Eastern Mediterranean University  
Faculty of Arts and Sciences  
DEPARTMENT OF MATHEMATICS

<table>
<thead>
<tr>
<th>Course Code</th>
<th>MATH161</th>
<th>Course Title</th>
<th>Discrete Mathematics</th>
</tr>
</thead>
</table>

| Academic Year | 2003-04 | Academic Term | SPRING | Course Credit | (3,2) 3 |

<table>
<thead>
<tr>
<th>Instructor(s)</th>
<th>Gr.1 Filiz ERBİLEN</th>
<th>e-mail and URL</th>
<th><a href="mailto:filiz.erbilen@emu.edu.tr">filiz.erbilen@emu.edu.tr</a></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Gr.2, 3 Rza BASHIROV</td>
<td></td>
<td><a href="mailto:riza.basirov@emu.edu.tr">riza.basirov@emu.edu.tr</a></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><a href="http://brahms.emu.edu.tr/rza/">http://brahms.emu.edu.tr/rza/</a></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Assistant(s)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AS227</td>
</tr>
</tbody>
</table>

Course Objectives

The main objective of the course is to give theoretical knowledge and practical background in discrete mathematics. Discrete mathematics is an area of mathematics, which helps to understand the nature of the problems arising in computer related fields and provides practical techniques to their solution. The fundamental ideas of discrete mathematics such as sets, functions, logic, relations, graphs, matrices, trees, induction and recursion, will be thought in the frame of current course.

Weekly Schedule

1. SETS: special sets, operations on sets, Venn diagram, set operations.
2. SETS: algebra of sets, associative, commutative, distributive and De Morgan laws, duality principle, power set.
3. FUNCTIONS AND RELATIONS: terminology, one-to-one (injection), onto (surjection), one-to-one correspondence (bijection), inverse and composition functions.
4. FUNCTIONS AND RELATIONS: binary relations, graphical representation of relations, partial ordering and equivalence relations, partitions, identity relation, inverse relation.
5. MATHEMATICAL INDUCTION: the principle of mathematical induction introducing various examples.
6. COMBINATORICS: the multiplication rule, ordered samples and permutations, binomial coefficients.
7. COMBINATORICS: unordered samples without repetition, permutations involving indistinguishable objects, multinomial coefficients.
8. 1st Midterm
9. COMBINATORICS: pigeonhole principle, the principle of inclusion and exclusion.
10. BOOLEAN ALGEBRA: propositions, basic Boolean functions, truth tables, logic gates.
11. BOOLEAN ALGEBRA: minterm and maxterm expansions, dual forms.
12. BOOLEAN ALGEBRA: simplifying Boolean expressions by Karnaugh maps.

Textbook(s) / Required Reading


Recommended Reading


Grading Criteria

1st midterm exam – 30%
2nd midterm exam – 25%
Quizzes – 10%
Final exam – 35%

Academic Honesty

Individual accountability for all individual work, written or oral. Copying from others or providing answers or information, written or oral, to others is cheating. Providing proper acknowledgment of original author. Copying from another student's paper or from another text without written acknowledgement is plagiarism. According to University’s bylaws cheating and plagiarism are serious offences resulting in a failure from exam or project and disciplinary action (which includes an official warning may appear in student's transcript or/and suspension from University for up to one semester).
<table>
<thead>
<tr>
<th>Additional Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attendance is compulsory. Any student who misses an examination should provide a valid excuse in writing within three days following the examination they missed. One general make-up examination will be given at the end of the semester. A student not attended exams and 50% of the classes will receive NG grade.</td>
</tr>
</tbody>
</table>