

**EE 497B**

**Probability and Random Processes  
for Electrical Engineers**

**Lecture 2**

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# Lecture 2 Topics

- Conditional Statements
  - if, then
  - if, and only if
- Set Theory
  - Foundation for the axiomatic definition of probability developed by Kolmogoroff in 1933
  - Useful in digital logic design

# *if , then* Statements

- A proposition is a statement that is either true or false
- Let  $p$  and  $q$  be two propositions
- Consider the proposition *if  $p$ , then  $q$* , also written as  $p \rightarrow q$ 
  - $p$  is called the hypothesis; it is an assumption or condition
  - $q$  is called the conclusion
  - Interpretation
    - If  $p$  is true, then  $q$  is true
    - $p$  is a sufficient condition for  $q$
    - $q$  is true does not imply that  $p$  is true