

## DEPARTMENT OF MATHEMATICS

### Mission

The Department of Mathematics at Oklahoma State University supports and promotes learning and scholarship in mathematics through general education courses, service courses to disciplines that use mathematics, and specialty courses to mathematics and mathematics education majors; its faculty and graduate students discover, apply, and disseminate mathematics; and it serves the people of Oklahoma and the nation through communication of mathematical ideas and methods to enhance quality of life and economic development.

### Vision

The Department of Mathematics will:

- Be highly valued for its core position in the education of students and its interdisciplinary activity;
- Be student-centered and scholar-driven in its academic programs and in its teaching at all levels of undergraduate and graduate education;
- Be acknowledged for its development of exceptional mathematical scholars, professional mathematicians, and teachers of mathematics;
- Seek and support excellent faculty for their achievements in research, education, and other scholarly activity; and
- Earn national recognition for having an excellent mathematics program.

### Core Values

**Excellence** - We seek excellence in all our endeavors, and we are committed to continuous improvement.

**Intellectual Freedom** - We believe in ethical and scholarly questioning in an environment that respects the rights of all to freely pursue knowledge.

**Service** - We believe that serving others is a noble and worthy endeavor.

**Integrity** - We are committed to the principles of truth and honesty, and we will be equitable, ethical, and professional.

**Diversity** - We respect others and value diversity of opinion, freedom of expression, and other ethnic and cultural backgrounds.

**Stewardship of Resources** - We are dedicated to the efficient and effective use of resources. We accept the responsibility of the public's trust and are accountable for our actions.

**Professional Development** - We support the principle of a life-long scholar and are committed to continuous professional development.

## Goals, Critical Success Factors, Objectives, and Strategies

**Goal 1: Academic Excellence-Teaching: Be recognized as a leading mathematics program for innovation, quality, and diversity in undergraduate and graduate mathematics education.**

### **Critical Success Factors:**

- Increase in number of students taught by regular faculty and post-docs.
- Student success rate in mathematics courses and programs.
- Increase in number and variety of courses offered.
- Amount of funding for honors courses and number of honors courses taught.

### **Objectives:**

**Objective 1.1:** Promote excellence in instruction.

#### Strategies:

- Teach more classes with faculty and post-docs.
- Increase training, mentoring, and supervision of TAs.
- Provide research mentoring for new graduate students.
- Improve and expand our computer classroom.

**Objective 1.2:** Create additional learning opportunities for students.

#### Strategies:

- Through new curriculum development, increase the options in the mathematics baccalaureate program.
- Develop new courses for the recently revised graduate programs in Applied Mathematics and Mathematics Education.
- Expand the role of the Mathematics Learning Resource Center in outreach and in the study and learning of mathematics.
- Increase funding for honors courses and number of honors courses taught.

**Goal 2: Academic Excellence-Research: Gain national recognition for research development by improving and maintaining our existing research groups and adding highly regarded researchers in selected new areas.**

**Critical Success Factors:**

- Be ranked in the top quarter of mathematics departments at land grant universities and among the top five mathematics departments in the Big XII.
- Number of endowed professorships and endowed chairs.
- Number of Ph. D. students.
- Number of post-doctoral positions.
- Number of citations per faculty member.
- Number of regional/national/international awards, invitations, recognition.
- Amount of external funding.

**Objectives:**

**Objective 2.1:** Encourage and support faculty research.

Strategies:

- Replace faculty lost from our existing research groups.
- Support professional development of faculty through competitive teaching/service loads, sabbatical programs, and participation in professional societies and meetings.
- Increase the number of graduate students involved in faculty-directed research projects.
- Increase external funding.
- Increase scholarly output.

**Objective 2.2:** Create new research opportunities.

Strategies:

- Establish recognized research groups in new areas of mathematics/applied mathematics/mathematics education.
- Establish new endowed professorships and endowed chairs.
- Develop research groups in interdisciplinary areas.
- Increase the number of post-doctoral positions in the department and obtain permanent funding for them.

**Goal 3: Academic Excellence-Outreach: Develop strong bilateral relationships with statewide K-12 mathematics programs and regional four-year colleges and connect the education of students to experiences in business and industry.**

**Critical Success Factors:**

- Number of interactions between faculty and high schools/regional colleges.
- Number of colloquia presented by researchers in business/industry/government who use mathematics.
- Number of public school students tutored at the Mathematics Learning Resource Center.
- Number of public school students attending outreach activities.

***Objectives:***

**Objective 3.1:** Promote interactions between OSU faculty/students and groups outside OSU.

Strategies:

- Create vehicles for regular interaction between our faculty and regional colleges and high schools.
- Develop programs that bring faculty and students in contact with researchers in business/industry/government who use mathematics.
- Expand public school tutoring at the Mathematics Learning Resource Center.
- Develop funding sources for outreach activities.

**Goal 4: Human Resources: Recruit, reward, and retain excellent faculty and staff and provide an environment for continuing development and an opportunity for each member of the faculty and staff to reach his or her full potential.**

**Critical Success Factors:**

- Retention rate for top-performing faculty and staff.
- Salary parity with peer institutions.
- Professional development opportunities provided by department.
- Number of Ph. D. students.
- Number of post-docs.
- Up-to-date hardware and software for computing.

**Objectives:**

**Objective 4.1:** Establish a good work environment for faculty and staff.

Strategies:

- Provide competitive salaries and workloads.
- Support professional development for faculty and staff.
- Increase the number of Ph. D. students (to carry out faculty-initiated research projects).
- Increase the number of post-docs (to collaborate with faculty on research projects).

**Objective 4.2:** Operate the department in an efficient manner.

Strategies:

- Reevaluate staff job descriptions and increase staff where necessary.
- Obtain permanent funding for our system manager position.

**Goal 5: Student Development: Recruit and retain a diverse population of students in the study and understanding of mathematics, culminating in better academically prepared graduates with viable career options, and increase the number of mathematics students at all levels.**

**Critical Success Factors:**

- Double the number of mathematics/mathematics education majors.
- Increase the number of graduate students by 50%.
- Increase the number of scholarships for undergraduate and graduate students.
- Average 15 Masters degrees and 4 Ph. D. degrees per year.
- Increase TA stipends by 50%.

**Objectives:**

**Objective 5.1:** Improve retention and graduation rates among undergraduate mathematics/mathematics education majors and graduate students.

Strategies:

- Provide tutorial support outside the classroom.
- Provide enrichment opportunities outside the classroom.
- Design attractive, viable degree programs.
- Reduce teaching loads for TAs.
- Provide more regular summer course offerings for graduate students.

**Objective 5.2:** Improve recruitment of undergraduate and graduate students.

Strategies:

- Obtain departmental control over some discretionary funds for scholarships.
- Provide competitive funding for TAs.
- Provide more teaching assistantships.
- Increase contacts with prospective graduate students.

**Goal 6: Diversity: Achieve national acclaim for innovative and successful recruitment, retention, and graduation of traditionally underrepresented groups in mathematics.**

**Critical Success Factors:**

- Number of majors among traditionally underrepresented groups.
- Number of baccalaureate degrees granted to members of traditionally underrepresented groups.
- Number of graduate students among traditionally underrepresented groups.
- Number of graduate degrees granted to members of traditionally underrepresented groups.

***Objectives:***

**Objective 6.1:** Increase diversity.

Strategies:

- Recruit undergraduate students from underrepresented groups that participate in the OSU High School Mathematics Contest.
- Create a visitation and speakers program with regional colleges and institutions that have high enrollments of underrepresented groups.
- Create a mentor program, administered by the Undergraduate and Graduate Directors, to provide extra attention and support for students of all backgrounds.
- Participate more actively in attracting Clark and McNair Scholars to visit and enroll.



**Goal 7: Image: Be highly regarded within the university and region for our service, teaching, and research and be recognized nationally for the improvements in our program.**

**Critical Success Factors:**

- Attain a ranking among the top 75 mathematics departments as rated by the National Research Council.
- Number of faculty receiving local, regional, national, and international awards and recognition.
- Number of students successful in Wentz, Truman, and Goldwater competitions.
- Students speaking and participating in regional and national meetings.
- Number of faculty involved in professional societies, committees, programs, or as editors of journals.

**Objectives:**

**Objective 7.1:** Gain recognition for our faculty, students, and programs.

Strategies:

- Make competitive nominations of faculty for local, regional, national, and international awards.
- Identify students for local, regional, or national awards and for participation in regional and national meetings.
- Host a Central Region American Mathematical Society meeting, giving more visibility to our faculty, program, and campus.
- Host an Oklahoma-Arkansas Mathematical Association meeting, giving more visibility to our educational activities, graduate program, and campus.
- Produce an annual newsletter for alumni.

**Objective 7.2:** Encourage participation in image-building activities.

Strategies:

- Reward faculty who receive awards themselves or who help students compete successfully for awards.
- Provide financial support for faculty and students speaking at regional, national, or international meetings.

**Goal 8: Quality of Life/Economic Development: Build functional bridges with other disciplines within the University and with business, industry, and government agencies to connect mathematics with its uses in economic development and improvement in the quality of life.**

**Critical Success Factors:**

- Number of interdisciplinary seminars.
- Number of seminars with participants from business, industry, government agencies.
- Number of student internships.
- Number of courses offered at OSU-Tulsa.
- Enrollment in mathematics courses at OSU-Tulsa.
- Number of faculty at OSU-Tulsa.

**Objectives:**

**Objective 8.1:** Increase connections with other organizations that use mathematics.

Strategies:

- Facilitate faculty involvement in interdisciplinary and multidisciplinary research.
- Support student applicants for summer internship programs.
- Enhance contacts with business, industry, and government agencies where mathematics is used.

**Objective 8.2:** Expand our presence at OSU-Tulsa.

Strategies:

- Design new programs for OSU-Tulsa.
- Increase course offerings and enrollment at OSU-Tulsa.
- Obtain permanent faculty positions at OSU-Tulsa.

**Goal 9: Image/Pride/Recognition: Partnerships/Collaborations: Encourage, support, and reward interdisciplinary research and educational activities and acquire new partnerships through Focused Research Grants and collaborations with national research institutes and other universities.**

**Critical Success Factors:**

- Number of faculty collaborations with faculty in other disciplines and other universities or research institutes.

***Objectives:***

**Objective 9.1:** Increase faculty collaborations with others outside the OSU Department of Mathematics.

**Strategies:**

- Encourage faculty to apply for Focused Research Grants.
- Encourage faculty collaborations with faculty at other research institutions.

**Goal 10: Healthy Living: Create and maintain an environment of self-esteem, concern for others, and professional and social acceptance among all faculty, staff, and students of mathematics.**

**Critical Success Factors:**

- Levels of job satisfaction and morale reported by faculty, staff, and students.

***Objectives:***

**Objective 10.1:** Maintain a positive working environment within the department.

**Strategies:**

- Provide departmental recognition of excellent faculty, staff, and students.
- Maintain broad involvement of faculty in departmental decision making.
- Provide staff with adequate resources and input for their job assignments.
- Provide mechanisms for student input.

**Goal 11: Leveraging Resources: Target new resources and focus existing resources to achieve the strategies necessary to realize our goals.**

**Critical Success Factors:**

- Amount of endowed funds utilized for research, teaching, and outreach.
- Number of enhanced professional development opportunities provided.

***Objectives:***

**Objective 11.1:** Employ endowed funds to help achieve our goals.

**Strategies:**

- Increase use of existing endowed funds for research, teaching, and outreach.
- Use endowed funds to provide reduced teaching loads for exceptionally productive faculty.
- Leverage external funding/endowed funds to provide enhanced professional development opportunities for faculty.