

**MATHEMATICS, STATISTICS AND PHYSICS DEPARTMENT
STRATEGIC PLAN
October 2002**

Campus Mission Statement

Purdue University North Central is dedicated to providing access to exceptional educational opportunities and is committed to providing, assessing, and enhancing three elements fundamental to a great land grant university: *Learning, Discovery and Engagement.*

Mathematics, Statistics and Physics Department Mission Statement

The Mathematics, Statistics and Physics Department supports the campus mission in the following ways: we are dedicated to helping students understand, apply, and appreciate Mathematics, Statistics, and Physics; we are committed to student learning by providing and assessing courses necessary for degrees on our campus and courses that transfer to Purdue West Lafayette and other institutions; and we encourage our faculty to pursue scholarly inquiry, discovery activities, and involvement in community engagement.

Campus Vision

In the next five years, Purdue University North Central envisions:

- **Expanding to a Bachelor's degree granting institution with selected Master's degree programs and with the retention or development of Associate degree programs that meet the needs of the community.**
- **Improving the campus environment to include additional modern buildings, instructional technology, and sufficient property to support future expansion.**
- **Providing a lifetime learning environment for campus constituents.**
- **Developing collaborative partnerships with other educational institutions and within the communities served.**

Department Vision/Aspirations

In the next five years, the Mathematics, Statistics and Physics Department envisions:

- Expanding to support an increasing number of Bachelor's and Master's degree programs that are expected to arise throughout the Purdue University North Central campus
- Expanding to offer minors and majors in appropriate areas of Mathematics, Statistics, and Physics
- Improving the technological support for the learning and understanding of Mathematics, Statistics, and Physics
- Developing collaborative partnerships with other academic units on the Purdue University North Central campus, with other educational institutions, and within the communities we serve

Campus Culture and Core Values

Purdue University North Central brings to its service region the national and international reputation of Purdue University with the environment of a small, student-centered, public, liberal arts college.

A high quality education, an exemplary learning environment, a caring atmosphere, and a safe, secure, and convenient campus are all hallmarks of this institution.

Department Culture and Core Values

The Mathematics, Statistics and Physics Department Core Values are as follows:

- The Department believes strongly in the individual worth of every student, and continues to strive to provide a high quality education in Mathematics, Statistics, and Physics appropriate to the student.
- The Department brings to its students and to the community the expertise of Purdue University faculty and the breadth of experience of a dedicated corps of guest lecturers, within the environment of a small, student-centered academic unit.
- The Department strives to maintain a balance among its core activities of learning, discovery and engagement.

Goals, Strategies, Resources and Assessment Measures

Campus Goal 1: Students

PNC students will receive support and services that are critical to their needs as they work toward achieving their personal, academic and career goals. PNC will focus on managed growth through the recruitment, retention, and post-graduation needs of a diverse student body from the local region, the State of Indiana, and beyond.

Mathematics, Statistics and Physics Department Objectives to Achieve Campus Goal 1:

A. The Department will support the retention of students in PNC degree programs by providing and enhancing the teaching of Mathematics, Statistics, and Physics courses; and the Department will support the recruitment of students.

Strategies for meeting this objective:

- The Department will improve placement procedures/tests and work with advisors and faculty in other Departments to optimize student placement in mathematics courses appropriate to their current level of knowledge as well as their desired major.
- The Department will develop, implement, assess, and enhance appropriate distance learning (coordinating with the Director of D. E.) and independent study (research) opportunities.
- Department faculty will make recruitment visits to local high schools.

Resources needed to meet this objective:

- Time to assess and improve placement instruments and to meet with advisors and faculty
- Time and funding for distance-learning and independent study opportunities
- Time and funding for recruitment visits

Assessment measures reflecting progress toward meeting this objective:

- Proportion of students in foundational courses needing to “drop back” to a lower course
- Number of distance-learning and independent-study opportunities
- Number of students participating in distance-learning and independent study
- Number of visits to local schools

Campus Goal 2: Academic Programs

PNC will enhance and expand the degree programs at the Bachelor’s and Master’s level. The curricula will be subject to a continuous quality improvement process. Learning, discovery and engagement will be the focal points of the academic environment at the North Central campus.

Mathematics, Statistics and Physics Department Objectives to Achieve Campus Goal 2:

A. The Department will enhance the teaching of Mathematics, Statistics, and Physics in an effort to improve students' understanding of these subjects and in turn to better prepare students for future courses, applications/experiences, and lifetime learning.

Strategies for meeting this objective:

- Department faculty will attend/host workshops/conferences to enhance teaching effectiveness
- Department faculty will engage in reflective practices to enhance their teaching (e.g., informal course assessments and studying the literature on pedagogy)
- The Department will actively recruit and mentor exceptional part-time faculty

Resources needed to meet this objective:

- Funds for travel to conferences and workshops
- Funds for hosting local workshops
- Time and funds for implementing knowledge gained from workshops and conferences
- Time for reflective practices
- Time and funds for recruitment of part-time faculty

Assessment measures reflecting progress toward meeting this objective:

- Satisfaction/perception ratings of students
- Satisfaction/perception ratings of faculty
- Outcomes of peer evaluations of part-time faculty
- Ongoing Department course assessment
- Number of faculty participating in conferences and workshops

B. The Department plans to develop and implement a Bachelor's degree in Secondary Mathematics Education with an option for teaching in the middle and junior high school. (Simultaneously we will explore the possibility of a Secondary Science Education program.)

Strategies for meeting this objective:

- Research requirements for a BS degree in Secondary Mathematics Education; prepare plan of study and degree proposal
- Plan and implement the teaching of all necessary courses
- Establish collaborations and agreements with the PNC Education Department and PU Calumet
- Recruit and hire two additional qualified tenure-track faculty members in Mathematics to support a BS degree in Secondary Math Education and other Department course offerings
- Develop relationships with local secondary, middle and junior high schools and teachers

- Seek approval and academic autonomy of the new program
- Seek NCATE accreditation

Resources needed to meet this objective:

- Time to research and design new BS degree program
- Funding for a consultant
- Time to design and implement teaching of all new necessary courses
- Time and funding to establish collaborations with Education Department and PU Calumet
- Time and funding of recruitment and search activities
- Salaries, benefits and start-up costs for two new faculty positions
- Funding for educational resources – e.g., manipulatives, computer software
- Time for faculty to plan and implement new courses

Assessment Measures reflecting progress toward meeting this objective:

- Approval of the new BS degree program
- Approval of academic autonomy of the new BS degree
- Hiring and retention (progress towards tenure and promotion) of faculty in new positions
- Enrollment
- Retention and graduation rates
- Satisfaction/perception rates of students/graduates, employers, and local schools
- Outcomes of Mathematics assessment activities
- NCATE accreditation

C. The Department will increase the proportion of Department courses taught by full-time faculty.

Strategies for meeting this objective:

- Recruit and hire at least three new full time qualified Mathematics faculty (at least two Continuing Lecturers) in addition to the two new faculty recommended under Department Objective B above and the replacement of faculty retiring over the next 5 years

Resources needed to meet this objective:

- Time and funding for recruitment and search activities
- Salaries, benefits and start-up costs for at least three full-time positions

Assessment Measures reflecting progress toward meeting this objective:

- Percentage of courses taught by full-time Department faculty
- Hiring and retention of new faculty as appropriate (tenure track or continuing lecturer)

D. The Department will enhance the technological support for the teaching of Mathematics, Statistics, and Physics in an effort to improve student learning and understanding in these subjects.

Strategies for meeting this objective:

- Research new pedagogical uses of technology for teaching and learning
- Department faculty will attend and participate in workshops/conferences that promote the use of technology in teaching and learning

Resources needed to meet this objective:

- Funding for faculty participation in workshops and conferences
- Funding for educational resources – e.g., computer hardware and software
- Time for researching and seeking funding for advances in technology

Assessment Measures reflecting progress toward meeting this objective:

- Satisfaction/perception ratings of students
- Satisfaction/perception ratings of faculty
- Outcomes of Department assessment activities

E. The Department will promote scholarly and discovery activities in the Mathematics, Statistics and Physics Department.

Strategies for meeting this objective:

- Mentoring of junior faculty
- Mentoring of senior faculty
- Promote a scholarly and discovery atmosphere among faculty via seminars and speakers
- Maintain and enhance technology to support scholarly and discovery activities
- Encourage student involvement in discovery activities (e.g. statistical consulting/research activities; see Objective A for Campus Goal 3)
- Encourage faculty participation in appropriate professional organizations at regional, national and international levels

Resources needed to meet this objective:

- Time for faculty to attend conferences and other professional development activities
- Funding for faculty to attend conferences and other professional development activities
- Funding (e.g. start-up costs) for faculty to engage in scholarly and discovery activities
- Funding for technological support for scholarly discovery activities
- Time for faculty to develop, implement, assess and enhance student involvement
- Time and funding for faculty participation in professional organizations

Assessment Measures reflecting progress toward meeting this objective:

- Number and type of scholarly and discovery activities participated in by faculty
- Number of scholarly works by faculty
- Satisfaction/perception ratings of Department faculty
- Percentage of faculty engaged in appropriate scholarly and discovery activities
- Number of students involved in discovery activities

F. The Department will offer appropriate minors in Mathematics, Statistics, and Physics; and support appropriate course offerings for other campus academic programs.

Strategies for meeting this objective:

- Research and design minors appropriate for the PNC campus
- Offer all necessary courses for minors in Mathematics, Statistics, and Physics
- Consult with client disciplines regarding appropriate support courses for their needs

Resources needed to meet this objective:

- Time

Assessment Measures reflecting progress toward meeting this objective:

- Enrollment
- Satisfaction/perception ratings of client discipline faculty
- Satisfaction/perception ratings of students
- Outcomes of Department assessment activities

Campus Goal 3: Constituent Relations

PNC will provide life-long learning opportunities that will enrich and engage the community. PNC will expand existing relationships and create new partnerships to expand our resource base, enhance positive perceptions of Purdue University, and provide opportunities for meaningful community involvement. PNC will work collaboratively with all types of educational institutions to ensure student access to higher education.

Mathematics, Statistics and Physics Department Objectives to Achieve Campus Goal 3:

A. The Department will promote community engagement of the Department by developing working relationships/partnerships with area K-12 schools, and community industry and organizations.

Strategies for meeting this objective:

- Encourage faculty to become involved in community engagement activities
- Establish a PNC Statistical Consulting Center for the PNC campus, and community industry and organizations
- Collaborate with sister institutions to enhance student learning
- Conduct professional development workshops for local teachers
- Conduct visits to local schools
- Share pedagogical information, e.g. teaching practices, use of technology
- Provide public astronomy observation sessions (see item 5 under resources)

Resources needed to meet this objective:

- Time for community engagement activities
- Funding to establish a Statistical Consulting Center on the PNC campus
- Time to provide statistical consulting
- Time to conduct professional development workshops for local teachers
- Time to conduct recruitment visits to local schools
- Time for discovery and engagement activities
- Funding for workshops
- Funding to establish and maintain an on-campus astronomy observatory

Assessment Measures reflecting progress toward meeting this objective:

- Number of faculty involved in community engagement activities
- Number, quality (as measured by surveys) and attendance of workshops
- Number and quality (as measured by surveys) of visits
- Number of visits to local schools
- Satisfaction/perception ratings of Statistical Consulting Center users
- Satisfaction/perception ratings of teachers and local schools
- Satisfaction/perception ratings of community industry and organizations

Campus Goal 4: Campus Environment

The PNC campus will be recognized as a center of beauty, culture, science, technology and the arts. PNC will provide facilities to support the needs of our academic programs, support services, and community initiatives.

Our Department is proud of the appearance of the PNC campus and the manner in which the campus is maintained by the administration. Our Department believes we can contribute valuable input to the administration regarding future planning for the enhancement of the campus appearance, renovations of current buildings (e.g. renovation of Physics Labs in Schwarz Hall), the planning of future buildings (e.g. an astronomy observatory), and the recognition of the PNC campus as a center of science and technology. In addition, the Mathematics, Statistics and Physics Department plans to keep the Department's public areas, tutoring facilities, and laboratory facilities aesthetically pleasing and professional.

Bench Marking Strategies and Peer Institutions

The Mathematics, Statistics and Physics Department will compare itself to the list of peer institutions below that appear in the PNC Campus Strategic Planning Document. As our plan is implemented and developed, these institutions may change.

Indiana University East (Richmond)
Pennsylvania State Altoona
Southwest State University (Minnesota)
The Ohio State University at Lima
Valley City State University (North Dakota)
University of Minnesota – Crookston
University of Wisconsin – Superior Campus

Peer institutions will be compared using (at least) the following data:

- Percentage of courses taught by Full-time Faculty
- Diversity of Faculty
- Strategic Plan
- Technology Support for Learning and Discovery
- Assessment Programs
- Retention Activities
- Support Staff
- Number of Secondary Mathematics Education Majors, once a BS degree program is approved and implemented
- Graduation Rates of Secondary Mathematics Education Majors
- Interactions with local industry

Response to ICHE Mandatory Review

An Associate of Science degree is offered on the Purdue University North Central campus with concentrations available in Biology, Chemistry, Engineering, Mathematics, and Physics. The curricula for the various disciplines are essentially equivalent to the first two years of the prescribed baccalaureate degree programs. While the program provides an attainable intermediate goal for the region bound student, it also prepares students for transfer to other campuses in pursuit of a baccalaureate degree.

All of the courses needed in the curriculum for the Associate of Science degree pre-exist on the campus. No additional resources were needed to initiate and to sustain this program.

Since its inception in 1996, five students have received an Associate of Science degree at Purdue University North Central.

Upon the establishment and approval of a Bachelor's Degree in Secondary Mathematics Education as outlined in the previous section **Goals, Strategies, Resources and Assessment** in this document, the Mathematics, Statistics and Physics Department will prepare an appropriate response for the ICHE mandatory review process.