MSCS MESS

Department of Mathematics, Statistics, and Computer Science
St. Olaf College, Northfield, MN 55057
October 19, 2018 | Volume 47, No. 6

No Upcoming Colloquium Due To Quiet Week

More Course Info

Like last week, we will be sharing information regarding some of the higher level courses in MSCS to help our readers make better informed decisions when registering.

Interim Courses

Math 356: Geometry
with Professor Matsuura
Euclid's famous fifth postulate states: Given a line ℓ and a point P not on ℓ, there exists exactly one line through P that is parallel to ℓ. (Can you draw a picture of this?) But what if there are more than one such parallel line? Then we obtain a different kind of geometry, called *hyperbolic* geometry. In Math 356, we still study various kinds of geometries, including Euclidean (briefly), finite, hyperbolic, and spherical. Then we'll take a transformation approach (vectors, matrices, etc.) to Euclidean geometry. The course ends with a brief look into fractal geometry—lots of beautiful structures! Through group projects and presentations, students will also investigate additional aspects of geometry. The course sequences with Math 220 for IMaP purposes and is offered each Interim.
Prerequisites: MATH 220, and MATH 244 or MATH 252.

Spring Semester Courses

Math 352: Abstract Algebra II
with Professor Dietz
If you loved Abstract I, you'll love Abstract II twice as much! We'll dive further into both group and ring theory, tying the two together with Galois' famous theorem that relates the roots of polynomials to certain groups. Don't worry if you took Math 252 a year or two ago–the group theory tends to come back pretty quickly, and we'll review ring theory when the time comes. This course is a must for anyone considering graduate school in mathematics, and is really good for those physics and computer science majors who enjoyed abstract algebra. Prerequisite: MATH 252.

CS 333: Theory of Computation
with Professor Allen
In this course we study abstract models of a computer, starting with finite automata, progressing to pushdown automata, and ending with Turing machines. Equally important will be the languages these models support, namely regular languages, context-free languages, and recursive languages. Along the way, classic issues in computer science arise: determinism, nondeterminism, grammars, context-free languages, decidability, and complexity. Prerequisite: CS 251.

CS 336: Logic Programming
With Professor Allen
Logic Programming is one of the major programming paradigms that was originally inspired by first order logic, a formal system of mathematical deduction. A logic program is a collection of facts and relationships. An execution of such a program produces new information and relationships

that can be deduced from the given ones. Logic programming developed as one of the two main approaches to formulating problems in artificial intelligence. Prerequisite: CS 251.

MSCS 341: Algorithms for Decision Making With Professor Richey
Today's world is awash in data. The challenge is how to extract information from this data in way that informs decision making. The best ways to do this involve advanced techniques and ideas from mathematics, statistics, and computer science. In this course, we will use the R programming language as an environment for implementing algorithms such as random forests, support vector machines, bagging, boosting, and k-means clustering. Some experience with programming in R, Python, or Mathematica is expected.
Prerequisites: MATH 220, CSCI 251, or STAT 272 or permission of the instructor.

If You're Teaching Math Next Year...

Some of you may be teaching next year—perhaps as a Supplementary Instruction (SI) leader for our introductory courses; in programs such as Teach for America, Math for America, and the Peace Corps; or as a TA at a graduate school. If so, I encourage you to take EDUC 350: Teaching of Mathematics 5-12 in the spring semester. The main goal of the class is to understand what it means to have an authentic experience in mathematics, to recognize why that is so important, and to acquire the skills needed to provide such experiences to students. The course involves independent and collaborative lesson design, readings and discussions about effective teaching practices (at all levels, not just grades 5-12), field experience in Northfield schools, and more. If you're interested, please contact Ryota Matsuura (matsuura@stolaf.edu).

Correction

Dear readers, last issue we erroneously reported incorrect prerequisites for Math 384: Financial Mathematics. The correct prerequisite is one of Abstract Algebra I or Real Analysis I.

To submit an article, event, or anything else for publication in the mess, email jadkow1@stolaf.edu*; to receive the Mess digitally each Friday, email* habero1@stolaf.edu*; visit* http://wp.stolaf.edu/mscs/mscs-mess/ *for a digital archive of previous MSCS Mess issues.*

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