New Mexico State University
Annual Report, 1965-66
Department of Mathematical Sciences

[Colloquia and Faculty Seminars](#)	[Distinguished Visitors](#)	[Undergraduate Scholarships](#)	[Grants Received by Department](#)
[Instruction](#)	[Curriculum](#)	[Library](#)	[Advisor Program](#)
[Student Majors](#)	[Professional Service](#)	[Meetings Attended by Faculty](#)	[Research Papers Published by Faculty](#)
[Research Papers Presented at Meetings by Faculty](#)	[Grants Funded](#)	[ANALYSIS](#)	

Due to Dr. Crouch's responsibilities as assistant to the Graduate Dean, more of the routine departmental duties have been delegated to special committees. Staff meetings were usually held at least twice a month and lasted on the average about one hour. As always, search for new staff is a major item dealt with in these meetings. Another major item of business in practically every staff meeting is an overall view of the department activities. Some of the results of these discussions are mentioned below.

[TOP](#)

COLLOQUIA AND FACULTY SEMINARS

The department had 34 colloquia. Seminars in Algebra, Number Theory and Topology were conducted during the academic year.

The third annual Holiday Symposium in Mathematics was held during the week of December 27 through December 31. Lectures on "The Index of Elliptic Operators" were given by Professor I. M. Singer of Massachusetts Institute of Technology.

[TOP](#)

DISTINGUISHED VISITORS

Dr. Richard S. Pierce, University of Washington

Dr. I. M. Singer, Massachusetts Institute of Technology

Dr. Oscar Kempthorne, Iowa State University

Dr. G. Milton Wing, University of Colorado

Dr. David K. Harrison, University of Oregon

Dr. Leonard Gillman, University of Rochester

UNDERGRADUATE SCHOLARSHIPS

Department of Mathematical Sciences Freshmen Scholarships - 10 (Source: Departmental Funds)

Physical Science Laboratory Freshman Scholarships - 3 (Source: Physical Science Laboratory)

GRANTS RECEIVED BY DEPARTMENT

NSF Excellence Grant, $700,000

NSF Summer Institute for College Teachers, $46,200

NSF Grant for Freshman Tutorial Program, $3,448

NSF Grant for Holiday Symposium, $6,500

NSF Summer Institute for College Teachers, (pending), $41,575

Instruction

Large sections taught by senior faculty with small ClS to 20 students) help sessions taught by teaching assistants are being continued. Several of the faculty have been making use of the overhead projector in their teaching, mainly in the large lecture sections. Dr. Ader has been using a portable public address system in his large lecture section.

Dr. Wisner has continued his experiments with teaching large lecture sections. By a predetermined plan, twenty-five students are selected each class period and Dr. Wisner teaches this group, calling upon the students for questions and recitation. The remainder of the class observes and has an opportunity to volunteer for five of the twenty-five positions if they so desire. Ideally, the remainder of the class should be isolated but still be able to see and hear. In this case, graduate students could be used to answer their questions immediately, but present facilities do not allow this added feature. Preliminary studies indicate that the plan is effective, and student reaction to it is generally favorable.

Curriculum

Undergraduate

The department has continued its policy of periodically reviewing its undergraduate offerings in all areas of mathematics. Several meetings were held with the faculty of the college of engineering to discuss problems in the sequence of courses for science majors.

With the addition this past year of Drs. Rogers and Kumar, our offerings in statistics have been revised and expanded. These changes were brought about after discussion with the departments interested in these courses. This expansion has created a need for more statisticians on the staff for the future.

The curriculum for the undergraduate honors program consisted of special honors sections of Mathematics 110, 191, and 192 and a tutorial problem seminar for ten outstanding freshmen.

Graduate

Several new courses were introduced to meet the needs of student and staff interests. Expansion of the offerings in statistics and computer science was accomplished and consideration of a graduate level applied mathematics curriculum was continued but final plans await staff additions in this area.

TOP

Library

The mathematics library is excellent. Over 140 current journals are subscribed to and back issues of most of these are relatively complete. There is still a need for more graduate books. It will be necessary to purchase multiple copies of many of these in the future.

TOP

Advisor Program

Graduate and undergraduate committees now take care of all advisees. A more permanent arrangement of assigning advisors is hoped to result in better advisee-advisor relationships at both the graduate and undergraduate level.

TOP

STUDENT MAJORS

Committees on both the graduate and undergraduate level handle the problem of student recruitment and recommend students for fellowships and scholarships.

A tutorial program was started this past fall as a means of attracting high quality undergraduate students. Ten students participated in this tutorial directed by Dr. Wisner.

TOP

PROFESSIONAL SERVICE

Dr. Wisner serves as an editorial consultant for John Wiley and Sons Publishing Company and as consulting editor for Brooks-Cole Publishing Company.

Drs. Gaughan, Wisner, Crouch, Adams, Soloman, and Hosford have participated in several high school mathematics conferences over the state this year.

Dr. Crouch was a Visiting Lecturer for the Mathematical Association of America.

Dr. Wisner is a member of the Undergraduate Panel of the Committee.on Support of Research in the Mathematical Sciences, a committee of the National Academy of Sciences - National Research Council, which advises the administration, congress, and agencies of the Federal Government on how funds should be appropriated for proper support to the mathematics community.

Dr. Thomas has served as Regional Director of the Southwestern New Mexico Science Fair.

MEETINGS ATTENDED BY FACULTY

Annual Summer Meeting of MAA and AMS, Dr. E. Walker, Dr. C. Walker, Dr. Wisner, Dr. Crouch
Annual Winter Meeting of MAA and AMS, Dr. Adams, Dr. Gaughan, Dr. Johnson, Dr. Solomon, Dr. Kumar, Dr. Loustaunau, Dr. Richman, Dr. Knoebel, Dr. Wisner, Dr. Mines, Dr. Crouch, Dr. Williams, Dr. E. Walker, Dr. Kruse, Dr. C. Walker, Dr. Swartz, Dr. Stevens

Meeting of AMS at New York, Dr. Johnson

Symposium of Mathematical Aspects of Computer Science, Dr. Adams

Western Regional Meeting of AMS, Dr. Wisner, Dr. Knoebel

Meeting of Institute of Mathematical Statistics, Dr. Rogers, Dr. Kumar

Mathematical Conference in Socorro, Dr. Stevens, Dr. Loustaunau, Dr. Gaughan, Dr. Cobble, Dr. Williams

Advanced Science Seminar in Newark, Delaware, Dr. Cobble

50th Anniversary meeting of MAA, Dr. Wisner

Southwestern Regional Meeting of MAA, Dr. Solomon, Dr. Richman, Dr. C. Walker, Dr. Swartz, Dr. Mines, Dr. E. Walker, Dr. Thomas, Dr. Crouch, Dr. Wisner

RESEARCH PAPERS PUBLISHED BY FACULTY

Dr. Philip Hosford, "The real world of the beginning teacher," New Mexico School Review, 1965.

Dr. Donald G. Johnson, "The completion of an archimedean f-ring," J.London Math. Soc., 1965.

Dr. S. Kumar, "A group-testing problem," Annals of Mathematical Statistics, 1965.

Dr. Fred Richman and Dr. John M. Irwin, "Direct sums of countable groups and related concepts," Journal of Algebra, 1965.

Dr. Fred Richman, "Generalized quotient rings," Proc. Amer. Math. Soc., 1965.

Dr. Edgar Rutter, "A remark concerning quasi-Frobenius rings," Proceedings of Amer. Math. Soc.

Dr. Louis Solomon, "The orders of the finite Chevelley groups," J.Algebra.

Dr. Louis Solomon, "An action of the symplectic modular group," Nagoya Math. J.

Dr. Donald Stevens, "The average number of real zeros of random polynomials," Proc. London Math. Soc.

Dr. Charles Swartz, "A generalized function calculus based on the Laplace transform," Studia Math.

Dr. Elbert A. Walker, "On n-extensions of Abelian groups, Ann. Univ. Sci. Budapest, 8 (1965).

Dr. Elbert A. Walker and Dr. Fred Richman, "Primary Abelian groups as modules over their endomorphism rings, Math. Zeit. 89, 1965.

Dr. Robert J. Wisner, "Matrix number theory I:factorization of 2 x 2 unimodular matrices," Acta Sci. Math., (with B. Jacobson).

RESEARCH PAPERS PRESENTED AT MEETINGS BY FACULTY

Dr. Cobble presented a paper at Mathematics Conference in Socorro, New Mexico.

Dr. Edward Gaughan presented a paper at Mathematics Conference in Socorro, New Mexico.

Dr. Philip Hosford, "The real world of the beginning teacher," Nineteenth National Conference of the National Commission on Teacher Education and Professional Standards, New York City.

Dr. Arthur Knoebel presented a paper at the sectional meeting of the Amer. Math. Soc. in Berkeley, at MIS and MAA meeting, and MIS meeting in Honolulu, Hawaii.

Dr. J. Loustaunau presented a paper at the annual meeting of the American Mathematical Society and at Mathematical Conference, New Mexico Institute of' Mining and Technology.

Dr. Ray Mines, "Completeness and generalized primary groups," Winter Meeting of Amer. Math. Soc.

Jack Porter presented a paper at the Southwestern Regional Meeting of the MAA in Albuquerque.

Dr. Donald Stevens, "Expected number of real zeros of polynomials," Chicago, Illinois.

Dr. Charles Swart z presented a paper at MIS and MAA meeting in Chicago.

Dr. Francis Williams presented papers at the joint meeting of the MIS and MM in Chicago and the Mathematics Conference in Socorro.

Dr. Robert J. Wisner presented a paper at the MIS meeting in Honolulu, Hawaii.

RESEARCH PROPOSALS RESULTING IN GRANTS

L. Solomon, $13,611

E. A. Walker and C. Walker (continuing), $38,000

J. Loustaunau, $8,106

ANALYSIS

The progress of the department over the past year must be subdivided into four general areas: overall program, staff, students, and facilities. A new building to house the department will partially solve the facilities problem but the availability of classrooms for large lecture sections remains a critical issue. In several cases this year it was necessary to split the large lecture sections because of the lack of rooms of sufficient size to hold the classes.

We must sustain our efforts to attract high quality students at the graduate level. This year only one student received a Ph.D. in mathematics although two others should finish at the end of this summer. The prospects for next year appear to be quite good as we have seven students who have passed preliminary examinations and are beginning their research. One of these students, Darel Hardy, has already sub-mitted a research paper for publication.

Our undergraduate recruiting and program needs to be re-evaluated. This past fall, ten outstanding freshmen were awarded scholarships and participated in a tutorial conducted by Professor Wisner. We plan to continue this program next fall and ten new freshmen have been selected for the tutorial. These young people come to this university with very good high school records and strong recommendations. Hopefully we can follow up and continue to challenge them in the years beyond the freshman year. It is this type of interest that will help insure the quality of our undergraduate program.

The staff of this department must be considered both as a strength and a weakness. The staff is active, well-trained and dedicated. Their standards are high and this is reflected in the performance expected 6f our students. While the new staff added for next year are of very high quality and will further strengthen the group, it should be pointed out that of the twenty-four staff members presently hired for next fall, only Drs. Giever, E. Walker, Thomas and Ader will have been on the staff more than four years; Drs. C. Walker, Richman and Wisner have each just completed their third year; the remainder will be either new or beginning their second year at NMSU. From this analysis, it is clear that there have been serious staff losses over the past few years. This year the loss of Dr. Ralph Crouch is very serious because of the role he has played in the development of this department over the past 17 years. In addition the recent resignations of Drs. Lick,

Thorp, Stevens and Rutter have been disappointing. It is in this sense that staff problems indicate a weakness which must be analyzed.

In future staff additions we must seek to broaden the areas represented within the department. In particular, staff members in applied mathematics and computer science must be obtained if we are to live up to the title "Department of Mathematical Sciences" and the stated goals of the NSF Science Excellence Grant. There are plans to add persons on joint appointments with various other departments depending upon the areas of specialization of those involved. The Science Development grant will presumably be helpful in solving these problems if they are faced fully.

This department has long sought and should now be able to obtain with the funds from the NSF grant one or more outstanding mathematicians on a visiting or a permanent basis. Unfortunately, the late date at which the grant was announced has made this difficult for the fall but efforts are still being made to fill this need for next year. The presence of such persons on this campus will certainly serve to attract and keep staff members of the type we seek.

The overall program of the department has certainly undergone improvement this year. Attention has already been drawn to the efforts expended in maintaining liaison with other departments within the university with regards to revision and expansion of service courses. It is only by constantly re-evaluating and, when necessary revising our offerings that we keep pace with the increased demands for more knowledge of mathematics in the other disciplines. The new additions to our staff this year have brought some different outlooks on undergraduate and graduate offerings for mathematics majors and stimulated many discussions which have led to improvements in the overall curriculum.

Return to NMSUMATH Home Page	Department of Mathematical Sciences	New Mexico State University