MSCS MESS

Quiet Week—No Events

In the spirit of quiet week, there will be neither a colloquium on Monday, October 24th nor a research seminar on Friday, October 28th.

Interim & Spring Course Offerings

Unsure of which MSCS classes you should take? Thankfully, faculty members have provided descriptions for upcoming electives to help spark your interest. Peruse these blurbs before your upcoming registration meetings!

Math 224: History of Mathematics in the West
Instructor: Kay Smith
Prerequisite: Math 220
Time: T 9:35-11:00, Th 9:30-10:50
How do new mathematical ideas arise? How have politics, economics, arts, and science influenced and been influenced by the development of mathematics? Using primary sources and historical studies, students will address these questions by examining significant events in the history of mathematics and the contexts in which they occurred. The course focuses on mathematics in ancient Greece and in Europe (and later the United States) from the Renaissance to the present. This new course satisfies the HWC general education requirement.

Math 232: Discrete Mathematics
Instructor: Kay Smith
Prerequisite: any of Math 119, Math 120, CSCI 121, or CSCI 125
Time: T 11:45-1:10, Th 12:45-2:05
Discrete mathematics is the branch of mathematics dealing with objects that can assume only distinct, separated values (in contrast to calculus which deals with continuous functions). In this course we will sample several areas of discrete mathematics including counting methods, graphs, networks, and discrete geometry and investigate mathematical models which use these concepts. The course is a good choice for students who want a change of pace from calculus or who want to increase their mathematical maturity before taking Math 244 or 252. Discrete Mathematics is offered alternate years.

Math 236: Mathematics of Biology
Instructor: Bruce Pell
Prerequisites: either of Math 126 or Math 128, and Math 220
Time: MF 12:55-1:50,W 12:55-3:00
This course introduces students to the essential modeling techniques of formulation, implentation, validation, and analysis. Students engage in these areas by combining experiment, mathematical theory, statistics, and computation to better understand a wide variety of biological systems. Offered annually in the spring semester. Counts toward neuroscience and mathematical biology concentrations.

Math 262: Probability Theory
Instructor: Matthew Wright
Prerequisite: Math 126 or Math 128
Time: MWF 8:00-8:55
This course introduces the mathematics of randomness. Topics include probabilities on discrete and continuous sample spaces, conditional probability and Bayes' Theorem, ran-

dom variables, expectation and variance, distributions (including binomial, Poisson, geometric, normal, exponential, and gamma) and the Central Limit Theorem. Students use computers to explore these topics.

Math 282: Problem Solving
Instructor: Kosmas Diveris
Prerequisite: Math 220
Time: T 8:00-9:25, Th 8:00-9:20
Do you find pleasure in mathematical problems that are interesting and accessible yet challenging? Would you like to broaden your mathematical horizons and stretch your creative thinking skills? Then sign up for Math 282 this spring. In this course we will explore the power and versatility of the math you already know, gather new techniques and theorems for approaching problems, and, most importantly, enjoy mathematics.

CSCI 300: Topic—Machine Learning and its Applications
Instructor: Vinayak Elangovan
Prerequisite: CSCI 251
Time: MWF 10:45-11:40
Machine learning has developed its way from artificial intelligence into various domain applications and provided major breakthrough in the past recent years including self-driving vehicles, smartphones, facial recognition, email spam filtering, smart and personalized web search, cloud computing, and gene analysis. The objective of this course is two-fold. The first objective is to provide a broad introduction into background of machine learning methods and its principles. The second objective is to provide the students with adequate information about the potential of machine learning methods, and hands-on experience in how it can be applied to solve real-world problems. This course includes theoretical aspects of supervised and unsupervised learning methods, discussions of case studies and applications of machine learning in different domains including pattern recognition, data analysis, knowledge extraction, Optical Character Recognition (OCR), and other con-

temporary applications.

Math 340: Complex Analysis
Instructor: Bruce Hanson (A), Paul Zorn (B)
Prerequisites: Math 220 and Math 226 or Math 244
Time: T 9:35-11:00, Th 9:30-10:50 (A); T 11:45-1:10, Th 12:45-2:05 (B)
Complex analysis treats the calculus of complex-valued functions of a complex variable. Familiar words and ideas from ordinary calculus (limit, derivative, integral, maximum and minimum, infinite series) reappear in the complex setting. Topics include complex mappings, derivatives, and integrals; applications focus especially on the physical sciences. This course is offered annually.

Math 352: Abstract Algebra II
Instructor: Kosmas Diveris
Prerequisite: Math 252
Time: T 9:35-11:00, Th 9:30-10:50
This course is a continuation of the study of the theory of groups, rings, and fields. Topics include group actions, Sylow theory, and Galois theory. Other topics may include representation theory, module theory, and others. This course is offered alternate years.

Math 356: Geometry
Instructor: Kay Smith
Prerequisite: Math 244 or 252
Time: M-F 10:40-12:00 and M-Th 1:00-3:00
Starting with a brief look at axiomatic Euclidean geometry, we will explore other geometries (including finite, hyperbolic, spherical) and the transformation approach to Euclidean geometry. Through group projects and presentations, students will investigate additional aspects of geometry. The course sequences with Math 220 for IMaP purposes and is offered each Interim.

Math 382: Graph Theory
Instructor: Adam Berliner
Prerequisite: Math 244 or 252
Time: T 8:00-9:25, Th 8:00-9:20
Simply put, graph theory is the mathematics of "connect the dots." The study of graph the-

ory dates back to Euler in 1736 when he wrote a paper about the Seven Bridges of Königsburg. Since then, graph theory has become an interesting major area of mathematics with additional utility in other areas such as computer science, engineering, and sociology. Famous problems in graph theory include: The Marriage Problem, the Network Flow Problem, the Committee Scheduling Problem, the Four Color Problem, and the Traveling Salesman Problem. In this course we'll learn about some of these problems, study certain classes of graphs (such as complete graphs, bipartite graphs, and trees), and discuss algorithms used to find graphs with certain properties or check if a graph has a desired property.

And a Joke to Mitigate Midterm Stress

$\mathcal{Q}$: What should you get if you're planning on proposing to an algebraist?
$\mathcal{A}$: A polynomial ring would be ideal.
$\mathcal{Q}$: And what about topologists?
$\mathcal{A}$: They'd be happy with a coffee mug.