Douglas College

Course Information

A: Division: **Instructional** | Date: **May, 1997**

B: Faculty: **Science and Technology** | New Course: **X**

Revision of Course:

Dated:

C: **MATH 230** | D: **Discrete Mathematics II** | E: **3**

Course Number | Descriptive Title | Credits

F: Calendar Description:

Summary of Revisions

This is the second of two Discrete Mathematics courses for Computing Science students. Topics include complexity of algorithms, recursion, recurrence relations, generating functions, equivalence relations, partial orders, partitions, graphs and trees, cycles and paths, shortest-path algorithms, minimal spanning trees, tree traversals and applications of trees and graphs.

G: Type of Instruction: Hours per Week

Lecture	4
Laboratory	
Seminar	
Clinical Experience	
Field Experience	
Practicum	
Shop	
Studio	
Student Directed Learning	
Other	
TOTAL	4 HOURS

H: Course Prerequisites:

Math 130

I: Course Corequisites:

None

J: Course for which this course is a prerequisite:

None

K: Maximum Class Size:

35

L: College Credit

Transfer **X**

Non-Transfer

M: Transfer Credit:

Requested **X**

Granted

Course Equivalents:

U.B.C.

S.F.U. **MACM 201**

U.Vic

Sept 5.97.

Course Designer(s)

Chairperson, Curriculum Committee

Registrar

Dean

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Course Information

- determine if a collection of subsets is a pa... artition of a given set;
- demonstrate an understanding of ... order, ...
- maximal element, minimal element, greatest element, least element ... bounds, lattices
- draw a Hasse diagram of a poset;
- ... represe... graph as an adjacency matrix or incidence matrix;

B. Course Content:

1. **Infinite Sets, Computability and Recursion**
   1.1. Cardinality of infinite sets.
   1.2. Recursion and iteration.
   1.3. Complexity of algorithms.

2. **Advanced Counting**
   2.1. Permutations and combinations with and without repetition.
   2.2. Indistinguishable and distinguishable objects.
   2.3. Recurrence relations.
   2.4. Solving first and second order linear recurrence relations.
   2.5. Generating functions.
   2.6. Solving recurrence relations using generating functions.
   2.7. Solving counting problems using generating functions.
   2.8. Principle of inclusion-exclusion.
   2.9. Applications of inclusion-exclusion.

3. **Relations**
   3.1. Equivalence relations and partitions.
   3.2. Partial orderings and Hasse diagrams.

4. **Graphs**
   4.1. Representations.
   4.2. Connectivity.
   4.3. Euler and Hamilton paths.
   4.4. Shortest path problems.

5. **Trees**
   5.1. Applications.
   5.2. Tree traversals.
   5.3. Trees and sorting.
   5.4. Spanning trees.
   5.5. Minimum spanning tre

ees.

Q: *Method of Instruction*

lectures, problem sessions and assignments.

R: *Course Evaluation*

nce with Douglas College policy. The instructor will present a Evaluation will be carried out in accorda

ation criteria at the beginning of the course. Evaluation will be ... written course outline with specific eval

ng: based on some of the followi

{ 0 - 40% } Weekly tests

{ 20 - 70% } Midterm tests

{ 0 - 15% } Assignments