

Spring 2009

# **Discrete Mathematics**

# Course Information

- Instructor
  - Professor Bohyoung Kim (김보형 교수)
    - Office : Bld. 138, Room No. 204
    - E-Mail: [bhkim@cse.snu.ac.kr](mailto:bhkim@cse.snu.ac.kr)
- Text
  - Lecture Notes ([http://vplab.snu.ac.kr/lectures/09-s/discrete\\_math/index.html](http://vplab.snu.ac.kr/lectures/09-s/discrete_math/index.html))
- Reference
  - Discrete Mathematics and Its Applications 6th edition (McGraw-Hill by Kenneth H. Rosen)

# Schedule

## 1. Logic, Proofs, and Sets

- Propositions, Predicates, Well-formed formula
- Rules of inference, Valid arguments (consequence)
- Set operations

## 2. Relations

- Definition and Properties of relations
- Equivalence relations

*(Mid-Exam #1)*

# Schedule (cont.)

## 2. Relations

- Partial ordering

## 3. Functions

- Definition and Properties of functions
- Surjective, Injective and Bijective functions

## 4. Discrete Probability

- Probability Theory
- Random variables, Expected value and Variance

*(Mid-Exam #2)*

# Schedule (cont.)

## 5. Graphs and Trees

- Definition, Path, and Circuit (Cycle)
- Tree, Rooted tree, and Ordered rooted tree

## 6. Algebraic Systems

- Semigroup, Monoid, and Group
- Lattices as algebraic systems

## 7. Boolean Lattice, Boolean Algebra, and Boolean Functions

- Definition and Stone's representation theorem
- Boolean Expression and Equivalence of Boolean functions

*(Final Exam)*

# Grading Policy

- 3 equally weighted exams + homeworks + class attendance
- TA
  - Hyunna Kim (김현나)
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