

**Department of Mathematics
Illinois State University**

2012-2017 Strategic Plan

Approved October 1, 2012

Context:

In 2000, Illinois State University had adopted a bold strategic plan, *Educating Illinois*, which laid out a plan to increase the quality of its multifaceted educational role in serving the people of Illinois and beyond. This document was an important strategic plan for the University to meet the educational needs of the people of Illinois. Since its initiation, *Educating Illinois* has been updated twice and has adapted to changing economic climates, with its latest version being *Educating Illinois, 2008-2014*.

In 2006, the Department of Mathematics revised its 2001 strategic plan to incorporate *Educating Illinois II* and the revised College of Arts and Sciences strategic plan. While we have made significant progress on a number of the goals in our 2006 strategic plan, a number of those goals were ongoing and continue today. Also, with the developments of the past five years, we are able to update and refine some of our previous goals as well.

Since 2001, we have seen an increased recognition of the need for quantitatively educated citizens in our society. As we see more sophisticated technologies develop and more complex situations arise in today's society, the need for citizens to support further development of these technologies and to make decisions about these complex situations has increased. For example, the National Academies in 2006 published *Rising Above the Gathering Storm: Energizing and Employing America for a Brighter Economic Future* and the follow-up report in 2010 entitled *Rising Above the Gathering Storm, Revisited: Rapidly Approaching Category 5* both of which emphasize the quantitative skills needed to face the employment needs and the challenges of the 21st century. Books such as *The World is Flat* and *That Used to be Us* reinforce this perspective. Such publications point out that better career opportunities await those with solid quantitative foundations, hence such citizens have better opportunities to influence our society.

We face rapidly changing technologies that have the potential to enhance our effectiveness to carry out our mission. In this environment, the Department of Mathematics has a unique opportunity to educate students at Illinois State University to be equipped to meet the challenges society demands of them and, through our teacher education programs, influence future generations of citizens well beyond those attending ISU. It is this context that informs the current strategic plan presented here.

Mission:

The mission of the Department of Mathematics at Illinois State University is to:

- a) provide a supportive environment for the learning of mathematics;
- b) provide the opportunity for mathematics and mathematics education majors to receive a high-quality undergraduate education;
- c) provide the opportunity for students from other disciplines to learn mathematics and its applications;
- d) provide the opportunity for high-quality graduate education through our master's and doctoral programs;
- e) contribute to the development and growth of mathematical sciences and mathematics education through research and scholarship;
- f) prepare high-quality elementary, middle school, secondary, and post-secondary mathematics teachers;
- g) contribute to the improvement of the teaching and learning of mathematics in schools and other educational institutions; and
- h) promote an understanding of the contributions mathematics has made to society through outreach and service to the community.

This mission statement underlies the Department's commitment to teaching its discipline, to teaching teachers of its discipline, and to scholarly activities and public service in its discipline.

Vision:

As the societal need for quantitatively educated citizens increases, the Department of Mathematics recognizes the important role it must play within Illinois State University community. Guided by *Educating Illinois* and the *College of Arts and Sciences Strategic Plan 2010-2015*, our vision is to provide excellent mathematics programs and general education offerings shaped by the scholarly achievements of a nationally and internationally recognized faculty and supported by the commitment of a talented and dedicated staff. Our vision includes supporting these programs by providing opportunities for lifelong learning and for interactions with the University community, the mathematical professional communities, and the broader society.

Our vision includes:

- Undergraduate and graduate degree programs that meet the highest academic standards.
- Active disciplinary research that informs the teaching in our programs and incorporates disciplinary trends.
- A continued strong commitment to the mathematical education of prospective teachers.
- Interdisciplinary connections that will enhance the education of our students and the scholarship of our faculty.
- Excellence of instruction that includes active learning and strong academic support services.

Values:

Consistent with *Educating Illinois* and the *CAS Strategic Plan, 2010-2015*, we in the Department of Mathematics value:

- A strong mathematics tradition that provides a basis for lifelong learning, critical thinking, engaged citizenship, and supports the professional aspirations of our students and our community.
- Active pursuit of learning and scholarship in the mathematical sciences through research and its dissemination through publication and teaching.
- Diversity of ideas, backgrounds, and approaches to the pursuit of knowledge that supports the growth of all students, faculty, and staff.
- Faculty and student collaboration in teaching, learning, and research that enhances the Department's intellectual and social life.
- Collaborative research, service projects, and other partnerships designed to meet society's needs.
- Open, collegial dialogue that supports shared governance and a spirit of genuine participatory democracy.

STRATEGIC DIRECTIONS:

Strategy One: Enhance the quality of the Department's academic programs and courses.

The Department of Mathematics recognizes its academic programs and courses as an essential part of its mission at Illinois State. Therefore, it is vital to maximize the quality of our academic programs subject to the resource constraints we are forced to deal with. Such efforts to maximize this quality include revising curriculum to address recommendations or requirements issued from professional mathematical organizations, supporting efforts to improve the quality of teaching in the Department using University resources, and increasing opportunities for students through research projects, internships, interdisciplinary studies, and professional projects. We propose the following actions to support this strategy.

Actions:

As part of this strategy, we recommend the following actions:

- Foster discussions and evaluation of the recommendations of the professional mathematics organizations in the context of our own programs.
- Investigate the feasibility of five-year BS/MS programs such as biomathematics, applied statistics, or actuarial science.
- Investigate the support and feasibility for a another Ph.D. program in the mathematical sciences based on the interests of those in the Department.
- Further develop the Ph.D. program to meet the advances in the field of mathematics education.
- Develop interdisciplinary ties with other departments that emphasize the centrality role of mathematics and statistics in these partner disciplines.
- Continue to expand culminating experiences for undergraduate and graduate students in our programs. This includes increasing research opportunities, internships, and other professional projects.
- Develop new courses to meet the changing nature of the various mathematical sciences represented in the Department and the broader University community.
- Explore alternative delivery methods and online resources for courses using new technologies and evaluate whether these methods enhance the learning experiences of students in these courses.
- Explore programs with Computer Science or Computational Mathematics emphasis to meet the needs of an increasingly technological society.
- Gather data on and monitor the success of students in all of the sequences in the undergraduate mathematics major.

Strategy Two: Work to serve the needs of other programs in the University through our General Education offerings and other mathematics courses.

The Mathematics Department plays a central role in the University through its General Education course offerings, its offerings for both Elementary and Middle Level majors interested in mathematics specializations, as well as courses for other programs such as Information Technology, the science programs, and Business. As this is an important part of the Department's mission, it will be important to review our course offerings on a regular basis to ensure we are meeting the needs of these other programs and the University as a whole.

Actions:

As part of this strategy, we recommend the following actions:

- Increase our online presence to better serve students in mathematics courses.
- Explore alternative delivery methods and online resources for courses using new technologies and evaluate whether these methods enhance the learning experiences of students in these courses.
- Promote dialogue with the primary stakeholders in the courses we offer as General Education or non-major courses.
- Develop new courses and further develop existing courses to better address the needs of the programs we serve in our courses.
- In courses offered for education majors, foster urban education opportunities when appropriate.

Strategy Three: Recruit and Retain highly qualified faculty members to meet programmatic needs.

The Department of Mathematics has a central and multifaceted role in the College and University. The Department is the largest producer of credit hours in the University each year and has a consistent demand for its major and graduate programs. The Department recognizes that its ability to advance its mission and fulfill this role is highly dependent on the quality and quantity of its faculty. As the demand for our programs remains strong, it becomes important that we continue to recruit and retain high quality faculty who will be assets to our programs. We propose the following actions to support this strategy.

Actions:

- Increase faculty salaries to make them compare more favorably with comparator institutions.
- Recruit faculty members to fill tenure-track positions and address the Department's programmatic needs.
- Revisit the reward structures in the Department with the goal of better supporting activities that advance the Department's mission and goals while respecting College and University guidelines.
- Enhance the facilities available to faculty to support their teaching and research.

Strategy Four: Optimize enrollment in our programs and recruit high-quality students.

The Department of Mathematics has benefited from the University's increased emphasis on recruiting high quality students. For the past seven years, the Department has had to limit enrollment in the undergraduate major and it has experienced students with excellent qualifications enrolling in this major. Enrollment in the Masters Program is now at approximately 90 students, but the enrollment in our Ph.D. program has remained relatively stable. We have the highest enrollment of Honors students in the College of Arts and Sciences and we are second in the University, second only to the Department of Curriculum and Instruction. Each fall, the Mathematics Department enrolls five to ten Presidential Scholars as majors in Mathematics or one of our sequences. It is also not unusual for a mathematics major to be a Bone Scholar in a given year. For the past seven years, ISU has regularly had one of its graduating actuarial students awarded the international John Culver Woody Scholarship from the Actuarial Foundation, recognizing these students as one of the top dozen actuarial students in the World graduating in their respective years. We have done an excellent job addressing this goal in the Department's 2006 strategic plan.

Still, the above success seems to have stretched the instructional resources in the Department. When there are national concerns about recruiting students into quantitative majors, we are experiencing a demand for our major that we are not able to meet given our current resources. We are also experiencing a high demand for students wanting to pursue an actuarial emphasis in our Masters program. We have seen an unusual increase in students enrolled in our Masters program since our last strategic plan. Hence there is a continued need to optimize our capacity for the major and in our graduate programs while still meeting our obligations to support other programs in the University through our course offerings, especially those courses in the University's General Education Program. The strong demand for the major also affords us the opportunity to continue to examine ways to increase the quality of our academic programs. It will also be important to continue recruitment strategies that will lead to an appropriate balance in the enrollments of the various sequences at both the graduate and undergraduate programs. We propose the following actions to support this strategy.

Actions:

- Continue to monitor and analyze the Department's capacity in the major and in its graduate programs.
- Continue to work with Enrollment Management and Admission Services to set appropriate enrollment targets.
- Continue to look for ways to achieve a better balance in the enrollments in the various sequences and emphases in the BS/BA and MS/MA programs.
- Continue and regularly enforce probation letters for those making inadequate progress in the major, with a follow-up advisement out of the major for those who are unable to remedy these deficiencies.
- Continue to pursue high quality students for all our sequences with the goal of increasing enrollment in the mathematics and statistics sequences while

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- continuing to recruit excellent students to the mathematics education and actuarial sequences. We should place an emphasis on targeting quality instead of quantity.
- Institute a recruitment strategy in our Masters program that will better balance enrollment with available resources.
 - Continue to monitor enrollment and implement efforts to stabilize and increase the number of students admitted into the Ph.D. program each year. Increase venues for recruiting highly qualified students to our Ph.D. program. Explore ways of making the program more accessible to part-time students while maintaining high standards for coursework and research experiences.
 - Design and implement Departmental showcases during University Open Houses.
 - Send mailings to high school teachers asking for recommendations for top students.
 - Follow up on contacting our top students who have applied or been accepted.
 - Review and revise our web presence as a recruiting tool. This would include brief biographical sketches of alumni with possible quotes from them.

Strategy Five: Enhance support for faculty research activities.

The Department of Mathematics reaffirms the role of research as a vital part of the academic life of its faculty and students. Such activities should be embraced and encouraged as part of Illinois State's teacher/scholar model. Research activities help faculty stay current in their fields and increase the profile of the Department and the University. This activity and knowledge becomes an asset to the faculty in her or his interaction with other faculty, graduate students, undergraduate students, and our society. Still, given the multifaceted role of the faculty member and the corresponding time demands, it is too easy for research efforts to be lost. Therefore, it becomes important for the Department to support faculty research activities. We propose the following actions to support this strategy.

Actions:

- Look for ways to further increase travel support or more flexible ways to distribute existing travel funds to better support faculty travel to venues that will help develop research ideas and disseminate the results of their research.
- Facilitate faculty grant applications for resources available internal and external to the University by encouraging faculty to be aware of and take advantage of such opportunities as well as using departmental resources when needed to support such applications.
- Increase funding for speakers and visitors who enhance the intellectual life of the faculty
- Continued support for faculty development of research proposals by publicizing existing grants and creating mentoring opportunities through events such as meetings in which faculty can consult others in the Department when writing such proposals.
- Increase funding for faculty involving undergraduate students in research activities

Strategy Six: Improve support services for students.

As an institution of higher learning, the primacy of our educational mission must be supported. While we strive to provide high quality instruction in our classes, we also need provide students with the support they require to be successful not only in our programs, but in pursuing further career goals and in becoming lifelong learners. Included in these support services is infrastructure support such as up to date technologies. We propose the following actions to support this strategy.

Actions:

- Continue to coordinate with the Julia Visor Academic Advising Center to provide support services for our students, including initiatives such as supplemental instruction for targeted courses.
- Continue support of extracurricular organizations such as the Math Club, the Actuarial Club, the Graduate Group for Educational Research in Mathematics, and the Mathematics Lifestyle Floor.
- Continue to work with students to make sure they are aware of needed requirements through activities such as annual meetings with MTE majors to go over the requirements for their major, e-mail reminders of missing requirements in the major or in teacher education gateways, and putting more information on our website for reference.
- Work to institutionalize undergraduate seminars modeled after the S-STEM scholarship program.
- Continue cultivation of donor supported scholarships.

Strategy Seven: Increase the profile of our programs, achievements of our students, and our faculty accomplishments.

An important component in obtaining the resources necessary to support the actions mentioned in this plan is to be able to let other constituencies know the value of what we have the potential of accomplishing. One of the best ways of convincing these constituencies of this potential is to make them aware of what we have already accomplished. Given the many accomplishments of our faculty and students, it is important to provide venues in which we can let others know of these accomplishments. We propose the following actions to support this strategy.

Actions:

- Continue to update and revise the Departmental website to provide faculty, students, and the public with relevant information that also showcases the members of the Department and its programs. Including biographical sketches of alumni and some quotes from these alumni should also be included.
- Continued efforts to gain University recognition of faculty by nomination for College and University awards.
- Continued support of the Departmental Awards Ceremony in the Spring.
- Explore opportunities that could give our programs more of a national or international presence, potential collaborations with other departments or other institutions.
- Continue to encourage faculty leadership in national and international organizations that would help advance the Department's mission.
- Increase the number of stories about members of the Department in *CASNews*.
- Develop a Departmental newsletter.
- Continue to send newsworthy information to University Media Relations.
- Financially support faculty attending national and international conferences, including those conferences focused on current issues and national discussions involving mathematics.
- Continue to increase support for student travel to conferences and support their efforts to present their research finding in national and international venues.
- Continue to host professional conferences or meetings with an emphasis on such events that highlight the strengths of the Department or may lead to future collaborations with other institutions.
- Explore using social media such as Facebook to increase our web presence.

Strategy Eight: Increase the amount of external financial support for faculty and student activities, including research activities.

Much of the Department's funding comes from State appropriated funds and these funds are subject to fluctuations as the economic conditions change. It is therefore becoming increasingly important to look for other sources of funds to further support activities that advance the Department's mission. Traditionally, these funds have taken the form of external grants, usually from government agencies. While the Department should continue to pursue such opportunities, it will also be important to explore other funding sources. We propose the following actions to support this strategy.

Actions:

- Increase travel support that will advance the development of viable grant proposals.
- Continue to support the Center for Mathematics Science and Technology (CeMaST) to help find funding opportunities and develop viable grant proposals.
- Continue Departmental support for cost sharing when it would increase the competitiveness of a proposal.
- Cultivate further donor support for the Departmental Excellence Fund.
- Cultivate funding for to support the research of both graduate and undergraduate students.