Math Minutes

Department of Mathmatics and Statistics
2002/2003

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SUMS Institute

By Kate Sisulak

The Institute for Strengthening the Understanding of Math and Science (SUMS) has just completed its seventeenth Math-Science Honors Program (MSHP). Dr. Joaquin Bustoz started the program in 1985 with 32 students from Phoenix area high schools and continues, having served over 1700 participants. Each spring, high school students from across the state compete for participation in the summer program.

Study Group, Sums 2002

The Math-Science Honors Program is an intensive, residential program that gives culturally diverse students a successful university experience and the ability to earn university mathematics credit while in high school. Participants in the program live on-campus, take a three or four credit mathematics course, and interact with faculty. This structured program includes traditional lectures, daily problem sessions, frequent testing, and one-on-one tutoring. The Math-Science Honors Program stresses hard work, discipline and encourages students to continue their education past high school. Applications for the MSHP 2003 will be available January 2003 on the web at http://summs.la.asu.edu. For more information please call (480) 965-1690.

Participants of MSHP program, Summer 2002

Letter From The Chair

By Andrew Bremner, Chair

Welcome to the 2002-2003 issue of the Department newsletter. In July 2002, the University appointed a new President, Michael Crow, who comes to us from Columbia University. He has many innovative ideas, and it is likely that the institution will be an interesting place to be over the next few years. At the Department level, there has been much activity since last year, with an official name change to the Department of Mathematics and Statistics. Yang Kuang followed Horst Thieme as Director of Graduate Studies and Glenn Hurlbert replaced Eric Kostelich as Director of Undergraduate Studies. (Glenn is, to my knowledge, the first Associate Chair of the Department to arrive regularly at work on roller-blades.)

May saw the retirements of Mike Driscoll, John McDonald, and Al Swimmer, with well over 100 years of collective service to the Department. Profiles of these three appeared in the last edition of the Newsletter.

In January, Harvey Smith, former Chair of the Department, retires after 25 years at ASU, and in May 2003, Lynn Kurtz steps down after 35 years of service. We shall miss their distinctive and much appreciated contributions to Department life. Sadly, two prized faculty members left us during the past year: Yijun Zuo, after four years on the faculty, and Tom Trotter, who has been with us since January, 1987. We wish Yijun well at Michigan State University. Tom relinquished his office as Vice Provost for Academic Affairs at ASU in order to assume the mantle of Chair of the Mathematics Department at Georgia Institute of Technology. His influence on the development of our own Department has been profound; to take just one

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Letter From The Chair

example, the current structure of the First Year Mathematics program is due to his tireless efforts when he was Chair of the Department. He was (and remains) an esteemed colleague and friend, and his weakness for chocolate is fondly remembered. Two Assistant Professors were hired in Spring 2002, despite university budgetary concerns that could have stopped the searches at any time. Michael Oehrtman joins the faculty with research specialization in Mathematics Education, and Jake Oleson, with research specialty in statistics. We give them both a warm welcome. Congratulations are collectively offered to Renate Mittelmann, our tireless maintainer of the Department's computing systems, who was promoted last year to Full/Senior (Research Professional) Academic Professional. Her responsibility is colossal: not only does Renate oversee software and hardware for well over 600 machines throughout the offices, labs, and classrooms, but she also faces the sometimes daunting task of educating our occasionally reluctant faculty in the modern aspects of computing!

Matt Isom continues to shepherd First Year Mathematics. Congratulations are due to Jay Abramson, Mike Trapuzzano (2001) and Terri Miller, Faris Odish, Richard Rudemann and Scott Surgent (2002) on their promotion from Lecturer to Senior Lecturer, and also to Purush Masilamani, Richard Reynolds, Leslie Shelton, and Doug Williams, on promotion from Instructor to Lecturer. We said goodbye to Sharon Walker and Yingxiang Zhu, both most valuable members of our team: we wish them well in their new careers. Because of severe budgetary problems this year, we were unable to hire our usual quota of Visiting Faculty, and accordingly lost ten positions for Visitors. To maintain teaching demands, we were authorized instead to hire new Lecturers and Instructors; and thus the First Year Math program has seen its numbers increase remarkably. We welcome Toni Coombs, Tracey Gust, and Marta Herrero as new Lecturers; and Mark Baer, Naala Brewer, Alok Dhital, Tae-Chang Jo, Rodger Moffett, Charles Seal, Derar Serhan, and Satoshi Takahashi, as new Instructors. The Department said farewell to a wonderful staff member this year, Kathy Radspinner, who had been with us only one year, but who left many friends behind. Her replacement is Joanne Person, already well-integrated into her role (and who signed up this season for a course in wilderness survival technique: who knows when this will come in useful?) We also welcome Christine Murray, whose responsibilities lie in the Testing Center. Since the last newsletter, grant funding at very impressive levels has been secured by Dieter Armbruster and Christian Ringhofer ($190K from NSF), Joaquin Bustoz for the Minority Access to Research Careers Program ($470K from NIH), John Jones with Matt Isom as co-PI ($150K from NSF), Alex Mahalov and Basil Nicolaenko ($852K from AFOSR), and Rosie Renaut ($350K from the Harrington Foundation and ASU). Many other faculty too have received national grant funding over the past year, recognizing their major contributions to their discipline. Hal Smith deserves hearty congratulations on his award of the Bellman Prize, for the best paper published over a two year period in the flagship journal Mathematical Biosciences. At the end of last year, Steve Kaliszewski and John Quigg organized the West Coast Operator Algebra Symposium at ASU, and in January Eric Kostelich will host the third of the ”Dynamics Days" meetings to be held at ASU. In April 2002, Math Awareness Week festivities culminated with a lecture by Dr. Simon Tavare of the University of Southern California on Mathematics and the Genome. This was a stimulating and well-attended talk with over 300 people in audience, including many local high school students and their teachers. Once again, faculty members have criss-crossed the United States with invited talks, and have given lectures across the developed world. It is clear as the year's activities are reviewed that every one of our current faculty from Professor to Instructor has played their own individual part in ensuring the Department remains a vibrant and dynamic institution in which to pursue mathematics!

Department Name Change

By Dennis Young

In February 2002 the Arizona Board of Regents approved a Departmental request to change its name to the Department of Mathematics and Statistics. The name change recognizes the growth of statistics programs in the Department, the Department's commitment to the future of statistics programs, and the fact that statistics is a distinct discipline in the mathematical sciences. In the past several years the Department has introduced a Concentration in Statistics for the Bachelor of Science Degree and a Minor in Statistics. The Department's statisticians have been active participants in the interdisciplinary Master of Science in Statistics program since its inception in 1990. The Department also actively supports the Statistics Hot Line consulting office in conjunction with the ASU Committee on Statistics and the Graduate College. Our new name will provide increased visibility for our statistics courses, programs and faculty. It will help us attract students and make it easier to recruit faculty in statistics. Finally, we anticipate that our new name will help the Department become a focal point for statistical activities at ASU.

WEXLER AWARDS for 2002.

By Andrzej Czygrinow, Chair of the Awards Committee

The 2002 Wexler Award for Outstanding Undergraduate Teacher was received by Prof. Sergei Suslov. Many students praised his qualities as a teacher and described his enthusiasm for teaching and dedication in the classroom. They emphasized his broad knowledge of subject and ability to convey it in an interesting and clear way. It is worth recalling that Sergei has taught a wide range of undergraduate courses from lower to upper level and in each of them he proved to be a successful teacher. His dedication to teaching can be clearly seen in his linear algebra web page where many resources are combined to give a better and deeper learning experience. Dr. Suslov obtained his Ph. D in 1986 from Kurchatov Institute of Atomic Energy and has an active research program in the area of special functions. Congratulations to Sergei Suslov for his excellent teaching!

The 2002 Wexler Award for Outstanding Mathematics Undergraduate went to Son Tran. Son is an excellent student and a great mathematical talent. He has taken many mathematics classes including most advanced undergraduate courses. He finished all of them with high grades. Teachers described his ability to understand deep mathematical ideas and creativity used to attack more involved problems. Son Tran is a student of Prof. Jack Spielberg. Congratulations to Son Tran for receiving the Wexler Award!

STATISTICS NEWS

By Sharon Lohr

Statistics faculty are active in collaborations across campus and at the national level. All of the Statistics faculty give advice to researchers across campus on statistical issues in their research. Dennis Young continues as consulting statistician for the NSF funded Integrated Graduate Education and Research Training (IGERT) program in Neural and Musculoskeletal Adaptations in Form and Function. Sharon Lohr is Chair of the Statistics representatives on the U.S. Census Bureau Advisory Committee of Professional Associations, and was elected in May 2002 to be Chair of the Survey Research Methods Section of the American Statistical Association.

We welcome Professor Jacob Oleson to the department. Professor Oleson received his Ph.D. in Statistics from the University of Missouri-Columbia in 2002. His research specializations are small area estimation, sample surveys, Bayesian methods, and environmental statistics.

All Statistics faculty in the department are also members of the ASU Committee on Statistics, a coalition of statisticians from the College of Business, the Department of Industrial Engineering, and the Department of Mathematics and Statistics. Under the able leadership of Professor Richard Burdick from the Department of Economics, the Committee on Statistics promotes statistical research and activity on campus and administers the highly successful Master of Science in Statistics degree program.

Eleven students received a M.S. Statistics degree between December 2001 and August 2002. Currently, 19 students are enrolled in the M.S. Statistics degree program. In addition, there are seven Ph.D. students and two M.A students concentrating in Statistics within the Department of Mathematics and Statistics.

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External Grants

The following individuals have current grant funding:

Dieter Armbruster
Joaquin Bustoz
Marilyn Carlson
Anne Gelb
Frank Hoppensteadt
Glenn Hurlbert
Matt Isom
Zdzislaw Jackiewicz
John Jones
Matthias Kawski
Hal Kierstead
Eric Kostelich
Yang Kuang
Ying-Cheng Lai
Sharon Lohr
Juan Lopez
Alex Mahalov
Hans Mittelmann
Basil Nicolaenko
Rosemary Renaut
Christian Ringhofer
Hal Smith
Michelle Zandieh

Kudos

Professor Phil Leonard, ASU math professor for 34 years, has been named the 2002 Teacher of the Year by the Southwestern Section of the Mathematical Association of America. This award is for college professors who have been "extraordinarily successful" in their teaching, have had influence beyond their institutions and who foster curiosity and excitement in their students. The Southwestern Section of the math association covers colleges and universities in Arizona, New Mexico and Texas.

Professor Frank Hoppensteadt received the Faculty Achievement Award for Research from the ASU Alumni Association. Professor Hoppensteadt is one of three professors at ASU who has joint appointments in the Colleges of Engineering & Applied Sciences and Liberal Arts & Sciences and he plays a very important role in connecting the research work of the two colleges. He is an internationally renowned scholar in the area of nonlinear systems. His name recognition as a leader in his field is very high at other U.S institutions and abroad. He has supervised and graduated 10 Ph.D. students over his career. Hoppensteadt has more than 130 publications, including 14 books.

Professor Rosemary Renaut was the first John von Neumann Visiting Professor of the Munich University of Technology Faculty of Mathematics. In recognition of her Outstanding Scholarly Achievements she was inaugurated on September 1, 2001. The special visiting professorship was created to foster research links between foreign and German institutions. Professor Renaut spent her sabbatical year at this institution working with faculty in mathematics, and teaching a special graduate level course on the Mathematical Essentials of Medical Imaging. She is looking forward to a return visit in May 2003 to continue collaborations initiated during the sabbatical year.

Anthony Gonzalez was selected as a recipient of the André L. Mackey Scholarship for the 2002-2003 academic year. This scholarship is awarded each year to one undergraduate student majoring in Mathematics who displays exceptional academic performance with interest in computers. The award, valued at $500 is named in honor of André Levard Mackey, who earned a Bachelor of Science degree in Mathematics at Arizona State University in May 1989.

Tracy Gust and Lynn Ybarra were recipients of the Department's 2002 TA Excellence in Teaching Awards. Each year, two graduate teaching assistants are selected for that award. Nominations are received from faculty, instructors, and lecturers and are based on classroom evaluations and feedback from students. This honor recognizes the TA's outstanding contribution to the Department's instructional mission. Recipients are honored at the Departmental Awards Ceremony in spring and receive a check for $75.00 in addition to a framed certificate.

WeBWorK

By Stefania Tracogna and John Jones

During Fall 2002, the Mathematics Department is piloting the use of a new on-line homework system, WeBWorK. The initial test involves a few Precalculus (MAT 170) and College Algebra (MAT 117) sections, and one section of Calculus (MAT 270). WeBWorK is an interactive on-line software that includes the following features:

a) There is a "math engine" that allows flexible mechanisms for handling numeric, symbolic, and string answers. A function or an expression can be entered in different equivalent forms. String answers allow for T/F, matching, multiple-choice, and short answer questions.

b) Individualized problems: each student has a similar but slightly different version of each problem. This almost certainly requires of a student to learn something about the problem in order to get the correct answer, since he can not merely copy answers from another student.

c) Instant feedback to students as to whether or not their answers are correct and immediate scoring of the assignment.

WeBWorK has been used for a while at other major Universities where it has proved to be highly successful. Thanks to a grant from the NSF overseen by Prof. J. Jones and M. Isom, we have support for

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Announcements

Anna Marie Ward
was born August 14, 2002 to Senior Lecturer Lance and Denene Ward.

Enya Marlene McGhee
was born July 27, 2002. She is Marlene Salvato's newest granddaughter.

Belany Zhang
was born July 6, 2002 to Professor Yang Kuang and his wife Aijun Zhang.

Luke Aaron Yubeta
was born November 15, 2002 to Administrative Associate Melissa and Jeremy Yubeta.

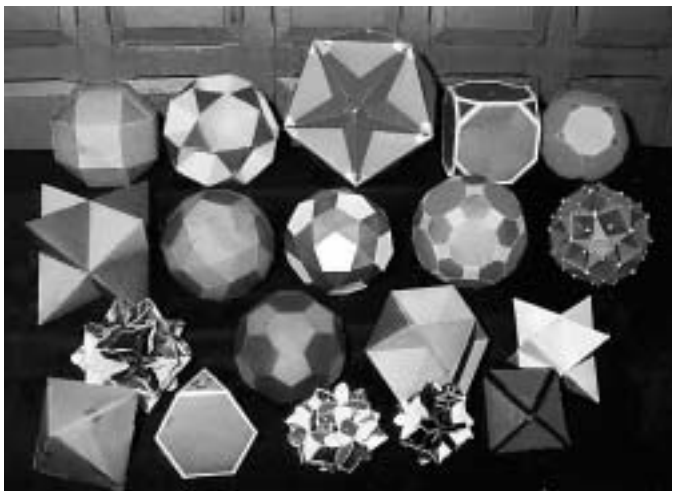
Inspirational Teacher

By Gayla Chandler

Dr. Leonard often has a mischievous twinkle in his eye when talking about mathematics. He is very crafty and has an excellent sense of the concept of a hint, ever careful not to remove the challenge of a problem by giving away too much information. (I have first-hand knowledge of this.) An appreciation for polyhedra and pride in his collection is common knowledge among his students and peers.

Phil recently loaned several polyhedra to the department, mostly made by students from his MTE180 classes between 1983 and 1992. Motivated to address concepts from geometry while having only a small amount of class time available, whenever he taught MTE180 he assigned a project for each student to build an Archimedean Solid outside of class. Discussion on how to build the solids included topics of angles, measure, terminology, and how the Archimedean Solids can be used to illustrate Euler's Theorem relating the number of vertices, edges and faces (V-E+F=2). In making the structures, students had to consider details such as the impact of edge-length to overall size. There were many types of materials used, including paper, twine, concrete, metal, fabric, wax, and cork. To grade them, Phil would roll them into the department meeting room on a big cart and line them up on tables to sort them by quality, creating a festive atmosphere. One can easily imagine the professor and his collegues in happy discussion about which structures were best and why. Year after year many students who otherwise struggled with their mathematics lessons turned in beautiful work of excellent quality.

The MTE180 polyhedra projects translated to some classrooms and students in India! While visiting ASU, Professor A. S. Jalaja of the NMKRV College for Women stopped by Phil's office to speak with him. Moved by his methods of teaching and his collection of polyhedra, upon returning to India, she incorporated some of his methodology into her own math education classes. A year or two later she delighted Phil with a photograph of a beautiful array of polyhedra made by her students, hand-delivered by Hans and Renate Mittelmann on their return from a 2001 visit to India. They met Jalaja in Bangalore where she was doing her Ph.D. studies with Prof. N. Rudraiah.



Monochromed picture of structures made by Professor Jalaja's students in India.

The photograph from India of the array of structures made by Professor Jalaja's students has been placed in the Wexler display case in the PSA216 lobby alongside the polyhedra from Dr. Leonard's own collection.

STATISTICS NEWS

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The University approved a Certificate program in Statistics in December 2000. The Certificate program, administered by the Committee on Statistics, requires 15 hours of coursework from a list of approved courses. The first student graduated with a Certificate in Statistics in May 2002. The Certificate program currently has 25 students enrolled, from departments across campus.

The ASU Statistical Consulting Service received 184 visits by clients across campus in 2001-2002. The students working in the service and supervising faculty helped students and faculty from 47 different departments with statistical questions in their research. In 2001-2002, Amylou Dueck, Mario Gonzalez, and Monika Keindl gained experience as applied statisticians by staffing the Consulting Service. The student consultants for 2002-2003 are Ana Kupresanin and Kelli Schalk.

Statistics graduate students continue to accumulate honors and awards. Lynn Ybarra and Tracey Gust were the two recipients of the Department's TA Excellence in Teaching award in 2002. Amylou Dueck received an honorable mention in the American Statistical Association 2002 Gertrude M. Cox Scholarship; this national award is given to outstanding female graduate students in statistics. Congratulations to Lynn, Tracey, and Amylou!

Yes, I want to support the Department of Mathematics with a charitable contribution.

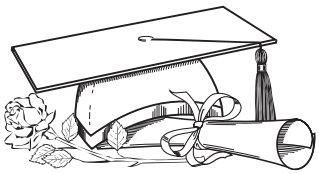
There are four funds that your contribution will go to; Andre Levard Mackey Scholarship Fund, Actuarial Fund, General Fund, and Wexler Memorial Fund. The funds will be deposited with the ASU Foundation, a seperate non-profit entity that exists to support ASU.

Please make checks payable to:
ASU Foundation/Mathematics

Please mail to:
Arizona State University,
Department of Mathematics and Statistics, PO Box 871804, Tempe, AZ 85287

Graduating Students

December 2001 through August 2002



Ph.D. Degree

Richard Archibald, May 2002
Advisor: Anne Gelb
Dissertation: *Boundary Detection and Reconstruction in Magnetic Resonance Imaging*
Future Employment: *Postdoc, Center for System Science & Applied Mathematics (Frank Hoppensteadt)*

Airat Bekmetjev, August 2002
Advisor: Glenn Hurlbert
Dissertation: *The Threshold Phenomenon in Random Pebbling Configurations*
Future Employment: *Visiting professor, Gettysburg College, PA*

Charles Dunn, May 2002
Advisor: Henry Kierstead
Dissertation: *Extensions of a Simple Competitive Graph Coloring Algorithm*
Future Employment: *Assistant Professor (tenure track) at Linfield College, Oregon*

Daniel Marthaler, May 2002
Co-Advisor: DieterArmbruster and Eric Kostelich
Dissertation: *Two Problems from Nonlinear Dynamical Systems*
Future Employment: *Post-doc at Duke*

Tae-Chang Jo, August 2002
Advisor: Dieter Armbruster
Dissertation: *Localized Solutions in Physical Systems*
Future Employment: *Instructor, ASU Department of Mathematics & Statistics*

Yu-Ju Kuo, May 2002
Advisor: Hans Mittelmann
Dissertation: *Interior Point Algorithms for Second Order Cone Problems with Applications*
Future Employment: *Assistant Professor (tenure track), Indiana University of Pennsylvania*

Dritan Zela, December 2001
Advisor: Steve Baer
Dissertation: *A Continuum Spine Model For The Horizontal Cell-To-Cone Feedback In Cat Outer Retina*

MA Degree

Robert Maule, May 2002
Advisor: Helene Barcelo

Helma Kluever, August 2002
Advisor: Jack Spielberg
Thesis: *The Harmonic Analysis of Automorphism Groups*

Laura Baker, August 2002
Advisor: Steve Baer

Jimmy Mopecha, August 2002
Advisor: Horst Thieme

MNS Degree

Ashwini Kelkar, December 2001
Advisor: Helene Barcelo

Sokly Lim, December 2001
Advisor: Dennis Young

Heather Loechelt, December 2001
Advisor: Christian Ringhofer

MS Statistics Degree

Cheng, Yan, May 2002
Advisor: Dennis Young
Applied Project: *A comparison of all subset variable selection methods based on Mallows Cp and its modifications.*

Coombs,Toni, May 2002
Advisor: Richard Burdick
Applied Project: *Estimating Confidence Intervals for Contrasts of the fixed Effect in the balanced Three Factor Mixed Model.*

Dueck, Amylou, May 2002
Advisor: Sharon Lohr
Applied Project: *Robust Estimation of Multivariate Covariance Components*

Edgar, Byron, December 2001
Advisor: Richard Burdick
Applied Project: *On the comparison of process capability indexes.*

Gelvin, Eric, May 2002
Advisor: Richard Burdick
Applied Project: *A confidence interval for an alternative indicator of measurement system adequacy.*

Gust, Tracey, August 2002
Advisor: Dennis Young
Applied Project: *Testing equality of two quantiles*

Hussen, Don, May 2002
Advisor: Jeffrey Wilson
Applied Project: *Comparative use of a two-sample test versus binary logistic regression.*

Keindl, Monika, August 2002
Advisor: Dennis Young
Applied Project: *Evaluation of jackknife method for comparing growth curves*

Wang, Yan, August 2002
Advisor: Robert St. Louis
Applied Project: *A new approach to portfolio allocation.*

Webb, Mandy, August 2002
Advisor: Jeffrey Wilson
Applied Project: *Comparisons of binary logistic regression models with quasi-complete data in SAS/SPSS*

Xia, Hong, December 2001
Advisor: JeffreyWilson
Applied Project: *Predicting poverty of Asian American women: An application of the generalized quasi-likelihood model.*

Bachelor of Arts

Heather Rose Getz, December 2001
Mandy Perro, December 2001
Chase William Reno, December 2001
B. Nicole Sallade, December 2001
Phong Quoc Chau, May 2002
Nadine Lynn Clah, May 2002
Edward Joseph Epsen, May 2002
Heather Rose Getz, May 2002
Anthony George Gonzalez, May 2002
Jitesh P. Kothari, May 2002
Hilda M. Link, May 2002
Talia Sue Nehls, May 2002
Mandy Perro, May 2002
Rachel Q. Wallington, May 2002
Steven R. Kaiser, August 2002
John R. Millett, August 2002

Bachelor of Science

Christopher John Campbell, December 2001
Arlene Morales Evangelista, December 2001
Darrin Scott Moses, December 2001
Joshua Nathaniel Rumsey, December 2001
Timothy Michael Sands, December 2001
Lori A. Spencer, December 2001
Phillip R. Backus, May 2002
Jay E. Blomquist, May 2002
Danelia de Kock, May 2002
Peggy E. Ehinger, May 2002
Ryan D. Hartman, May 2002
Daniel Jaramillo, May 2002
Jill M. Joels, May 2002
Michael R. Malin, May 2002
Joshua M. Perlin, May 2002
Sanjeev Ramchandra, May 2002
Steven M. Spiriti, May 2002
Mary Rose Thai, May 2002
Carlton J. VanLeuven, May 2002
Danelia de Koch, August 2002
Erik G. Peterson, August 2002
Christopher L. Wilson, August 2002

Bachelor of Science – Computational Mathematical Sciences

Paul Shuster, August 2001
Michael Stewart, August 2001
Clifton Joseph Burt, December 2001
Alexa Dae Allison, May 2002
Adam W. Nelson, May 2002
Ngoc Bach Quach, May 2002
Ryan D. Clarke, August 2002

Service Awards

5 years - Jialong He
5 years - Juan Lopez
5 years - Melissa Yubeta
5 years - Michelle Zandieh
10 years - Alex Mahalov
10 years - Kathy Prewitt
15 years - Zdzislaw Jackiewicz
15 years - Matthias Kawski
20 years - Hans Mittelmann
20 years - Marlene Salvato
25 years - Harvey Smith
35 years - Lynn Kurtz

Department of Mathematics and Statistics

Graduate Program Notes

By Yang Kuang, Director of Graduate Studies

Following the recent tradition set by Horst Thieme, my predecessor, I would like to report first a few useful numbers indicating the current status and trends of our graduate programs. First and foremost, we have a uniformly top-notch faculty (ranked 26 according to the faculty quality and 14 according to the percentage of program faculty publishing in the period of 1988-1992 by the National Research Council). In the Fall 2001 semester, we had 76 students enrolled in our graduate program taking a total of 626 credit hours. In Fall 2002, we have 83 students enrolled in our graduate program taking a total of 831 credit hours, an increase of over 33%. Sixty-six of these students are supported as TAs and 11 of them are supported as RAs. Among the 83 graduate students, 52 are Ph.D students.

Thanks to Katie Kolossa, Debbie Olson and many others, we had a wonderful TA training event this summer. The graduate exams prior to the start of the semester also went very well. With the new streamlined graduate exam structure in place and a newly established graduate mentoring committee, our graduate program will be greatly improved, more competitive and productive. We have produced 6 Ph.D.'s so far this year. We expect 3 or more Ph.D. graduations this Fall. Our record so far is 7 PhD's in 1995.

I would like to share with you some good news from our current and former graduate students. Tim Lant (advisor: Horst Thieme) is the newly elected president of the ASU graduate student association and also won the prestigious ARCS award for the second year in a row. Amylou Dueck, a Ph.D. student of Sharon Lohr, received honorable mention in the American Statistical Association Gertrude M. Cox Scholarship program. This award is given annually to outstanding female graduate students in statistics. We can be quite proud that our statistics program has had two students recognized by the Cox Scholarship (Lynn Ybarra received the scholarship in 1999). Cristina Negoita (advisor: Rosie Renaut) is currently in Spain on a Marie Curie Graduate Research Fellowship to carry out research related to her PhD. She will graduate in Spring 2003. Jodi Mead (Boise State, Ph.D, 98, Renaut) has enjoyed ONR support for her research since 2001. It is my pleasure to report Bingtuan Li (Ph.D, 98, Kuang) obtained his first NSF grant in his first year at University of Louisville and is charged to set up a mathematical biology group there. Irakli Loladze (postdoc at Princeton, Ph.D, 2001, Kuang/Thieme), has published a significant paper that attracted media attention (Loladze, I. (2002): Rising atmospheric CO2 and human nutrition: toward globally imbalanced plant stoichiometry? Trends in Ecology & Evolution 17:457-461).

Promotions

Renate Mittelmann: Full/Senior Academic Professional.

Jay Abramson: Senior Lecturer

Mike Trapuzzano: Senior Lecturer

Terri Miller: Senior Lecturer

Faris Odish: Senior Lecturer

Richard Ruedemann: Senior Lecturer

Scott Surgent: Senior Lecturer

Math Awareness Month

By Steve Kaliszewski

The Department celebrated its fourth annual Mathematics Awareness Month in April 2002, in coordination with the Joint Policy Board for Mathematics and colleges and universities across the country. The timely theme of this nationwide event was "Mathematics and the Genome".

The primary event was a public lecture by Professor Simon Tavaré of the University of Southern California. Professor Tavaré is an internationally recognized probabilist and statistician who currently holds the George and Louise Kawamoto Chair in Biological Sciences at USC and is Professor-at-Large at the Keck Graduate Institute for Applied Life Sciences in Claremont, California.

Professor Tavaré's lecture, which was attended by a large and enthusiastic crowd, was titled “Chips and Chimps”. In an eminently understandable fashion, Professor Tavaré illustrated the fascinating mathematics and molecular biology behind some of the research which has emerged from the Human Genome Project. The talk included the first public announcement of a new estimate of the age of the last common ancestor of all existing primates --- his paper on the subject had appeared in *Nature* that very day.

A Math Department Open House and Barbecue preceded Professor Tavaré's lecture, and many people turned out --- including students from various area high schools --- to mingle with math professors and students on a brilliant Arizona April afternoon.

A special Math Awareness Colloquium was held later in the month, featuring Dr. Arthur C. Heinricher of Worcester Polytechnic Institute. Dr. Heinricher is the associate director of the Center for Industrial Mathematics and Statistics at WPI, a program that brings WPI faculty, graduate, and undergraduate students together to provide a mathematical problem-solving resource for business and industry. His talk included an informative and inspirational overview of some of the problems undergraduate students at the Center have solved for local businesses and industry. Topics ranged from differential geometry in a steel mill to large-scale optimization in automobile insurance to damage spread in organizational networks.

For up-to-the-minute details on this year's Math Awareness Month events, point your web browser to <http://math.la.asu.edu/~mam>.

Undergraduate Program Notes

By Glenn Hurlbert, Director of Undergraduate Studies

I've been sitting in this seat for only a few months, yet I think I've already accomplished my main objective -- Bev Lantrip thinks I know what I'm doing. On the other hand, maybe she's accomplished her goal of getting me to think that she thinks I know what I'm doing. In either case, Eric Kostelich is a hard act to follow, having put in so many fruitful years both preceding and following John Jones. As a finely trained mathematician, I enjoy recognizing patterns, and I am convinced that Eric will follow me. (Eric, are you still reading?)

This year is our first in offering the brand new degree in Computational Mathematical Sciences, and it seems to be a hit. Already, 39 of our 223 majors give it two thumbs up. The degree has an applied bent and requires extra Computer Science courses, a second Science, and strongly encourages an internship. Including students in Education pursuing Math as their major teaching field, we currently boast 382 majors in total, up from 351 last year. The number climbs each week as former Engineering students, many of whom are attracted by the CMS degree, find my office and see the light. The numbers seem on the rise in comparison to the 57 students we graduated last year. (If you are one such graduate, drop us a line and let us know what million-dollar job you have acquired!) Other numbers on the rise include student enrollment: this Fall we are teaching over 12,000 students, 3% more than last year. This caused us great difficulty in meeting the demand, mostly in First-Year Math courses. Luckily we had increased our number of Lecturers from 36 to 41.

In other FYM news, MAT 194 College Algebra Plus, now in its second year, is on track for obtaining the permanent number MAT 113 by next Fall. The course is intended for students who need refreshment in MAT 106 while taking MAT 117. By taking MAT 113 they can get 5 credits in one semester rather than 6 in two. Good deal, huh? Also, students interested in MAT 117, as well as MAT 170 and MAT 270, now can find on-line tutorial help through WeBWorK, a program developed by John Jones and his elves through an NSF grant. WeBWorK also handles all homework on-line for these courses and will expand to include all of FYM within two years. For more on this great computer system read WeBWorK article elsewhere in Math Minutes. Finally, MTE 181 Theory of Elementary Mathematics II, having run with one section for a year now, will expand to six sections in the Spring. Students pursuing elementary education are now required to take both MTE 180 and MTE 181.

The quality of our student majors keeps improving. Almost one quarter of them have a GPA over 3.5. We have given out a number of Undergraduate Research

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Visitors

Maria Luisa Colasante is a faculty member of the Dep. of Mathematics at the Universidad de Los Andes, ULA , Merida-Venezuela. She came to ASU on sabbatical leave. Her current research interests are digital topology and operator theory. She received her Ph. D in mathematics from the University of Iowa. In the last three years she worked in curriculum for the Undergraduate Math. program and directed the Master Math. program at ULA.

David Dudley is here on sabbatical from Phoenix College, where he has taught for 20 years. He is co-facilitating MTE 598, Using Maple to Teach Calculus, with Dr. Marilyn Carlson. He graduated with an MA from ASU in 1975. He is a recipient of many teaching awards, among them Wexler Distinguished Teaching Award (1980) and the AMATYC Teaching Excellence Award (1997). He was Math. Dep. Chair at Phoenix College from 1987-1993.Outside of mathematics, he is Vice Chair of the EncantoVillage Planning Committee for the City of Phoenix and a fire fighter in the Sherwood Forest Estates Volunteer Fire Department (between Flagstaff and Williams).

Fadhel Al-Musallam received his Ph.D. in August 1989 from the Department of Mathematics at ASU under the supervision of the late Professor Domingo Herrero. Since then he has held a position at Kuwait University where he is currently an Associate Professor of Mathematics. His interests include Special Functions but mainly center around Integral Transforms. He is currently on a sabbatical leave from Kuwait University.

Marek Rychlik, Professor of Mathematics at the University of Arizona, Tucson (currently on sabbatical leave). His Ph.D. is from the University of California, Berkeley.
Major areas of interest: dynamical systems theory, computational algebraic geometry and computational science, chordal problems of planar geometry, implementation of Kuranishi-Cartan techniques for PDE in software, decay of correlations in Boltzmann gas and billiard-type systems, educational Web-based software development for ODE and calculus, on-line teaching and testing tools (eGrade).

Lynn Kurtz Retires in May 2003.

By Doug Moore

Lynn grew up in South Dakota and received his B.S. at South Dakota School of Mines & Technology. He was a graduate teaching assistant at the University of Utah earning an M.S. in Differential Equations in 1961 and a Ph.D. in Functional Analysis in 1964. His first position was at University of Kentucky for three years before coming to ASU in 1967. Thus he will have completed 36 years service at ASU at retirement.

In his early years at ASU Lynn published papers on summability in normed and topological vector spaces, and Korovkin theory. During his years in the department at one time or another Lynn has served on most of our committees, including the personnel committee, undergraduate committee, t/a recruitment, chairing the graduate studies committee and, recently, the elections committee. And, of course, the ubiquitous course coordination. At the university level he has served on the patents committee. For several years Lynn made presentations at various high schools to their advanced mathematics classes.

Lynn says he designed and taught the first "calculus with computing" course at ASU, using BASIC and GE timesharing terminals in the early 70's. This was long before we had PC's and Maple. He thinks, but can't swear to it, that he also taught the first 'reformed' mathematics course, using group learning in MAT 205 "Creative art of mathematics" in the late 60's. He says, however, that he harbors serious reservations about that method of teaching for more advanced offerings. "I don't think having the blind teach the blind how to see is an efficient way to learn, especially if there is any serious amount of material to be covered" he says.

On a personal note Lynn earned a private pilot license and has for many years had hobbies of digital electronics, singing and square dancing. The digital electronics expanded into the personal computer movement as PC's evolved. Lynn has designed several electronic games, one of which was patented and brought to market, and built a computer with a video interface for himself before there were any PC's. Lynn helped in the college application for our first two PC's in the department, and he set them up and got them running in the 7th floor lab. So that's another first. "I was the first microcomputer support person in the department", he observed, noting that it seemed to be a voluntary unpaid position at the time. In the 80's during the summers Lynn worked for himself developing a group calendaring software product that ultimately was translated into six foreign languages and was sold by ABDick and NCR in the USA and Unisys in the United Kingdom.

When asked about his plans for retirement, Lynn said "I don't know exactly yet. I'm thinking I might like to get involved in some kind of computer literacy project for seniors. Certainly nothing that involves grading papers."

Harvey Smith to Retire

By Joan H. McCarter

The Department of Mathematics will not be the same when Harvey Smith retires in January 2003. His presence in the Faculty Meeting room, working with students has become a regular event. Although he has an office, he prefers the more casual atmosphere to have contact with his students. He is happy to discuss practically anything with anyone at any time. He enjoys working with students.

Harvey came to ASU in 1977 to become the Department Chair, reorganizing both the graduate and undergraduate curriculum. He held this position until 1982. Since then he has remained very active in the department: chairing committees, serving in the Faculty Senate, advising students and acting as the department ombudsman. He graciously takes on any assignment given to him.

Harvey's research experience divides itself easily into two distinct areas of concentration. The first is within pure mathematics and the second is within public policy.

In pure mathematics, Harvey conducted research in Functional Analysis, more specifically in the study of operator algebras. Much of this research was conducted with his former student, Robert Busby. One of their main results concerned the classification of twisted group algebras of locally compact groups G with values in a C* algebra A. (What makes these algebras "twisted" is that the product is constructed by using a cocycle to modify the usual convolution product of the group algebra.) They show (in the commutative case) that these algebras are characterized by principal $\widehat{G}$ (the dual of G) bundles, which, in turn, are characterized (in the locally trivial case) by the first integer Čech cohomology of the maximal ideal space. Thus Busby and Smith have continued on what seems to have become an extensive tradition in mathematics to use a cohomology theory to classify the objects in some new category. Harvey's most recent research in operator algebras (again with Busby) studies product convolution kernels whose corresponding integral operators map an L^p space to an L^q space. To do this they must study the mixed spaces $L_{p,q}(G)$, giving interesting new results, particularly when G is not Abelian.

While Busby seems to have been one of Harvey's main collaborators in pure mathematics, Kupperman has played this role in the public policy arena. Fortunately, most of Harvey's work in this domain has become outmoded with the collapse of the Soviet Union and the end of the cold war. More recently Harvey has been involved in work understanding terrorism, which has not yet achieved the same happy oblivion than his other work has done. However, Harvey plans to devote his future to the writing of mathematical books and other pedagogical issues.

His consulting experience is extensive. He has worked on technical and strategic problems of terrorism at Los Alamos, strategic policy and ballistic missile defense for the Executive Office of the President, technical and organizational problems for the U.S. Army Security Agency and measuring delinquency for the Center of Criminological Research. He has consulted on error correcting codes, network problems and stochastic processes.

In his private life, Harvey is married to Ruth Kolb Smith. They have 3 children and 2 grandchildren. He is a strong supporter for Ruth who has continued her career as pianist in chamber music groups. His children have studied both mathematics and music.

After retirement, Harvey and Ruth plan to spend more time with their grandchildren. Harvey will continue writing textbooks on mathematics.

WeBWorK

Continued from pg. 4

our own servers and for people to customize materials for use in our courses. During the past summer, a team of six lecturers and one graduate student developed sufficient material to use in the pilot sections. Because the problems are individualized for each student the amount of work involved in coding was quite significant. The goal is for all FYM classes eventually to use WeBWorK for their homework assignments.

In an informal survey of two Precalculus classes an overwhelming 90% of the students said that they simply love WeBWorK. The most often listed reasons were:

1. Instant feedback as to whether the answer is right or wrong.
2. Possibility of trying a problem until they get it right.
3. Availability of the answer keys after the due date.
4. Immediate scoring of the assignment.
5. Minimal chance of misplacing the homework or forgetting to turn it in.
6. Problems can be printed out in advance and worked on anywhere.
7. Homework is organized and can be easily reviewed.
8. Possibility of partial credit if there are multiple questions in the same problem.
9. The interface is very user-friendly.

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There were a very few drawbacks the students indicated: the server might be slow or down, WeBWorK is too picky with regards to how to enter the answers and the syntax at times can be complicated.

As an added benefit, WeBWorK is extremely cost effective, practically eliminating the need for a grader.

The WeBWorK setup is still a work in progress. For more information visit http://hobbes.la.asu.edu/courses/webwork-help.

The Emergence of a Research Group in Undergraduate Mathematics Education

By Marilyn P. Carlson

Our mathematics education community continues to mature with the addition of a new faculty member, and the addition and advancement of several students in our program. Mike Oehrtman, our newest mathematics education faculty member, recently completed his Ph.D. in mathematics at the University of Texas. Mike's research focus is on understanding the interactions between students' development of mathematical concepts and the ways they use those concepts as "cognitive tools" to solve problems. Mike also brings with him experience in working on various aspects of professional development for secondary school teachers and many other research and instructional talents. Welcome aboard Mike!

Michelle Zandieh, another mathematics education faculty member in our department was recently awarded the Research in Mathematics Education (RME) Early Career Publication Award. This is a very prestigious award that acknowledges the substantial contribution of a research paper from an individual that is within five years of completing her/his degree. Early in 2001 Michelle was also granted an NSF CAREER Award. This is also a distinguished award that is given to junior faculty members in science and engineering to assist them in developing research projects with educational initiatives. Congratulations Michelle!

Our graduate student population continues to evolve. Sally Jacobs completed her Ph.D. during the Spring Semester of 2002. Her work involved an extensive study of the notion of variable in the context of first semester calculus, with her results uncovering the diverse conceptions that students hold about variable that both promote and inhibit their understanding of major conceptual strands of calculus. Sally has already had two publications accepted from her work. Sean Larsen has advanced to Ph.D. candidacy and has a publication for his work investigating the complexities and processes involved in learning to understand mathematical structures and formal mathematics, including proof. Marguerite George is beginning her work to investigate teacher questioning and Irene Bloom is currently designing her study to investigate the effectiveness of MTE 483 in developing preservice secondary teachers' problem solving abilities and behaviors. Nanci Smith is beginning a project to investigate the process of acquiring an understanding of The Fundamental Theorem of Calculus and Mark Burtch has begun to investigate conjecturing in the context of differential equations. Scott Adamson, Phil Clark, Ted Coe, Trey Cox and Denise Nunley are also moving toward the definition of their dissertation work. Others that have recently been admitted to graduate studies to conduct research in the area of mathematics education include Nicole Engelke, Vicki Lancaster, Karen Platt, Jessica Knapp and Erika Livingston.

Our mathematics education group continues to lead various funded projects to assist inservice teachers and community college faculty in advancing their content and pedagogical knowledge related to knowing and learning mathematics.

On October 23rd-26th of 2003 we will be hosting the annual research conference of the Special Interest Group of the MAA on Research in Undergraduate Mathematics Education (SIGMAA on RUME) at the Old Town Scottsdale Hotel. I hope that you will make time to join some of the sessions and begin to learn more about the products of our research.

Undergraduate Program Notes

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awards in recent years and have several undergraduates working on projects this semester. (One such student is modeling the brewing process of beer, the kind of project I dreamed about as an undergrad!) Hopefully we will be able to grant more awards in the Spring (see http://math.asu.edu/~undergrd/scholarship.html). We continue to attract top students from the Honors College. One such student, Collin Raymond, a past Undergraduate Research award winner and recipient of the prestigious Goldwater Scholarship, has just been awarded a Marshall Scholarship, which he will take up at the London School of Economics. We wish him good luck! Finally, this December, 12 of our students will attempt the Putnam exam, a national mathematics competition for undergraduates. By all accounts, this is a record for us -- go team!!

In the coming few years we hope that many more of our students might take advantage of some of the great opportunities that exist by trying an REU (Research Experience for Undergraduates) program, finding fascinating internships, or even studying abroad. Those interested can find more information at http://math.asu.edu/%7Eundergrd/information.html .

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"The mathematical sciences particularly exhibit order, symmetry and limitation; and these are the greatest forms of the beautiful."
Aristotle, Metaphysics

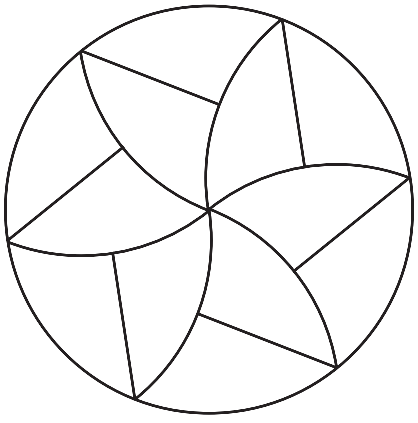
Test Your Logic

This puzzle was devised by Einstein, who reckoned that 98% of the population would be unable to solve it. We have taken the liberty of replacing brands of cigar with makes of automobile.

There are five houses in a row, each a different colour. The five owners are of different nationality; each owner prefers a different drink, drives a different car, and keeps a different pet. You are given the following information:

The Englishman lives in the red house.
The Swede has a dog.
The Dane drinks tea.
The green house is to the left of the white house.
The owner of the green house drinks coffee.
The Jaguar driver keeps birds.
The owner of the yellow house drives a Ford.
The owner of the centre house drinks milk.
The Norwegian lives in the first house.
The Jeep driver lives next door to the owner of a cat.
The horse owner lives next door to the Ford driver.
The BMW driver drinks beer.
The German drives a Porsche.
The Norwegian lives next to the blue house.
The Jeep driver has a neighbour who prefers to drink water.
Question: who owns the fish?

This is the solution to the cake puzzle from last issue



If you are an alumnus of the ASU Math. Department, please let us know where you are and where you are currently employed: we would like to hear from you!
Please write to us or e-mail us at: newsletter@math.la.asu.edu.