 8.1/9.1 Relations and Their Properties 8.3/9.3 Representing Relations *8.4/9.4 Closures of Relations* *8.5/9.5 Equivalence Relations* *8.6/9.6 Partial Orderings*
	Wed, Nov 12	**Due – Honors Project Progress** **Posted – Homework 5**	
14	Mon, Nov 17	**Quiz 12**	9.1/10.1 Introduction to Graphs 9.2/10.2 Graph Terminology
	Wed, Nov 19	**Due – Homework 5**	
15	Mon, Nov 24	**Posted – Homework 6**	9.3/10.3 Representing Graphs and Graph Isomorphism *9.4/10.4 Connectivity* *9.5/10.5 Euler and Hamilton Paths* *9.7/10.6 Planar Graphs* *9.8/10.7 Graph Coloring*
	Wed, Nov 26	*No class – Thanksgiving holiday*	
16	Mon, Dec 1	**Quiz 13** **Due – Homework 6** Last class. Regular class will not meet after this point.	*10.1/11.1 Introduction to Trees*
	Wed, Dec 3	**Due - Complete Honors Project with report**	
	Tues, Dec 9 3:00 pm - 6:00 pm	**Final Exam** in Butler 103	

Some Other Important Dates
Fri, Aug 22: Last day to drop without a grade.

MSU Academic Calendar
http://www.registrar.msstate.edu/Calendars/calfall14.pdf

Fall 2014 Examination Schedule
http://www.registrar.msstate.edu/Files/Student%20Files/Exam%20Schedule/Fall%202014%20Exam%20Schedule.pdf