

# Special Topics in Mathematics – MTH 492 (2 units)

TR 1:30-2:25 pm in RS 13

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Instructor: Greg Crow, Ph.D.      *Texts:*  
Email: [gcrow@pointloma.edu](mailto:gcrow@pointloma.edu)      None  
Phone: 619.849.2604  
Office: RS220  
Office Hours: Posted in Canvas

### University Mission:

Point Loma Nazarene University exists to provide higher education in a vital Christian community where minds are engaged and challenged, character is modeled and formed, and service is an expression of faith. Being of Wesleyan heritage, we strive to be a learning community where grace is foundational, truth is pursued, and holiness is a way of life.

### Department Mission:

The Mathematical, Information, and Computer Sciences department at Point Loma Nazarene University is committed to maintaining a curriculum that provides its students with the tools to be productive, the passion to continue learning, and Christian perspectives to provide a basis for making sound value judgments.

### Catalog Description

Study of an area of mathematics not otherwise included in the curriculum. The needs and interests of students and faculty involved determine the topics.

### Learning Outcomes

- Students will be able to apply their mathematical knowledge to solve problems.
- Students will be able to use technology to solve problems.
- Students will be able to speak about their work with precision, clarity and organization.
- Students will be able to write about their work with precision, clarity and organization.
- Students will collaborate effectively in teams.

### Grade Components

Grade Components	Percent
Final Exam	25
First Draft of Portfolio	25
Portfolio	50
Total	100

### Homework and Late Submission Penalties

The homework is a portfolio that demonstrates your understanding of the topics in the course. The first draft of the portfolio will be submitted on or before Thursday 19-Oct-2017. The completed portfolio will be submitted on or before Thursday 7-Dec-2017. Late submission of a portfolio will be assessed a  $2^{n-1} \times 10\%$  deduction where  $n$  = the number of weekdays late. The day counter for late work begins at the start of class on the weekday it is due. For example, a portfolio submitted at 3:30pm on the first weekday after the due date will incur a two day late penalty deduction of 20%.

**Final Examination:**

There will be a comprehensive Final Examination. The Final Examination will include problems and questions over material assigned in the text, readings and handouts, as well as material presented in class. The Final Examination shall not be missed without prior consent or a well-documented emergency beyond your control. A score of zero will be assigned if the Final Examination is missed without prior consent or a well-documented emergency beyond your control.

**Grading Scale**

Grades are based on the number of points accumulated throughout the course with the following exception. A student must pass the Final Examination in order to pass the class. That is, a score of 60% must be achieved on the Final Examination, or else the final grade will be an F regardless of all other point totals. Approximate minimal percentages required to obtain a given grade are:

Grading Scale in percentages	A	B	C	D
+		(87.5, 90.0)	(77.5, 80.0)	(67.5, 70.0)
	[92.5, 100]	[82.5, 87.5]	[72.5, 77.5]	[62.5, 67.5]
-	[90.0, 92.5]	[80.0, 82.5]	[70.0, 72.5]	[60.0, 62.5]

**Attendance:**

Attendance is expected at each class session. In the event of an absence you are responsible for the material covered in class and the assignments given that day.

Regular and punctual attendance at all classes is considered essential to optimum academic achievement. If the student is absent from more than 10 percent of class meetings, the faculty member can file a written report which may result in de-enrollment. If the absences exceed 20 percent, the student may be de-enrolled without notice until the university drop date or, after that date, receive the appropriate grade for their work and participation. See [http://catalog.pointloma.edu/content.php?catoid=24&navoid=1581#Class\\_Attendance](http://catalog.pointloma.edu/content.php?catoid=24&navoid=1581#Class_Attendance) in the Undergraduate Academic Catalog.

If you miss 10% of the class, you will receive a warning. If you miss 20% of the class, you will be automatically de-enrolled.

**Class Enrollment:**

It is the student’s responsibility to maintain his/her class schedule. Should the need arise to drop this course (personal emergencies, poor performance, etc.), the student has the responsibility to follow through (provided the drop date meets the stated calendar deadline established by the university), not the instructor. Simply ceasing to attend this course or failing to follow through to arrange for a change of registration (drop/add) may easily result in a grade of F on the official transcript.

**Academic Accommodations:**

If you have a diagnosed disability, please contact PLNU’s Disability Resource Center (DRC) within the first two weeks of class to demonstrate need and to register for accommodation by phone at 619-849-2486 or by e-mail at [DRC@pointloma.edu](mailto:DRC@pointloma.edu). See [Disability Resource Center](#) for additional information. For more details see the PLNU catalog: [http://catalog.pointloma.edu/content.php?catoid=24&navoid=1581#Academic\\_Accommodations](http://catalog.pointloma.edu/content.php?catoid=24&navoid=1581#Academic_Accommodations)

Students with learning disabilities who may need accommodations should discuss options with the instructor during the first two weeks of class.

**Academic Honesty:**

Students should demonstrate academic honesty by doing original work and by giving appropriate credit to the ideas of others. Academic dishonesty is the act of presenting information, ideas, and/or concepts as one’s own when in reality they are the results of another person’s creativity and effort. A faculty member who believes a situation involving academic dishonesty has been detected may assign a failing grade for that assignment or examination, or, depending on the seriousness of the offense, for the course. Faculty should follow and students may appeal using the

procedure in the university Catalog. See [http://catalog.pointloma.edu/content.php?catoid=24&navoid=1581#Academic\\_Honesty](http://catalog.pointloma.edu/content.php?catoid=24&navoid=1581#Academic_Honesty) for definitions of kinds of academic dishonesty and for further policy information.

**Copyright Protected Materials**

Point Loma Nazarene University, as a non-profit educational institution, is entitled by law to use materials protected by the US Copyright Act for classroom education. Any use of those materials outside the class may violate the law.

**Credit Hour:**

In the interest of providing sufficient time to accomplish the stated course learning outcomes, this class meets the PLNU credit hour policy for a 2 unit class delivered over 15 weeks. Specific details about how the class meets the credit hour requirements can be provided upon request.

**Final Exam: 1:30-4:00 pm on Tuesday December 12<sup>th</sup>, 2017**

The final exam date and time is set by the university at the beginning of the semester and may not be changed by the instructor. This schedule can be found on the university website and in the course calendar. No requests for early examinations will be approved. Only in the case that a student is required to take three exams during the same day of finals week, is an instructor authorized to consider changing the exam date and time for that particular student.

**The Final Exam is a Comprehensive Examination.**

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
August	20	21	22	23	24	25	26
	27	28 Student Transitions	29 (Monday)	30	31 No Class	1	2
September	3	4 Labor Day	5 Introduction & Paths in $R^2$	6	7 Paths in $R^2$	8	9
	10	11	12 Equivalence of Paths in $R^2$	13	14 Products of Paths in $R^2$	15	16
	17	18 Dept. Chapel	19 Loops in $R^2$	20	21 Loops in $R^2$	22	23
	24	25 Spiritual	26 Obstructions in $R^2$ -----	27 Renewal	28 Obstructions in $R^2$ -----	29 Week	30
October	1	2	3 Groups	4	5 Groups	6	7
	8	9	10 Free Groups	11	12 Free Groups	13	14
	15	16	17 Relations on Free Groups	18	19 Portfolio Draft Due	20 Fall Break	21
	22	23	24 The Fundamental Group	25	26 The Fundamental Group	27	28
	29	30	31 The Fundamental Group of $S^1$	1	2 The Fundamental Group of $S^1$	3 Last Day to Drop	4
November	5	6	7 The Universal Cover of $S^1$	8	9 The Universal Cover of $S^1$	10	11
	12	13	14 Higher Dimensional Loop Spaces	15	16 Higher Dimensional Loop Spaces	17	18 Homecoming
	19	20	21 Higher Dimensional Loop Spaces	22 Recess	23 Thanksgiving Day	24 Recess	25
	26	27	28 $\Pi_n(X)$	29	30 $\Pi_n(X)$	1	2
December	3	4	5 Review	6	7 Portfolio Due	8	9
	10	11	12 1:30 - 4 pm Final Exam	13	14	15	16 Commencement