MATHEMATICAL SCIENCES

THE UNIVERSITY OF TEXAS AT EL PASO

FALL 1997

From The Chair

Joe Guthrie, Ph.D.

Part of these chair columns is a kind of update on what has been going on in the department over the last year or so. It seems strange to be summing up when the academic year is just beginning. One wants to look forward, not back. However, the last couple of years have been very exciting ones in our department, and I hope the future will be as bright.

In this newsletter are accounts of three activities in the department which are giving our undergraduate students opportunities hard to find elsewhere. Professors Amine Khamsi, Helmut Knaust, and Nancy Marcus have led the SOS Math project. Several students have worked alongside them in creating this web site which has received national recognition. The undergraduate research program, under the direction of Professor Mike O'Neill, promises to give some of our best students a professional headstart. Finally, Club Zero is an active part of our department which provides informal contact between students and faculty which is especially important on a commuter campus such as ours. Mike O'Neill is taking over sponsorship of the club this semester from Art Duval.

Recent additions to the faculty include Jeffe Boats, David Dennis, Louise Guthrie, Mike O'Neill, Robert Thurman, and Luis Valdez-Sanchez. Nhu Nguyen, who spent last year at NMSU, is visiting. Carl Hall has returned after spending last year as a visitor at the University of Alaska, and Joan Staniswalis has assumed the directorship of the Statistics Consulting Laboratory.

Mathematics students now have two computer laboratories on campus which are reserved for their use. They are equipped with Power Macintosh computers with Mathematica and other special software designed especially for mathematics. These computers are used extensively in such courses as Differential Equations and Multivariable Calculus. Course materials are being developed which will allow us to lengthen this list.

Thank you to all who have contributed to our Excellence Fund in recent years. This fund allows us to do things our regular budget doesn't cover. It paid for the Club Zero trip to Grants last year and will

Club Zero
UTEP Student Math Club

Club Zero, the UTEP student math club, was revived in Fall 1995. In that time, the club has helped many math majors and other students who like math to get to know one another better, and given them a chance to see a variety of interesting facets of math that they might not ordinarily see in their courses. Currently, the club has nearly twenty members from several different majors, and meets weekly over cookies and soda, for games or puzzles, or a good presentation on mathematics.

Presentations last year covered such topics as: q-Calculus; the algorithms calculators use to compute various functions; topology and graph theory of chemical molecules (given by Emil Mittag, a chemistry major and club officer); and Geometer's Sketchpad, the dynamic geometry computer program (given by Alfredo Rodriguez, also a club officer). Last year, the club also started a small library of math books of interest to undergraduates.

The highlight of last year was the visit, paid for by the department's Excellence Fund, to the MAA Southwest Section meeting in Grants, NM. The seven UTEP students who attended outnumbered the students from all the other campuses in the Southwest Section (El Paso, New Mexico, and Arizona), including nearby UNM. They saw a variety of talks on math research and pedagogy by mathematicians from throughout the Southwest. Plans are underway to have even more students visit the Texas Section next year in Dallas, and hopefully have some of our students give talks.

Undergraduate Research

The department of Mathematics is continuing its effort to provide experiences in mathematics outside of the classroom and to promote student interaction with the department's faculty.

In support of this effort, the MIE [Model Institution of Excellence] program has provided equipment for a new undergraduate mathematics laboratory located on the second floor of Bell Hall. The laboratory includes 3 Sun system Sparc-5 computers and one Sun system Ultra I computer as well as the Web lab computer which is being used by student workers in the department's "Math on the Internet" projects.

The laboratory will be open to use by all undergraduate students who are involved in mathematics activities under the direction of a faculty mentor. Located across the hall from the "Peer Facilitator Office", the lab is expected to become a part of a small center of undergraduate mathematics in Bell Hall.

This semester, three winners of the MIE stipend for undergraduate research will be taking leadership roles in developing this new resource within the math department. Under the direction of a group of faculty mentors they will undertake development of computer demonstrations for the Calculus sequence, for our Linear and Matrix algebra courses, and for our Differential equations classes. The expertise that the researchers develop in the lab will be shared with other mathematics students in classroom presentations and in a peer mentoring role, which is a requirement of the stipend award. Another facet of the mentoring role will be to attract more student researchers and help in their training in the use of the software.

These students, who are funded for a nine month period, will also work on some open ended research projects utilizing the software packages Mathematica, Geomview and Geometer's Sketchpad. The group will aim at presenting their projects at the MAA sectional meeting in the Spring semester.

This is certainly a lot to rest on the shoulders of the three winners. But we have great confidence in their enthusiasm and of their pride in their work.

Congratulations to Edgar Bridges, Juan Medina and Liz Molina on winning the prestigious MIE stipend!

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send them to Dallas this spring. Books and supplies for a small Club Zero library of mathematics and career information came from this fund. It also helps with the cost of sending faculty members to important meetings overseas.

This year there is a new way to support the mathematics department. In addition to the Excellence Fund and the Gladman Scholarship Fund, there is a recently established Mathematical Sciences Endowment Fund. This fund represents the department's part of the university's Legacy Campaign. In this fund, the donations will remain intact while the income is used to support our programs. I hope you will consider helping us to get this Mathematical Sciences Endowment Fund off to a great start.

S.O.S. Mathematics

S.O.S. Mathematics (http://www.math.utep.edu/sosmath) is an internet site on the World Wide Web, developed by faculty and students in the UTEP Mathematics Department, where our students can find review material to help them doing their homework, preparing for a test, or getting ready for class. Students can work at any campus or off-campus location with internet access, and there is no need for books, since related subjects are just a mouse click away.

S.O.S. Mathematics has been on-line since the Fall of 96 to help students at UTEP and from around the world to brush up on their Math skills in Algebra, Trigonometry, Calculus, Differential Equations, Matrix Algebra and Complex Analysis. Also available are "cyber-exams" to give students the opportunity to assess their skills.

The project, which currently consists of about 2000 pages of study material, has been generously supported by "A Model Institution for Excellence", a university wide initiative sponsored by the National Science Foundation. Additional support comes from the College of Science, and NASA.

About 5000 students use the site every month, ranging from high school students struggling with their homework to professionals refreshing their Math memory. Here are some of their comments: Andrew C. is a UTEP student taking the Differential Equations course: "This site has been very, very helpful in answering questions that the book does not." Sandy B., a 39-year old mom, will be attending college for the first time this fall and writes: "Your site is exactly what I need. Thank you to all of those who have made this Web site possible." Karin M. is working at an accelerator laboratory in Germany: "Without your site to guide me on the properties of hyperbolic functions, I would have been stuck! The site seems very useful at those times when your mathematical handbooks are far away!"

Department of Mathematical Sciences - ALUMNI DATA UPDATE

Please fill in the form below so we can update our records.

Name: _____ Maiden Name: _____

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City: _____ State: _____ ZIP: _____

Home Phone: _____ Business Phone: _____

Degree(s) and Major: _____ Year(s): _____

Employer: _____

Position/Title: _____

Birthdate - Month: _____ Day: _____

Let us know what you have been up to (To be included in the Math Department Newsletter).

_____

_____

Enclosed is my gift of $ _____ for the 1997 Alumni Fund For Excellence.

Yes, I want to support the Department of Mathematical Sciences.

Enclosed is my check for:

_____ Mathematical Sciences Endowment Fund

_____ Math Department Enhancement Fund

_____ C. H. Gladman Scholarship Fund   _____ Other _____

_____ In Memory/Honor of: _____

OR you may use: ___ Mastercard   ___ Visa   ___ Discover

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Club Zero *(continued from page 1)*

For fall semester 1997, Club Zero is going strong. We have already had two neat math talks at the meetings. Professor Bob Thurman spoke about stable and unstable manifolds for the equilibrium positions in rotating coordinates of the restricted three body problem. One of the club's officers, Ricardo Saenz gave us a great presentation on "Pirate Treasure and the Chinese Remainder Theorem". This talk was a provacative invitation to Number Theory.
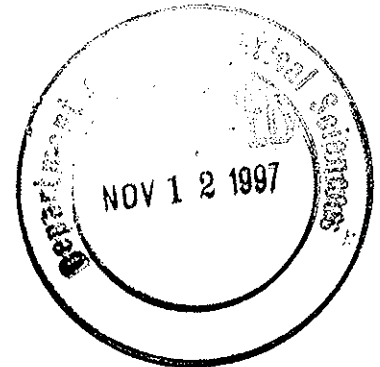
A course on number theory will be offered in the spring and Club Zero is hoping to form a study group for it. Ricardo's talk was certainly a giant step in that direction. The club has already sponsored a fall semster study group for the course Introduction to Analysis which has been meeting twice a week and has about seven members.

Currently, as a source of fun and hopefully funding, Club Zero is sponsoring a campus-wide homecoming chess tournament. The games will be played through October with the finals to occur in homecoming week. The club is considering making the event monthly or bi-monthly and perhaps expanding to other games (backgammon, Othello,...).

Plans for the near future and for the Spring semester include: a picnic/BBQ with the whole Math department at the chairman's house; Math Night at the El Paso Buzzard's nest [that's ice hockey, in case you didn't know]; a trip to the MAA sectional meeting in Dallas; and more math presentations.

UTEP

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Department of Mathematical Sciences
El Paso, TX 79968-0514

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Dr. Joe A. Guthrie
University of Texas at El Paso
Mathematical Sciences - BEL 124
El Paso TX 79968