Undergraduate course descriptions

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## IS203: Analytical Foundations for Information Problems

### Course Description

A survey of mathematical topics for students in information sciences. Provides an introduction to sets, relations, graphs, grammars, probability, and propositional and predicate logic. These topics relate to applications in information modelling, representation and expression.

### Course Objectives

1. Introduce fundamental mathematical tools for solving problems of information modeling and expression.
2. Prepare students for core and elective undergraduate coursework in information sciences.

### Prerequisites

* MATH 124: Finite Mathematics

### Recommended Texts

Wallis, W. D. (2013). *Mathematics in the real world*. Birkhäuser.

van Benthem, J., van Ditmarsch, H., van Eijck, J., & Jaspars, J. (2014). *Logic in Action*. Amsterdam, NL: Logic in Action Open Course Project.

### Topics

1. Sets and Relations as models of application domains
2. Problems of combinations and arrangements
3. Probability and the probabilistic view of information
4. Distributions as models of data and events
5. Graphs and trees as domain models
6. Strings, codes, errors, and privacy
7. Facts and rules in the propositional and predicate calculi