Marshall University
Syllabus

Course / Title Number	MTH 440/635: Combinatorics and Graph Theory
Semester/Year	Spring 2016
Days/Time	TR 11:00AM - 12:15PM
Location	Smith 516
Instructor	Dr. Michael Schroeder
Office	Smith 742F
Phone	(304)696-6643
E-Mail	schroederm@marshall.edu
Office/Hours	T 1:30PM - 4PM, R 12:30PM - 3PM
University Policies	By enrolling in this course, you agree to the University Policies listed below. Please read the full text of each policy be going to www.marshall.edu/academic-affairs and clicking on "Marshall University Policies." Or, you can access the policies directly by going to http://www.marshall.edu/academic-affairs/?page_id=802 Academic Rights and Responsibilities of Students Excused Absence Policy for Undergraduates Academic Probation and Suspension Computing Services Acceptable Use Students with Disabilities Academic Forgiveness Academic Dishonesty Affirmative Action Inclement Weather Sexual Harassment Dead Week

Course Description: From Catalog

This course is designed to introduce students in mathematical sciences to the theorems, techniques, and applications of graph theory and combinatorics.

The table below shows the following relationships:
How each student learning outcomes will be practiced and assessed in the course.

Course Student Learning Outcomes	**How students will practice each outcome in this Course**	**How student achievement of each outcome will be assessed in this Course**
Students will learn various methods of counting	Homework and Class Exercises	Homework and Exams
Students will learn how to produce combinatorial proofs	Homework and Class Exercises	Homework and Exams
Students will discuss generating functions and their properties	Homework and Class Exercises	Homework and Exams
Students will discuss graphs and properties of graphs	Homework and Class Exercises	Homework and Exams

Required Texts, Additional Reading, and Other Materials

1. Allenby, *How to Count, Second Edition.* (ISBN: 9781420082609)

Course Requirements / Due Dates

1. Exam 1: Thursday, February 18, 2016 (tentative)
2. Exam 2: Thursday, March 17, 2016 (tentative)
3. Exam 3: Thursday, April 21, 2016 (tentative)

Grading Policy

Homework:

Homework will be assigned almost every day. Assignments will be due one week from their assignment date. Each homework will be graded as a percentage, and the lowest few assignments will be dropped. Your homework (and presentations) will constitute 35% of your final grade. Graduate student homework must be typeset using LaTeX.

In-Class Activities:

There will be short warm-up assignments at the beginning of class, requiring that you can recall the definitions, methods, and theorems discussed in the previous class. This will constitute 5% of your final grade.

Exams:

We will have three mid-term exams and a final exam in this course. The weights of the midterms are each 12%. The weight of the final is 24%. A portion of the graduate exams may be an oral exam.

Attendance Policy

You are responsible for everything that is said and covered in class each day. Attendance and participation will be key factors in border-line grades getting bumped. Graduate students will be required to present problems throughout the semester.

Course Topics

- Permutations and Combinations
- Occupancy Problems
- Inclusion-Exclusion
- Stirling and Catalan Numbers
- Partitions and Generating Functions
- Introduction to Graph Theory
- Trees
- Special Topics to be determined by the class

Course Schedule

There are three midterm exams on the following tentative dates:

1. Thursday, February 18, 2016
2. Thursday, March 17, 2016
3. Thursday, April 21, 2016

MTH 440/635: Combinatorics and Graph Theory

Specific Class Information

Semester:	Spring 2016	**Instructor:**	Dr. Michael Schroeder
CRN:	4087 (201) MTH 440	**Email:**	schroederm@marshall.edu
	4106 (201) MTH 635	**Office (Phone):**	Smith Hall 742F, (304) 696-6643
Meeting:	TR 11:00AM - 12:15PM	**Office Hours:**	T 1:30-4PM, R 12:30-3PM
		Classroom:	Smith Hall 516

Required Text: Allenby, *How to Count, Second Edition.* (ISBN: 9781420082609)
Prerequisites: Math 300

Learning Outcomes, Methods, and Assessment

Each learning outcome is listed below. Students will complete homework and graduate students will present problems to practice these skills. Assessment will be done through midterm and final exams.

Desired MTH 440/635 Learner Outcomes/Objectives

Successful students will ...

- Learn various methods of counting
- Learn how to produce combinatorial prooofs
- Discuss generating functions and their properties
- Discuss graphs and properties of graphs

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Exams

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Grade Scale

The course is graded on a 10-point scale – 90% is an A, 80% is a B, etc.

University-Wide Policies

You are responsible for knowing all university policies, which can be found at

`http://www.marshall.edu/academic-affairs/?page_id=802`