

# Course Syllabus

## COMBINATORICS II (Math 422)

- Description:** *A continuation Math 421, with topics selected from generating functions, coding theory, algorithmic graph theory and network theory.*
- Credit Hours:** 3
- Audience:** Partially satisfies the theory elective requirement to complete a mathematics major.
- Prerequisites:** Math 421 or consent from the instructor.
- Format:** 3 lectures (50 min) per week
- Textbook:** *Introduction to Graph Theory, 2<sup>nd</sup> Ed.*, by Douglas B. West
- Software:** None required
- Internet:** Course materials and grades are maintained in Blackboard.
- Access & Accommodations:** The Access & Accommodations Resource Center (AARC) is the campus office that works with students to provide access and accommodations in cases of diagnosed mental or emotional health issues, attentional or learning disabilities, vision or hearing limitations, chronic diseases, or allergies. You can contact the office at [aarc@valpo.edu](mailto:aarc@valpo.edu) or 219.464.5206. Students who need, or think they may need, accommodations due to a diagnosis, or who think they have a diagnosis, are invited to contact AARC to arrange a confidential discussion with the AARC office. Further, students who are registered with AARC are required to contact their professor(s) if they wish to exercise the accommodations outlined in their letter from the AARC.
- Notice of Cancellation:** In the event class is cancelled, you will be notified through your Valparaiso University e-mail account.

### Course Goals

- A. Students improve mathematical proof writing skills.
- B. Students improve mathematical verbal communication skills.
- C. Students improve problem-solving skills.
- D. Students will be prepared for success in future (graduate level) combinatorics classes.
- E. Students increase their knowledge about the mathematics profession.

**Student Learning Objectives (General)** Preface: *Students will be able to...*

1. Carry over an apply knowledge from Combinatorics 1 and previous proof based course(es).
2. present clear and detailed solutions to assigned problems.
3. read and understand assigned sections of the textbook.
4. Independently study a new combinatorial topic and present this topic to their peers.

**Topical Learning Objectives.** Preface: *Students will be able to ...*

5. use graphs to model real life situations.
6. recognize graph theoretic properties of graphs and use these properties in problem-solving.
7. use algorithms to study properties of graphs.