

- Joint Dept of Math, Stats, CS
 - 70-80 graduating majors
 - 2100 student classes
- (approx. 1 out of every 8 student enrollments)

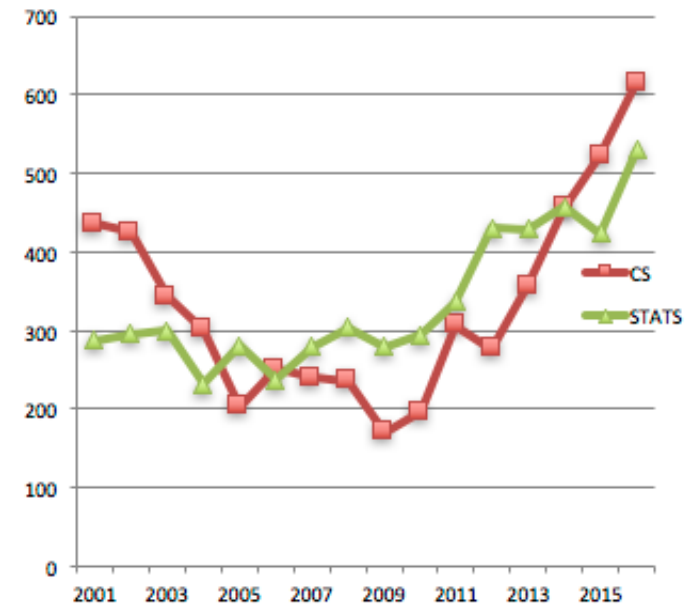


“The educational offerings of typical departments in the mathematical sciences have not kept pace with the changes in how the mathematical sciences are used.” (NRC, 2013)

Innovations

- Applied Math and Stats major (rolled out 2007-08)
- Data Science minor (rolled out spring 2016)
- Multivariate approach in entry-level math and stats
 - 3 course calculus sequence (rolled out over 10 yrs, spring 2016 complete)
 - Intro to statistical modelling (rolled out over 2005-06)

Driven by student interest

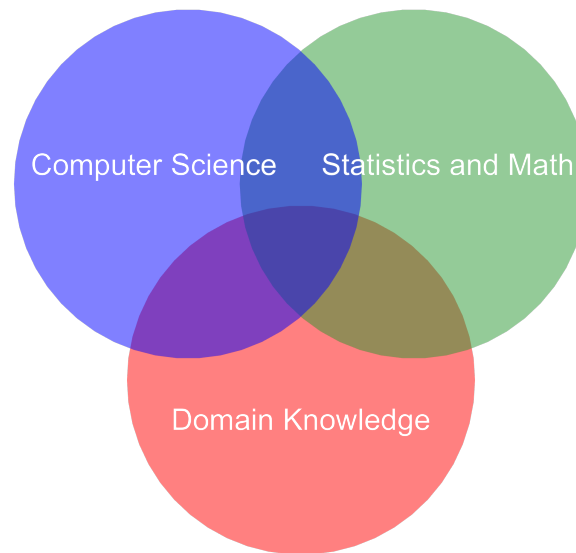


Requirements

<p>Introductory Courses (take all 4) COMP 123 Core concepts: MATH 155 Intro stats: MATH 236 Linear: MATH 237 MVC:</p>	<p>Intermediate/Advanced Courses (take 5) the capstone and computation courses from the left may also be double counted here</p> <p>Statistical Courses: _____ , _____ two from MATH 253, MATH 354, MATH/COMP 365, MATH 453, MATH 454, MATH 455, COMP 302, COMP 484</p> <p>Applied Courses: _____ , _____ two additional from MATH 253, MATH 312, MATH 354, MATH/COMP 365, MATH 432, MATH 437, MATH 453, MATH 454, MATH 455, MATH 479, COMP 302, COMP 484</p> <p>Elective Course: _____ one additional course that is either from the above list, or is a pure math course numbered 250 or above</p>
<p>Computation Course: _____ one chosen from MATH 253, COMP 124, COMP 221, COMP 302, COMP 340, COMP 346, MATH/COMP 365, COMP 484</p>	
<p>Capstone Course: _____ any 400-level capstone course, taken before spring of senior year</p>	
<p>Integrative Experience: _____ either (i) internship/summer project, (ii) major/minor in allied department, or (iii) preceptorship in two MSCS courses</p>	
<p>Capstone Presentation on Capstone Day in spring of Senior Year</p>	

The data science minor requirements

- ✓ Courses: 2 computing, 2 statistics, 2 domain area expertise
- ✓ Integrative essay on a completed or proposed project



Example essay: Farm to School Connections by Tessa Ganser – Geography major, Data Science minor

“... The connection between local food production and institutional markets begs for a spatial analysis. I partnered with the Minnesota Farm to School Leadership Committee to produce maps and demonstrate need to facilitate coordination between Minnesota farmers and Minnesota school districts for my final project in Intro to GIS (GEOG 225). I worked with Minnesota Grown (my internship site), a statewide local foods program housed at the Minnesota Department of Agriculture to acquire information on specialty crop farmers throughout the state....”

FIGURE 2:

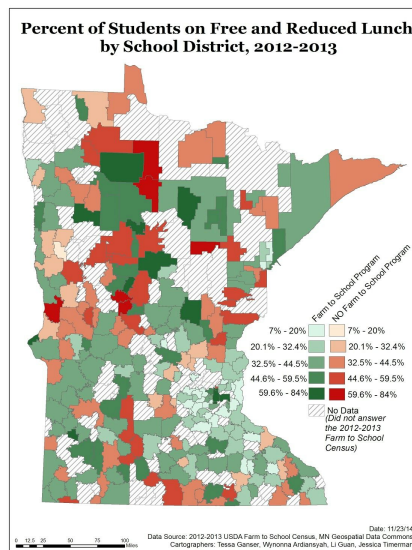
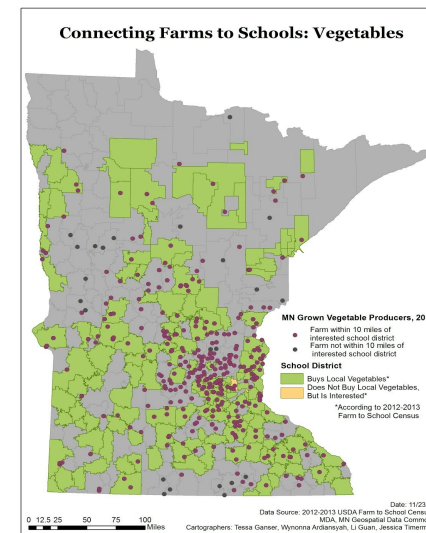


FIGURE 3:



Role of Chair in Process

1. Outreach to arts, social science and science departments
2. Hire new colleagues with eye toward change; look for synergies with existing faculty members both within and outside department
3. Write proposals and shepherd through college curriculum committee
 - Alignment with strategic planning
 - Alignment with faculty strengths and student interest
 - The liberal arts setting provides an opportunity to synthesize lenses for data developed in the social sciences, humanities, and fine arts

Other

1. Trade-offs
 - AP placement and credit more difficult in calculus
 - Hiring of adjuncts to teach calculus and statistical modelling harder
 - Huge enrollments
2. A lot of fun and source of energy for faculty members

Sabbaticals

- Industry
 - Established programs in industry. *Examples:* Google, Facebook
 - Individually initiated. *Example:* Senior Research Fellow, Target Corporation
 - Funding available. *Example:* Grant Opportunities for Academic Liaison with Industry (GOALI) can help fund a sabbatical embedded in industry
- Government
 - NSA Sabbatical Program in Mathematics
 - AAAS Science & Technology Policy Fellowships (Executive agencies – NSF, Dept of Defense, etc.) This year will place up to 15 with expertise in “big data and analytics”
 - AAAS & AMS Congressional Fellowships
 - Jefferson Science Fellowship (Dept of State, USAID)
 - National labs. *Examples:* Argonne, Sandia