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The Sum Times

October 2017

Message from Dr. Norton

Sometimes a time of transition can seem more like an intersection of what we otherwise think of as disjoint periods of time; our times are the sum of times. This issue of the Sum Times is at one of those sum-of-times times. The semester has just begun, and yet we are heading into fall break. It was 90 degrees outside just a few days ago, and now there is a comfortably autumnal chill in the air, with 80s due to return. The football team has played only a few, and yet the hoops teams have begun to practice. As we prepare to break up the continuity of our semester with a jump discontinuity of fall break, we prepare just after break to change to the idea of iteration in signing up for our spring semester courses while still embracing our current ones. Seniors focus on those current courses while planning or fretting over what is to come after graduation. Industrious undergraduates try to boost those grade point averages while scouting for summer internships. (No, it is not too early for that!) Faculty are rolling on current courses and have book selections due for next semester. Somehow – sometimes – multitasking breaks up the monotony of the monotone convergence toward the break or the end of semester.

May this mid-semester experience for you be more than the sum of our times. Welcome back / carry on / best wishes for the future!



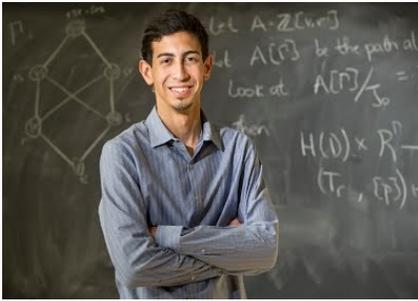
Dr. Douglas Norton
Dept. of Mathematics and

WELCOME BACK Students and Faculty!

Oct. 7 (F)	Mid-Term
Oct. 9 (M)	Semester Recess
Oct. 176(M)	Classes Resume
Oct. 27-29 (F-Su)	Homecoming
Oct 20 (F)	Registration Advising Begins
Nov. 10–12 (F-Su)	Special Olympics
Nov. 21 (Tu)	Thanksgiving Recess after last class
Nov. 27 (M)	Classes Resume
Dec. 13–19 (W-Tu)	Final Examinations
Jan. 2 (Tu)	Final Grades Due (noon)

Fall 2017
Semester
Dates To
Remember

New Faculty Spotlight



Alexander Diaz-Lopez, Ph.D.

PhD, University of Notre Dame (2016)

Alexander is a math enthusiast who believes that, provided the right environment and mentorship, everyone can have a successful and meaningful experience with mathematics. His research is in combinatorics and abstract algebra. Get to know him better by visiting his website: <https://sites.google.com/site/diazlopezalexander/>.



Kaitlyn Muller, Ph.D.

PhD, Rensselaer Polytechnic Institute (2011)

Kaitlyn received her M.S. and B.S. degrees from Rensselaer Polytechnic Institute in 2008 and 2006. Kaitlyn's research interest is in the area of radar image reconstruction. The goal is to take measurements of radar waves and turn them into images. Prior to joining Villanova, Kaitlyn spent one year as a postdoctoral research fellow of the National Research Council at the Air Force Research Laboratory at Wright Patterson Air Force Base. She also spent 5 years as a research scientist at Colorado State University.



Peter Muller, Ph.D.

PhD, Rensselaer Polytechnic Institute (2014)

Peter received a Masters in Applied Mathematics from Rensselaer Polytechnic Institute in 2012. In 2010, he received a B.S from Fordham University, where he majored in both Math and French. Peter's research interests are in applied mathematics, specifically the math of medical imaging and mathematical modeling. Prior to joining Villanova, Peter spent three years as a postdoctoral researcher at Colorado State University.

Villanova Math Club

The officers of Math Club are excited to welcome returning and new Math Club members! This year, Math Club is under new leadership:

Co-President - Ron Berna

Co-President - Elizabeth Leonard

Treasurer - Saurabh Verma

Social Chair - Meghan Carlock



Everyone is welcome to join Math Club - Math Majors and Minors, Liberal Arts and Sciences students, Business students, Engineering students, graduate students. **If you love math, are interested in it, need help with it, or simply want to meet new people**, then Math Club is the club for you!

Meetings will take place approximately every three weeks in the MLRC and will include snacks, discussions about classes and professors, as well as fun activities such as math-themed competitions. This year the Math Club is planning on organizing several events, for instance, **a professional development night, Quizzo nights, Teacher talks, Math in Movies night, Board game night, a T-shirt design contest, and more!**

For more information, contact any of the officers!

Mathematics Learning And Resource Center (MLRC)



Location: 211 Falvey Library

Hours: Sunday 6:30-9:00pm

Mon.-Thurs. 1:00-5:00pm

Dates: August 29 - September 1

& 6:30-9:00pm

September 6 - October 6

October 17 - November 21

Phone: 610-519-MLRC (6572)

November 28 - December 12

Check out our web page at www.villanova.edu/mlrc for more MLRC info regarding Villanova math

Q: What does the zero say to the eight?

A: Nice belt!



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Spring 2018 Electives

Mat 4310 Stats Methods- Paul Lupinacci, Yimin Zhang

This course is an introduction to data summarization and various statistical methods that will allow students to begin to build up a toolbox of statistical techniques for handling data analysis. The class will study probability distributions that will serve as the foundation for these methods. The statistical methods that the class will study include point estimates, interval estimates and hypothesis tests for population means, variances and proportions, categorical data analysis, regression and correlation. Prerequisite: MAT1505

Mat 4315 Stats Models – Jesse Frey

Simple and multiple linear regression, including prediction, correlation, model building, multicollinearity, influential observations, and model fit; ANOVA for designed experiments, including completely randomized, randomized block and factorial designs; Time Series including linear time series models, moving averages, autoregressive and ARIMA models, estimation and forecasting.

Prereq: MAT4310

Mat 5200 Theory of Numbers – Paul Pasles

Mat 5200 Theory of Numbers

Number theory considers properties of the integers. For example, some of the natural numbers 1, 2, 3,... are prime (like 2, 3, and 5), while others are not. How are the prime numbers distributed? In this course we will study sequences (like the Fibonacci numbers), congruences, the fundamental theorem of arithmetic, Pythagorean triples, Diophantine equations, some basic cryptology, and quadratic reciprocity.

Prereq: MAT2600



Mat 5400 Complex Analysis – Amanda Knecht (*satisfies 2nd analysis requirement*)

Why “get real” when you can get complex? The results of algebra, calculus and geometry are all the more beautiful when viewed through a complex lens. In this course, we’ll study functions of the complex variable. We will cover Cauchy’s theorem, power series, Laurent series, and many more topics with the ultimate goal of proving the Fundamental Theorem of Algebra.

Prereq: MAT2500

“To understand the Universe, you must understand the language in which it’s written, the language of Mathematics.”

- Galileo Galilei

Mat 5700 Math Stats I – Elise Pasles (*satisfies 2nd analysis requirement*)

The course covers the basic principles of the theory of probability and statistics. Topics include: probability, random variables, discrete and continuous probability distributions, important families of distributions, multivariate probability distributions, and functions of random variables.

Prerequisite: MAT2500 & 2705

Mat 5705 Math Stats II – Michael Levitan

This is a course on the theory of statistical inference. Key topics include the law of **large** numbers, the Central Limit Theorem, point estimation, maximum likelihood estimation, consistency, sufficiency, interval estimation, sampling distributions, hypothesis testing, order statistics, and Bayesian statistics. This course should be of interest for any student who wants to do a graduate degree in statistics or who wishes to understand the theoretical foundation for the standard methods of applied statistics.

Prereq: MAT5700





Teacher: What is
 $2n$ plus $2n$?

Student: I don't
know. It sounds
 $4n$ (foreign) to
me.

Mat 5920 Topic: Biostatistics – Paul Bernhardt

Statistics is the fastest growing STEM major and also one of the most in-demand job skill areas in the U.S. Biostatistics is an important subset of statistics that focuses on the analysis of data related to living organisms. In this course we will learn several types of regression methods for analyzing medical and biological data, including multiple regression, logistic regression, survival data analysis, and longitudinal data analysis. The study of these analysis techniques will be motivated by various real-world data sets and will involve working in teams to explore these data sets and discover powerful statistical methods.

Prereq: MAT1313 or MAT4310

Spring 2018 Seminars

Mat 5900-001 Graph Theory-Katie Haymaker

Course description: Graph theory is a fascinating area of mathematics that was born from practical problems involving the feasibility of certain paths of travel between a set of distinct locations. In this seminar we will explore some of the fundamental topics in graph theory, including connectedness, traversing graphs, coloring vertices and edges of graphs, and many more. Each student will choose a topic or application (based on interest) and compose a final project and presentation on the topic. This course will also provide opportunities for peer-review, discussion of writing and research in mathematics, and encounters with open math problems.

Mat 5900-002 Financial Derivatives-Klaus Volpert

This is a seminar following the course Mat 4550 (Mathematics of Financial Derivatives). Because it is a seminar, there won't be much lecturing on my part. Instead, we will focus on projects and presentations by members of the class. The first presentation will be chosen from a book of case studies, to help everyone review the various types of derivatives, their idiosyncrasies and pitfalls. After that everyone will choose a mathematical topic from within the world of finance, and then present two times on that topic, plus write a summary paper. This topic should build on what was learned in Mat 4550.



Registration



Study Abroad

Interested in studying abroad? Stop by Villanova's Office of International Studies and meet with a member of the staff to learn about different opportunities.

Office of Education Abroad

Middleton Hall,
2nd Floor

(610)519-6412

abroad@villanova.edu

If you would like to submit an article or have an idea for the SUM Times, please contact the math department!

To All Students: Set up an appointment to meet with your advisor to prepare for registration.



Preparing for Registration

Meet with your Academic Advisor:

Discuss your course options for next semester

Receive your Registration PIN (a.k.a. Alternate PIN)

Registration PIN:

Save it to your phone or email

Changes each semester

Spring Registration PINs begin: sp _____ (four random numbers)

Fall Registration PINs begin: fa _____ (four random numbers)

Take the time to test your PIN before your registration time begins

How to "Test" your PIN: Go to your *Student* tab → *My Schedule and Registration* → *Login to Register* → Select the appropriate term → type your PIN

If you enter the correct PIN, the system display your registration time appointment

If you enter an incorrect PIN, you will receive an error message: *Authorization Failure – Invalid Alternate PIN*

If you feel you have the incorrect PIN, contact your Advisor or your Advising Center

Note: The system is "case sensitive." The letters are lower case.

Check your Registration Status link will display the following:

Date and time you can begin registering and the date and time online registration ends.

An alert if you have Holds on your account which will prevent registration

Link to *View Holds* is at the bottom of the screen

Your Academic Standing

Your Student Status