University of Nebraska-Lincoln
Department of Mathematics and Statistics

N E W S L E T T E R

Fall, 1984
Volume II, No. 1

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NEW EQUIPMENT PURCHASES

With funds donated by alumni and overhead money produced from our National Science Foundation grants, the Mathematics and Statistics department purchased two new video terminals and two IBM personal computers. The video terminals connect to the University System which consists of a new CDC (Control Data) main frame computer and two CDC mini computers. The IBM-PC's have 256K and Epson printers, and they have become quite popular with some of our staff, particularly for use in word processing and in languages to solve mathematics problems. We have FORTRAN, PASCAL, and BASIC for the PC's, and both video terminals support APL. With the influx of computer use in all areas of pure and applied mathematics and statistics, we shall have to expand our facilities considerably during the next few years.

STAFF CHANGES

This year we welcomed four new faculty members. Richard Rebarber, who just received his Ph.D. in control theory from the University of Wisconsin, is on a tenure line. Visiting this year are Sudhir Gupta, a statistician from India, Michel Lapidus, an analyst from USC, and John Lewis, a control theorist from Ames-NASA in Los Altos.

Several of our regular staff members continue to be on leave. Frank Gilfeather remains at the National Science Foundation in Washington, D.C., as the director of the modern analysis program; Robert Krueger is visiting Ames Research Laboratory at Iowa State; and, Yung Tong has temporarily joined the staff at Georgia Tech. Daniel Mihalko has taken a permanent position at the School of Aerospace Medicine at Brooks AFB, Texas, and Spyros Magliveras has transferred full-time to The Computer Science Department.

This year after 34 years service to our department and the University, Professor Lloyd Jackson retired. Lloyd received his Ph.D. in differential equations from UCLA in 1950 and then came to Nebraska. Over the years his leadership helped develop our department and gradutate program to one of national standing. Lloyd still attends seminars regularly and his research program is still going strong.

The coming spring will be a busy one for us. So far our department has been authorized to hire five new professors. Generally, we are looking for recent Ph.D.'s whose areas will strengthen the current expertise on our faculty.

We have strong groups in commutative algebra, semigroups, analysis and operator theory, differential equations, control theory, and combinatorics.

In statistics and some of the other applied areas it is difficult to find staff because of the great demand by both universities and industry. Salaries in those areas have climbed significantly.

ACTIVITIES

Pi Mu Epsilon, the undergraduate mathematics honorary, kicked off the Fall Semester with a picnic at Holmes Lake. The annual Departmental picnic followed and now we are planning the Math Department Christmas party and potluck. All of these social events bring together our faculty, staff, and graduate students; we believe it is important to have these kinds of activities because they enhance our working environment and help us develop a better faculty-student learning community.

Also, we are currently preparing for the annual Putnam Examination, a national mathematics competition for undergraduates. Every university that participates has five team members, and a high standing on the test can be very prestigious and rewarding for both the university and the team members.

THE BOEKEL LECURESHIPS

Due to a generous grant from Mr. Robert Boekel of Denver, our department has been able to institute a lecture series which brings to our department outstanding mathematicians with international reputations. Having such people on campus is tremendously stimulating for our students and faculty; it gives our faculty an opportunity to exchange ideas which often result in new contributions to the literature. Last year, four speakers were funded, and this year we expect to have four more.

It is this kind of financial support from outside sources that creates an atmosphere of quality and gives us a margin of excellence over other universities with whom we compete for outstanding students and faculty.

WHAT IS CONTROL THEORY?

In last year's Newsletter we presented a problem in number theory to challenge your problem-solving ability. This year we would like to briefly give you some notion of what the area of control theory is and where it has its origins.

Control theory is presently a very popular area of mathematics that developed in the last twenty to thirty years. Some of its origins are in the "space program" where the problem of controlling a space vehicle was important. Now, applications include controlling the environment, the economy, the output of electrical circuits, the trajectory of a missle, and so on. A typical problem involves determining what the "input" should be in order to produce a certain "output"; for example, how do the economic factors like tax rates, unemployment, etc., produce a desired inflation rate? Control theory deals with developing models for these types of situations and proving theorems which help to determine the solutions. Mathematically, it heavily involves differential and difference equations, matrix algebra, and some "stochastic" control problems use probability theory.

Professors Jerry Dauer, Richard Rebarber, and John Lewis all work in control theory. Several of our Ph.D. students have chosen this area and courses in control theory often have high enrollments, even at the 900-level.

1983 QUESTIONNAIRE RESULTS

We received 67 questionnaires last year in response to our mailing. It was fascinating to see the varied jobs alumni have found and to read the comments. Most alumni were pleased to receive the newsletter and were eager to hear more about the department and about other alumni. We do not have space to discuss in detail every reply, but the following four comments seemed to be of special interest:

First, Dr. William G. Leavitt, class of 1937, (AB) and 1938 (MA) (and later a Ph.D. at Wisconsin) lives in Lincoln and is a Professor here at UNL. His response to the question about how mathematics training helped his career was simply "This was where I found out that I loved mathematics." Also, he stated that courses with Miguel Basoco had been the most useful "more for his enthusiasm than for course content." Non-teaching activities he would like to see the department undertake: "more and better research."

Second, Pansy Read Car class of 1919 (AB) lives in Gering, Nebraska. Now 87 years old and retired, she was formerly a math teacher. She says about her math training: "It was my livelihood during my teaching years. I have used it in many different ways during my married years... It developed my love for children, especially those of high school age. My three children are all graduates of the University in Lincoln and all took much math. I now have 3 grandchildren who are University of Nebraska graduates." She mentioned she especially admired Dr. Candy for his kind and trusting ways. Also she says "I urge all young students to take as much math as possible."

Third, Charles Wright, class of 1956 (BA), 1957 (MA) is now Professor and Chairman of the Department of Mathematics at the University of Oregon. He writes: "I still feel strong ties to the University of Nebraska and to Lincoln, in spite of having left there over twenty-five years ago. From time to time I see the names of fellow graduate students who have made good (as well as ones who have become department heads) and I would be interested in knowing what's become of them. I hope you find out enough through your canvass to include some information on alumni in your next newsletters. I always felt that we math students were a pretty select bunch, and perhaps you can help us regain a sense of belonging to the departmental tradition at Nebraska."

Fourth, Delores Bernhardt Armstrong, class of 34 (AB) lives in Eureka, California, and is a retired high school teacher. She writes that she taught mathematics for 30 years and was chairman of her department for 20 of those years. She comments "I would have liked to thank Dr. Basoco for his help. I was afraid of him but admired him so much."

In order to give some information about each respondent in a limited space, we have prepared this occupations chart (listing people by last names and class year; parentheses give former name.)

Education (48%)

a) pre-college (mostly high school teaching)
Cox (19), Edwards (30), Armstrong (34), Reed (47), Buell (49), Hamme (68), (Jones) Ward (68), Schlotthauer (69), Rogge (70), Brakke (72), Miller (74), Meyer (75), Massman (79), Nicholson (80), May (81), Bayer (82), Cargill (82)

b) College
Leavitt (37), Gass (43,54), Anderson (51,54), (Davis) Wirsig (54), Wright (56,57), Gross (59,63), Meitler (64), McKee (68), Bosch (70), Broberg (71), Shou (74), Woodle (76,78), Hammerstrom (80)

Actuarial or related work (15%)

Bykerk (68), Bayer (69), Schuetz (69), Baker (71), (McGee) Obering (71), Boslough (75), Bors (76), Evans (77), Peebles (82), Spelker (83)

Computer Programming (11%)

Bayer (68), Batter (71), Lieneman (73), Anderson (76), Bloom (77), Greenfield (78), Soderholm (81)

Engineering (11%)

Fraser (56), Hare (70), Woodward (70), Collord (76), Winter (76), Jurgens (81), Hyslop (82)

Other professions

Balodis (56)-chemist; Baumann (64)-operations research; Mitchell (68)-attorney; Haseloh (69)-Pilot, Air National Guard, Willis (69)-psychologist; Gregg (71)-Transportation planner; Reynolds (72)-law student; Decker (73)-Project coordinator Union Pacific RR; Keesling (75)-school supplies; Reznicek (77)-physician; Heckman (79)-Navy officer; Hoyt (80)-Ph.D. student; Nicholson (80)-Homemaker.

Some of the respondents praised their favorite professors; Miguel Basoco, Walter Mientka, Bernie Harris, David Skoug, and Jim Lewis were mentioned particularly. The comments about the importance of math training for your careers and personal development were generally very favorable and in agreement. For example, one person said, "It taught me the value of logical, deliberate thinking and planning -- gave me confidence and keeps my curiosity stimulated." Another wrote, "I get to be treasurer of every organization I belong to and have learned lots of bookkeeping and accounting -- even being offered jobs from accounting firms."

There was no real consensus on which courses were most useful. Several people said "all of them."

We thank all of you who responded to the questionnaire and hope that we can continue to have an alumni information exchange in this newsletter. Please write to let me know what you or other alumni are doing; we will try to incorporate your news into an article for the next newsletter.