Computer Science Department
cs.salemstate.edu

SYLLABUS **Summer II, 2016**

MAT214A Discrete Structures **4.0 cr. [DII]**
Prerequisites: MAT210 or MAT220.

Instructor: Beifang Yi **Office**: MH 211A **Phone**: (978) 542-7246
email: byi@salemstate.edu **Hours**: M & W (6:00pm-6:30pm) **WebSite**: http://cs.salemstate.edu/~byi/
M & W (10:00pm-10:30pm)

Section	Time	Room	Final Exam
21	M/W 6:30-10:00pm	MH 206	**Wednesday 8/17, 8:00pm-10:00pm MH206**

Catalog description:
A study of discrete mathematical structures of interest in computer science and other applied fields. Topics will be chosen from logic, proof techniques, sets, Boolean algebra, functions, relations, basics of counting, recursion, graphs, trees, and discrete probability. Four lecture hours per week. Not open to students who have received credit for either MAT214 or MAT 314.
Prerequisites: MAT210 or MAT220.

Global Goals:
This course is intended to:
- develop students' ability to think abstractly, use logically valid forms of argument, avoid common logical errors and understand what it means to reason from definitions.
- expose students to a variety of discrete structures that appear frequently throughout mathematics.
- provide students with a familiarity with the fundamental notions of set, function, logical consequence and proof.
- gain experience using counting techniques appropriate to discrete structures.
- obtain an ability to identify discrete structures in everyday life.
- become able to apply the concepts and techniques studied to practical problems

Learning Objectives:
Upon successful completion of the course, a student will be able to do the following:
- identify the logical structure of statements.
- determine the truth value of compound mathematical statements given the truth values of the components by using a truth table.
- determine the logical relation (implication, equivalence, contrapositive, negation, etc.) between two mathematical statements.
- write valid mathematical proofs, using a variety of proof techniques including mathematical induction.
- use permutations, combinations and the multiplication principle of counting to formulate and solve counting problems.
- define sequences recursively and solve simple recurrence relations.
- express relations and functions as sets.
- use the abstract notion of function to describe relationships.
- identify relations as functions, one-to-one functions and onto functions.
- Be able to use the order notation to discuss the efficiency of algorithms.
- use standard Boolean operations to describe sets.
- solve basic problems on graphs and networks.
- be able to find the minimal spanning tree of a weighted graph.
- be able to find Euler and Hamiltonian paths and circuits for some graphs.

Course Topics

A detailed topics list can be found from course schedule copy given in the class and on the instructor's homepage (http://cs.salemstate.edu/~byi/ and through the link to this class, i.e., MAT214A).

Text:

(Required) Discrete Mathematics with Applications, 4th Edition, by Susanna S. Epp. Cengage Learning, 2011 (ISBN: 978-0-495-39132-6).

Additional references:

- Course website: http://cs.salemstate.edu/~byi/MAT214A/.

Cell phones:

Turn the ringer off, or, better yet, *turn the phone off*.

Lecture Attendance:

Class policy is that of the Registrar's office - see the University catalog for details. Lecture will start promptly at the scheduled time, so please make a serious effort to not be late. While class attendance does not *directly* affect your final grade, some of the material covered in class is not found (in the same form) in the text, so class attendance and notes are very important. Note that you are at all times responsible for materials and assignments discussed in class: if you miss a class, try to get lecture notes from a classmate and review them *before* the next lecture. We will use SSU's online course management system, **Canvas** (https://elearning.salemstate.edu) to post assignments, quiz grades, and announcements regarding the course topics and progress. You will need to visit Canvas (with your SSU Navigator use-name and password) for the course activities. Canvas uses your SSU-stored email box for the communication between you and the instructor and thus you must use that email address. Each student is responsible for completing all course requirements and for keeping up with all that goes on in the course.

Whether you come to class on time or not, **reading of the topics before** their presentation in the class is very important to your success in this course!

Final Grade:

Final grade will be determined using the following grading weights:

	Grade-A	Grade-B	Grade-C
assignments	15%	0%	0%
quizzes	40%	55%	0%
final examination	45%	45%	100%
semester overall final grade	Max (Grade-A, Grade-B, Grade-C)		

Attendance is not used to calculate the final grade: however, note that you are at all times responsible for assignments and materials presented in class. Please note that **Grade-A** from the above table gives the **easiest** way of earning higher grade.

Assignments/Quizzes:

Homework will be assigned for each section/topic covered in the class. The problems pertaining to a section/topic completed during a given class will be due at the start of the next Class when usually the solutions will be given in the class. You can work on the problems freely with others from class, unless it is for an assignment to be turned in and you are instructed to work alone. For the most part, *homework will be evaluated through quizzes*. These will cover material on any sections/topics that we have completed by the end of the *previous* class.

Your grades of these assignments (not the quizzes) will be mostly based on how much you have completed the homework rather than the correctness of your solutions. The quiz questions will be mostly like the assignment questions and thus your quiz grades will give a very accurate evaluation of your understanding of the course topics and performance on both the quizzes and assignments. Please check the grading table above on how to calculate your overall final grade and also refer the penalty policy for late submissions below (i.e., Due Dates/Time).

Exams/Quizzes:

There will be one *comprehensive* final examination and several quizzes. Check the table under Final Grade above for these test grading weights and times.

Quizzes will be held in class hours. There will be about 5 in-class quizzes and 5 take-home quizzes to be held in the semester (one or two quizzes with the lowest grades will not be used to calculate the final grading/scoring).

Missed Tests:

Tests (the final exam and quizzes) may not be made up except for *documented emergency* situations. If a test must be made up, arrangements must be made with the instructor to take the test before it is discussed in class (usually within a week of the test being administered).

Due Dates/Time:

- **There will be a 30% penalty for each week an assignment (lab/project/short-answer exercise) is late**; penalties accrue at the due time of the assigned due date (any assignments being submitted later will be considered "being late at least one week", that is, one week late is defined as Day 1 after submission deadline, up to and to including Day 7; ***n***-weeks-late can be counted in the same way.).
- **No assignments will be received after the final examination**.

Study Groups:

While I strongly encourage study groups, I require that each student hand in his/her answers in her/his own words - if two answers are highly similar to each other (particularly both have very similar errors), neither will receive credit. .

Academic Integrity:

Academic Integrity Policy and Regulations can be found in the University Catalog and on the University's website (http://catalog.salemstate.edu/content.php?catoid=13&navoid=1295#Academic_Integrity). The formal regulations are extensive and detailed - familiarize yourself with them if you have not previously done so. A concise summary of and direct quote from the regulations: "Materials (written or otherwise) submitted to fulfill academic requirements must represent a student's own efforts". *Submission of other's work as one's own without proper attribution is in direct violation of the University's Policy* and will be dealt with according to the University's formal Procedures.

All students are expected to be familiar with the academic regulations, including those regarding Academic Integrity, for Salem State University as published in the college catalog. In addition, each student is responsible for completing all course requirements and for keeping up with all that goes on in the course (whether or not the student is present).

Salem State University is committed to providing equal access to the educational experience for all students in compliance with Section 504 of The Rehabilitation Act and The Americans with Disabilities Act and to providing all reasonable academic accommodations, aids and adjustments. Any student who has a documented disability requiring an accommodation, aid or adjustment should speak with the instructor immediately. Students with Disabilities who have not previously done so should provide documentation to and schedule an appointment with the Office for Students with Disabilities and obtain appropriate services.

In the event of a university declared critical emergency, Salem State University reserves the right to alter this course plan. Students should refer to http://www.salemstate.edu/ for further information and updates. The course attendance policy stays in effect until there is a university declared critical emergency. In the event of an emergency, please refer to related course announcement and alternative study guide and materials at Canvas (https://elearning.salemstate.edu/) by logging to the course link at Canvas. Students should review the plans and gather all required materials before an emergency is declared.

Please remember that if, for any reason, you decide to drop this course, you **MUST** do so officially through the Registrar's office. The last day to withdraw from a course this semester is **August 1st**.

Note: This syllabus represents the intended structure of the course for the semester. If changes are necessary, students will be notified in writing and via all regular class communication mechanisms (class discussion, emails, and/or the course link at Canvas https://elearning.salemstate.edu/).