CSM Senate Meeting

Date: Monday, September 15th, 2014
Time: 2:30pm - 4:00pm
Location: CSM Dean's Office Conference Room

**Agenda:**

1. Introduction of new members
2. Elections.
3. Approval of the May 12, 2014 meeting minutes.
4. Announcements
5. New business
   5a. College Personnel Committee 2014-2015
   5b. Revision of ENGIN/MATH 211L. Change in pre-requisites.
       **Motion:** To pre-approve the changes in pre-requisites for ENGIN/MATH 211L.
       **Rationale:** The old pre-req was Engin 104 and co-req was Math 242. The new pre-req is adequate and since this course is a pre-req or co-req for Engin 231, the co-req of Math 242 is now replaced by Math 141.

   5c. Addition of EEOS 109 - Cultural Geography.
       **Motion:** To pre-approve the addition of EEOS 109 - Cultural Geography.
       **Rationale:** Cultural geography is a sub-discipline of Geography that studies how places produce diversity as well as the spatial variation of cultures, human activities, and communities. It is based on the notion that place, or location, is the foundation of cultural differences on global, national, and regional levels. Basic geographical perspectives, principles, and tools will be taught to so that students will understand why cultural differences occur where with the goal of better understanding the world's many cultural differences. Students will learn how cultural geographers perceive culture and other human activities as both responses to and causes of changes in natural and social environments.

   Approval of new graduate MATH courses. The following courses are to be part of the requirements for the proposed PhD in Computational Science as indicated in the "Proposal to Establish an Interdisciplinary Program in Computational Science" within the College of Science and Mathematics.

   5d. Addition of MATH 620 - Combinatorial Analysis.
       **Motion:** To approve addition of MATH 620 - Combinatorial Analysis.
       **Rationale:** This course provides a foundation for discrete structures and techniques that are salient throughout computational science, providing not only a unifying theme, but also a collection of highly applicable concepts and methods.
5d02.  **Addition of MATH 625 - Numerical Analysis I.**  
**Motion:** To approve addition of MATH 625 - Numerical Analysis I.  
**Rationale:** This course introduces the essential ideas and computational techniques that modern scientists or engineers will need in order to carry out their work. In most scientific modeling projects, investigators have to deal with very large systems of linear equations, understanding of which requires powerful computers, and a firm understanding of the vast number of existing pertinent algorithms.

5d03.  **Addition of MATH 626 - Numerical Analysis II.**  
**Motion:** To approve addition of MATH 647 - Probability Models.  
**Rationale:** This course introduces the essential ideas and computational techniques that modern scientists or engineers will need in order to carry out their work. In most scientific modeling projects investigators have to deal with very large systems nonlinear equations, understanding of which requires powerful computers, and a firm understanding of the vast number of existing pertinent algorithms. 

5d04.  **Addition of MATH 640 - Computational Algebraic Topology**  
**Motion:** To approve addition of MATH 640 - Computational Algebraic Topology.  
**Rationale:** Algebraic topology has given rise to cutting-edge methods of data analysis that are of much current interest. Implementing these in the context of high-performance computation can provide students with powerful analytic tools of wide applicability in the biological and physical sciences and beyond.

5d05.  **Addition of MATH 642 - Probabilistic Simulation.**  
**Motion:** To approve addition of MATH 642 - Probabilistic Simulation.  
**Rationale:** This course introduces the essential ideas and computational techniques that the modern scientists or engineers will need in order to carry out their work. In most scientific modeling projects investigators have to generate data and probabilistic tools for understanding stochastic models.

5d06.  **Addition of MATH 647 - Probability Models.**  
**Motion:** To approve addition of MATH 647 - Probability Models.  
**Rationale:** Probability modeling has important applications in computer science, engineering, economics, and biology and has been used for market research, optimization problems, machine learning, and biomodeling. Many other universities offer this course on a regular basis too.

5d07.  **Addition of MATH 648 - Statistical Learning.**  
**Motion:** To approve addition of MATH 648 - Statistical Learning.  
**Rationale:** Statistical Learning is a fundamental tool of computational data analysis with applications across the sciences.

5d08.  **Addition of MATH 673 - Structure and Dynamics of Complex Networks I: Structural Properties**  
**Motion:** To approve addition of MATH 673 - Structure and Dynamics of Complex Networks I: Structural Properties.  
**Rationale:** This course on complex networks is intended for graduate students in the
Computational Sciences PhD program with backgrounds in mathematics, physics, biology, computer science or engineering who wish to learn about the major ideas and techniques developed in, and the results recently discovered in, one of the most important interdisciplinary research fields.

5d09. **Addition of MATH 674 - Structure and Dynamics of Complex Networks II: Dynamical Processes**

**Motion:** To approve addition of MMATH 674 - Structure and Dynamics of Complex Networks II: Dynamical Processes.

**Rationale:** This course on complex networks is intended for graduate students in the Computational Sciences PhD program with backgrounds in mathematics, physics, biology, computer science and engineering who wish to learn about the major ideas and techniques developed in, and the results recently discovered in, one of the most important interdisciplinary research fields.

5d10. **Addition of MATH 677 - Symbolic Computation**

**Motion:** To approve addition of MATH 677 - Symbolic Computation.

**Rationale:** Symbolic computation is an essential part of scientific computation. Topics such as large integer multiplication and sparse matrix and polynomial operations are necessary for many practical applications of mathematics.

5d11. **Addition of MATH 680 - Introduction to Computational Algebraic Geometry.**

**Motion:** To approve addition of MATH 680 - Introduction to Computational Algebraic Geometry.

**Rationale:** This course introduces computational aspects of algebraic geometry - an active and growing field with applications to robotics, computer aided design, automatic theorem proving, invariant theory, projective geometry, computer vision, and more.

6. Dean's announcements

7. Other business

8. Adjourn