

MTH 480/690: Special Topics: Design Theory

Specific Class Information

Semester:	Fall 2018	Instructor:	Dr. Michael Schroeder
CRN:	3057 (480-101)	Email:	<code>schroederm@marshall.edu</code>
	3086 (690-101)	Office (Phone):	Smith Hall 742F, (304) 696-6643
	3087 (690-102)	Office Hours:	MWF 10AM to 11AM
Meeting Days:	MWF		TR 8AM to 9AM
Meeting Time:	8:00AM – 8:50AM		
Classroom:	Smith Hall 511		

Texts: Lindner & Rodger. *Design Theory, 2nd edition*. (ISBN: 978-1420082968)
Stinson. *Combinatorial Designs, Constructions and Analysis*. (ISBN: 978-0387954875)
van Lint & Wilson. *A Course in Combinatorics, 2nd edition*. (ISBN: 978-0521006019)

Prerequisites: C or better in MTH 300 and MTH331.

Learning Outcomes, Methods, and Assessment

In this course, there are four primary learning outcomes for students. Each are listed below, along with the means by which students will practice for each outcome and methods of assessment.

Desired MTH 480/690 Learner Outcomes/Objectives

Successful students will be able to ...

- ▶ define what a design is and construct designs
- ▶ prove properties of designs
- ▶ read and present mathematical publications relating to designs
- ▶ produce mathematical material using \LaTeX

Practice and Assessment Methods

Students will have low-stakes in-class assignments, homework, and other activities to serve as practice. The midterm and final exams will serve as the assessment tool.

Course Description

Designs are mathematical objects which are used in a variety of disciplines such as experimental design, coding theory, and combinatorics, to name a view. In this class, we introduce the simple definition of a design, then manipulate this definition to yield several interesting types of designs, properties of designs, and applications. Much of this course will require a proof-writing background and passing familiarity with linear and abstract algebra.

This is a special topics class and has no catalog description. (3 hours)

Course Policies

Attendance

You are responsible for everything that is said and covered in class each day, along with any class material posted online. Participation and preparation for class are expected and is part of your grade. Any absences must be discussed with me before the following class day. Please email or come to my office.

Homework

Homework will be assigned and submitted through MU Online. Assignments must be typeset using \LaTeX . Any drawings or graphs may be done by hand, scanned or have their pictures taken, and inserted into your \LaTeX document.

Lectures and In-Class Activities

The course will consist of traditional lecture and group work. Presentations will be given by groups, which may count as a homework grade in certain circumstances (you will be given notice on this).

Exams

We will have two (2) mid-term exams and a final exam in this course. An unexcused absence for an exam will result in a **zero (0)** for that grade. An excused absence as determined by the Office of Student Affairs (location at MSC2W38) will warrant a makeup exam. Graduate students will have oral components to their exam grades.

Grade Scale

This course is graded on a 10-point scale. The percentages for your work are given below:

Homework	25%
Midterm 1 (Friday, October 5, 2018)	20%
Midterm 2 (Friday, November 16, 2018)	20%
Final Exam (Monday, December 10, 2018)	35%

University Policies

By enrolling in this course, you agree to the University Policies listed below. Please read the full text of each policy by going to

www.marshall.edu/academic-affairs

and clicking on “Marshall University Policies.” Or, you can access the policies directly by going to

www.marshall.edu/academic-affairs/policies/.

These policies include: Academic Dishonesty, Excused Absence Policy for Undergraduates, Computing Services Acceptable Use, Inclement Weather, Dead Week, Students with Disabilities, Academic Forgiveness, Academic Probation and Suspension, Academic Rights and Responsibilities of Students, Affirmative Action, and Sexual Harassment.

About this Syllabus

This syllabus is subject to change at my discretion.

Marshall University Syllabus

Course / Title Number	Special Topics: Design Theory (MTH480 and MTH690)												
Semester/Year	Fall 2018												
Days/Time	MWF 8:00 to 8:50am												
Location	Smith 511												
Instructor	Dr. Michael Schroeder												
Office	Smith 742F												
Phone	(304) 696-6643												
E-Mail	schroederm@marshall.edu												
Office/Hours	MWF 10:00 to 10:50am, TR 8:00 to 8:50am												
University Policies	<p>By enrolling in this course, you agree to the University Policies listed below. Please read the full text of each policy be going to</p> <p style="text-align: center;">www.marshall.edu/academic-affairs</p> <p>and clicking on “Marshall University Policies.” Or, you can access the policies directly by going to</p> <p style="text-align: center;">http://www.marshall.edu/academic-affairs/?page_id=802</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">Academic Rights and Responsibilities of Students</td><td style="width: 50%;">Academic Dishonesty</td></tr> <tr> <td>Excused Absence Policy for Undergraduates</td><td>Affirmative Action</td></tr> <tr> <td>Academic Probation and Suspension</td><td>Inclement Weather</td></tr> <tr> <td>Computing Services Acceptable Use</td><td>Sexual Harassment</td></tr> <tr> <td>Students with Disabilities</td><td>Dead Week</td></tr> <tr> <td>Academic Forgiveness</td><td></td></tr> </table>	Academic Rights and Responsibilities of Students	Academic Dishonesty	Excused Absence Policy for Undergraduates	Affirmative Action	Academic Probation and Suspension	Inclement Weather	Computing Services Acceptable Use	Sexual Harassment	Students with Disabilities	Dead Week	Academic Forgiveness	
Academic Rights and Responsibilities of Students	Academic Dishonesty												
Excused Absence Policy for Undergraduates	Affirmative Action												
Academic Probation and Suspension	Inclement Weather												
Computing Services Acceptable Use	Sexual Harassment												
Students with Disabilities	Dead Week												
Academic Forgiveness													

Course Description: From Catalog

This is a special topics course. There is no catalog description.

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 be able to define what a design is and construct designs	low-stakes in-class assignments, homework	midterms and final
Students will be able to prove properties of designs	low-stakes in-class assignments, homework	midterms and final
Students will be able to read and present mathematical publications relating to designs	low-stakes in-class assignments, homework	homework and in-class presentations
Students will be able to produce mathematical material using L ^A T _E X	homework	homework

Required Texts, Additional Reading, and Other Materials

1. Lindner & Rodger. *Design Theory, 2nd edition*. (ISBN: 978-1420082968)
2. Stinson. *Combinatorial Designs, Constructions and Analysis*. (ISBN: 978-0387954875)
3. van Lint & Wilson. *A Course in Combinatorics, 2nd edition*. (ISBN: 978-0521006019)

Course Requirements / Due Dates

1. Homework – Assigned throughout the semester
2. In-Class Presentations – Assigned throughout the semester
3. Midterm 1 – October 5, 2018
4. Midterm 2 – November 16, 2018
5. Final Exam – December 10, 2018

Grading Policy

Homework	25%
Midterm 1 (Friday, October 5, 2018)	20%
Midterm 2 (Friday, November 16, 2018)	20%
Final Exam (Monday, December 10, 2018)	35%

Attendance Policy

You are responsible for everything that is said and covered in class each day, along with any class material posted online. Participation and preparation for class are expected and is part of your grade. Any absences must be discussed with me before the following class day. Please email or come to my office.

Course Topics

Course Schedule