

Notes from the Chair

I was elected to serve as the new chair of the department starting in May 2008. Since Gary Stoudt agreed to take the position of interim dean for the college on Natural Sciences and Mathematics in January, this prompted my starting as chair a few months earlier than planned.

Let me tell you a little bit about myself. I grew up in Guatemala City, Guatemala, a city about the size of Philadelphia in Central America. I attended the German School of Guatemala, a school that followed the German public schools curriculum. That was my school from Kindergarten through high school. Early on in high school I decided that I wanted to study mathematics.

I enrolled at Universidad del Valle (in Guatemala City) the only university in Guatemala that offered a degree in “pure” mathematics in 1980. Universidad del Valle was modeled after American colleges and I followed the preparation of a typical mathematics student in an American college. The degree however is a bit more extensive than a B.S. The degree I obtained in 1986 was the degree of Licenciado en Matemáticas, and it entails the equivalent of about 160 credit of instruction (in about 5 years). During my second year in college I began working as a teaching assistant for freshman math courses. That got me interested in becoming involved in teaching mathematics. During my last two years in college a three-week position as a replacement for a mathematics teacher in a private high school on sick leave turned into a full time job teaching mathematics and statistics courses for grades 9-12 at Colegio Suizo Americano. This was a small private school that emphasized instruction in mathematics and computer science. This experience convinced me I wanted to be involved in education, but after 6 years of studying mathematics I was convinced I did not know “enough” math yet.

Since there are no graduate programs in mathematics in Guatemala and since my college education was like that of an American student, I decided I would go to graduate school in the United States. After applying mostly to universities in the big ten, I enrolled in the Ph.D. program at the University of Iowa in 1986. Because I had

“extensive” experience teaching compared to many other entering graduate students, I had an opportunity to teach my own course there from the start. While I was a graduate student in Iowa I focused mostly on model theory and abstract algebra, and ended up doing my dissertation in abstract algebra, working on commutative semiring theory. The title of my Ph.D. thesis was “The Lattice of Ideals of Commutative Semirings” and my advisor was Dr. Daniel D. Anderson, an expert on commutative rings and r -lattices. Two other important “teaching experiences” at Iowa included three years as an adjunct instructor at Kirkwood Community College and working for three years in a calculus reform program (funded by NSF) under the direction of professor Keith Stroyan to develop a student active calculus curriculum that integrated the use of the software, Mathematica. A very significant component of the course was projects. Students would use a computer lab to investigate real problems such as bungee diving, the spread of epidemic diseases, the setting of whale harvesting quotas and others. My involvement in this project convinced me of the value of a constructivist or “hands-on” approach to teaching and learning mathematics and the use of technology.

I joined the faculty of IUP in the fall of 1992 and spent the first couple of years involved in various projects that used computers (and Mathematica) in calculus and differential equations courses. I have also been involved with projects that sought to recruit minorities to IUP, and have been involved with the Center for Statistics Education and the SEQuaL and HOME PLaTe grants. I have served in many capacities in the university governance, but last year I decided to submit my name for consideration for the chair position. I am grateful for and honored by the support from the many wonderful faculty in the department. These first few months as chair have been a learning experience and have kept me quite busy, but I look forward to continuing to grow into the position.

Now you know a bit about me (perhaps more than you cared to know.) I look forward to hearing from you, our alumni. Call the office 724-357-2206 or better yet, drop me a line via email: falarcon@iup.edu. In future issues of *Stright Lines*, I plan on sharing with you what is new in the Mathematics Department.

Scholarships and Presentations by Students

The scholarship winners for the 2005-2006 and 2006-2007 school years are listed below. The recipients and two of their family members were invited to our annual awards banquet in April. Scholarship information can be found on the Math Department Web site.

<i>Scholarship</i>	<i>2005-2006 Winner</i>	<i>2006-2007 Winner</i>
M. M. Reigh	Janine Garret	Jennifer Hunter
A. G. Morrell	Lauren Abbott	C. Elizabeth Hall
J. A. Boytim	Stephanie Haid	
R. A. Daugherty	Chris Krahe	Tori Groves
T. Kuczinski	Gabe Foust	Jeffrey Lyons
R. A. Stoudt	Kara Taylor	Lauren Abbott
W. W. Hennemann	Rachel Weiner	Dan Stenhaus



2005-2006 Scholarship recipients: Lauren Abbott, Janine Garrett, and Rachel Weiner (front); and Chris Krahe, Gabe Foust, Stephanie Haid, and Kara Taylor (back).



2006-2007 Scholarship recipients: C. Elizabeth Hall, Lauren Abbott, Dan Steinhaus, Jeffrey Lyons, Jennifer Hunter, and Tori Groves.

- During Spring 2006, several students gave presentations in local and regional conferences. A group of students including Elizabeth Hartung, Jason McCarty, Anne Krinock, and Amanda Schiel, all from Dr. Alarcon's Abstract Algebra class, gave presentations in both the IUP Undergraduate Scholars Conference and the MAA-Allegheny Mountain Section Spring 2006 Meeting held at Juniata College. Some of you might have had the same experience when you took Dr. Alarcon's class.

Anne also gave a presentation on Statistical Steganalysis from her independent study in these two conferences, as well as a poster presentation in the Symposium on Women in Mathematics, Science, and Technology sponsored by College of Natural Sciences & Mathematics. Two other students, Marissa Umbel and Traci Stevens, gave poster presentations in the Symposium on Women in Mathematics, Science, and Technology, as well. Marissa also gave her poster presentation at the Undergraduate Scholars Conference.

The following students gave presentations at the Second Annual IUP Undergraduate Scholars Conference on April 14, 2007: Christine Kester, Annalese Weldy, Tiffany Cornman, Jennifer Price, Ean Livingood, Jeffrey Wittmer, David Carley, Joshua Himmer

- In March 2007 IUP hosted the T3 - Teachers Teaching with Technology Regional Conference. Several faculty, along with students Jennifer Hunter, Laura Mayfield, Ashley Bothel, Traci Stevens, Jenn Hernley, and Malena Howe, gave presentations.
- In December 2007 Applied Mathematics graduate student Dan Ross had an article titled, "Arpad Elo and the Elo Rating System" published on the Chess Base.com Web site (<http://chessbase.com/newsdetail.asp?newsid=4326>). The article is based on work Dan completed in one of his IUP graduate courses.
- In January 2008 Applied Mathematics and Computer Science dual undergraduate major Jason Carney presented a poster titled, "Sierpinski Curve Julia Sets from 3-Circle Inversion," at the Undergraduate Mathematics Poster Session held in January at the Joint Mathematics Meetings in San Diego. Jason's poster was one of 20 out of approximately 200 that were recognized as outstanding.

New Faculty 2005-2006

Kimberly Burch

I grew up in Boardman, Ohio (a suburb of Youngstown) where contrary to popular belief, there are a few hills. I enjoyed my years as a University Scholar at Youngstown State University, playing violin in the Dana Symphony Orchestra and playing volleyball and golf as often as possible. I graduated in 1997 with a B.S. in mathematics. I then moved from Penguin country to Panther territory to attend graduate school at the University of Pittsburgh, earning my M.A. in mathematics in 1999 and my Ph. D. in mathematics in May 2002. My dissertation was entitled "Matching Equivalencies and Chemical Graph Theory". My current research uses graph theory to predict physical properties of chemical compounds. I am also examining which types of graphs are matching covered.

I met my husband, Hal, in the choir at First United Methodist Church in Pittsburgh during my second year of graduate school. We both enjoy golfing, biking, hiking, and our new favorite activity, disc golf. In this game, you play golf with a Frisbee® and the "holes" are actually baskets with chains to catch your disc when you "putt". We are looking forward to tackling the course at Schenley Park in Oakland and any other courses we find.

We are both avid sports fans and have continued to follow and root for the Pittsburgh Steelers and the University of Pittsburgh men's basketball team while living in New Jersey. We were even lucky enough to be in Madison Square Garden to witness Pitt win the Big East Championship against Connecticut in 2003. We are both excited to be living in Western Pennsylvania again and look forward to attending the Pittsburgh symphony and various other cultural activities and sporting events.

Dan Look

I was raised in a small village on the coast of Maine. I earned my B.A. and M.A. in mathematics from the

University of Maine and my Ph.D. from Boston University. My masters' thesis was entitled "Classifying Topological 2-Disk Intersections in the Plane" and, as the title indicates, was in the field of Topology. For my Ph.D. I concentrated on rational maps and dynamical systems; my dissertation was "Singular Perturbations of Complex Polynomials and Circle Inversion Maps".

My current research lies in the intersection of Topology and Complex Dynamics; in particular, I enjoy investigating the topological structures/properties of the Julia sets arising from rational maps.

When not doing mathematics I can often be found watching television (I am a huge fan of the Simpsons and everything/anything related to Transformers).

If television is not available I enjoy reading H.P. Lovecraft, Isaac Asimov, E.E. Smith and others.

Channa Navaratna

My Name is Channa Navaratna. Since I was always curious about machinery and how it works, I decided to get a degree in Engineering. I received my BS in Electrical and Electronic Engineering and worked at two engineering institutions before I decided to embark on a career in teaching. I received my Masters and PhD degrees in Applied Mathematics from Texas Tech University where I taught mathematics for seven years. Among other achievements, I received an award from the Texas Tech University for my excellence teaching in 2002.

I am interested in inter-disciplinary research, mainly in biomathematics. I am also working on many projects in the areas of mathematical modeling, numerical analysis, computational mathematics, biomedical mathematics, non-linear stochastic filtering, and control theory

My hobbies are traveling, photography and messing up my car. I have traveled to a few countries and many states in US. I hope to travel to all the states and visit as many attractions as possible.

New Faculty 2007-2008

Mary Lou Metz

After growing up in Clearfield County and graduating from Moshannon Valley High School, I entered IUP and graduated as a mathematics education major several decades ago. I completed my M.Ed. in Secondary Mathematics at IUP and my Ed.D. in Mathematics Education from the University of Pittsburgh in 2007.

Most of my educational career involved teaching high school mathematics at Rockwood Area High School in Somerset County. Four years ago I accepted a position at the University of Pittsburgh's Institute for Learning where I did professional development with mathematics teachers and coaches at the elementary, middle, and high school levels in Los Angeles, Rhode Island, New York City, and Pittsburgh. During those 4 years, however, my love of teaching never diminished and I am very excited to be returning to teaching and to be returning to IUP.

My professional interests include providing all learners with access to challenging mathematics content, assisting teachers in providing the best possible learning opportunities for their mathematics students and using technology as a tool to explore and learn mathematics. I am also interested in fractal geometry and applications of statistics and data analysis to other areas of mathematics. On a personal level, I enjoy spending time with my family (especially my two adult children), listening to music, traveling, and sewing.

Mavis Pararai

I was born in Zimbabwe and went to an Anglican Girls High School. There were very few women who taught mathematics those days because it was believed to be very difficult. I got inspired by one lady who taught me mathematics at the Ordinary Level. I went on to do mathematics, physics and chemistry at the Advanced Level. I studied mathematics at the University of Zimbabwe and I taught mathematics at my former high school when I graduated from the University of Zimbabwe. I then went to Central Michigan University where I got my PhD. I taught at Georgia Southern University before coming to IUP. I work in count data models especially looking at underreported counts. I hope to diversify into other areas.

Edel Reilly

I grew up on a small dairy farm in Ireland, so my first exposure to math was probably counting cattle. All high school seniors take a national exam which determines their post-secondary educational opportunities. I was fortunate to earn a scholarship to the National University of Ireland-Galway where I studied mathematics and economics as an undergraduate. I also earned a graduate scholarship that permitted me to study education at NUI-Galway. All Irish public school teachers are required to earn graduate degrees before they can begin their careers.

I applied for a US visa when I was still in high school. I was completing my graduate work when I received my green card to come work in the US. So I moved to America, spent a summer serving meals at IHOP, and eventually moved to Wisconsin so that I could earn a teaching certificate. I attended the University of Wisconsin-Madison and earned a Master of Science Degree in Curriculum and Instruction with an emphasis in Mathematics Education.

I taught high school mathematics for 3 years in Wisconsin before moving to Pennsylvania. My public school teaching career involved teaching all levels of mathematics including General Math, Algebra, Geometry, Functions, Statistics, and Trigonometry (FST) and Calculus. My most recent position was teaching middle school students in seventh and eighth grade at Westmont Hilltop School District in Johnstown, PA.

I earned my Doctorate of Education in Curriculum and Instruction from IUP in December. My scholarship in mathematics education focuses on assessment and writing in the mathematics curriculum, integrating other disciplines into the mathematics curriculum, gender issues and mathematics, and parental involvement in middle school age groups. I recently published an article on integrating mathematics and other disciplines for NCTM's Mathematics Teaching in the Middle School journal.

On a personal level, I am an avid reader. I also enjoy travel, working in my yard, and spending time with my husband and two young sons.

Sin sin, níl aon scéal eile agam

IUP's Mathematics Curriculum Through the Years, Part 6

by Gary Stoudt, Interim Dean of the College of Natural Sciences and Mathematics

In the last installment, long time faculty member M.C. Gordon (at the Normal School since at least 1890) was joined by Olive S. Tilton in 1925. The College Preparatory Curriculum, which had coexisted since the founding with the higher education curricula, was eliminated. More change was coming.

On January 21, 1919, Republican William Cameron Sproul was sworn in as Governor of the Commonwealth of Pennsylvania. Sproul was education-oriented, having graduated from Chester Normal School and Swarthmore College in Pennsylvania, and wanted to upgrade the normal schools to collegiate status. Admission standards, curricula, and faculty were slated for improvements, leading to ISNS becoming a degree granting institution in 1926 with the appropriate name change to Indiana State Teachers College (ISTC) coming a year later.

The years 1926-32 saw the transition from two year programs leading to a teaching certificate to four year programs leading to the B.S. in Education degree. The two year programs remained, but were augmented by an Advanced Two Year Curriculum leading to the degree. The two year programs were eliminated in 1933. We concentrated on the four year program for prospective junior high and high school teachers during this period.

During the sophomore, junior, and senior years of this program students were required to have special preparation in two fields, consisting of 18-30 semester hours per field. The choices were English, Social Studies, Science, Mathematics, Geography, and Foreign Languages. To specialize in mathematics an incoming student must have completed algebra and plane geometry in high school. The Mathematics electives were a 12 semester hour (s.h.) course in Mathematical Analysis (which was really a two year course consisting of Algebra, Trigonometry, Analytical Geometry, and Differential and Integral Calculus), a 3 s.h. course in the Teaching of Junior High School Mathematics, and a 3 s.h. course in the Teaching of Algebra and Plane Geometry. Specialty clubs began to form around the fields of specialization; a Mathematics Club was started in 1931.

Olive Tilton was now Head of the Mathematics Department, and M.C. Gordon would remain until his retirement in 1928. He would be replaced by Joy Mahachek,

a former training teacher at ISNS from 1921-23. Mahachek held a B.A. degree from Iowa State Teachers College, Cedar Falls (1921) and an M.A. from Teachers' College, Columbia University (1925). Mahachek would remain a fixture in the Mathematics Department for many years to come. Earl E. Prugh began in the department in 1929, splitting time between mathematics teaching and Health and Physical Education teaching. Prugh had a M.A. degree from Columbia University. Also in 1928 the quality point grading system was initiated, with 3 quality points for a grade of A, 2 for B, 1 for C, and none for a D or F. The enrollment for the 1928-29 academic year was 900 students in the Elementary Curriculum, 168 in the Junior-Senior High School Curriculum, 101 in the Music Curriculum, 85 in the Home Economics Curriculum, 39 in the Art Curriculum, and 119 in the Commercial Teachers Curriculum.

An interesting report appeared in the August, 1930 edition of the Teachers College Bulletin. This report is reminiscent of report issued by many departments of mathematics today. In an article entitled "Analysis of the Results of the Schorling-Clark-Potter Arithmetic Test Given to Freshman at I.S.T.C. in September 1928 and 1929" Olive Tilton writes "This study shows that the mathematics department in college is compelled to spend too much time in remedial work in arithmetic to prepare a large number of students for classes in the teaching of arithmetic." In typical "pass the buck" style known to many college educators she goes on to say "If the elementary school is to train students effectively in arithmetic, the teachers in these schools must reorganize their teaching procedure so as to include both scientifically constructed drill materials and standardized tests to check their teaching. The secondary schools need to demand that entering students attain eighth-grade standards and then provide for maintenance of this skill and extension of knowledge of arithmetic by means of practical application in science and courses in secondary mathematics."

In 1932-33 the change to four year degree programs was completed and the mathematics courses for specialization saw the Mathematical Analysis course changed to 15 s.h. and the addition of a 3 s.h. course in Introduction to the Theory of Statistics. There are now 24 s.h. in mathematics, with 18 s.h. required for specialization in mathematics. The curricula at ISTC remained stable until 1937, when the first two years of instruction were made uniform for both the Elementary and Secondary courses. The final two years depended on the course of instruction chosen by the student.

At this same time changes were made in the mathematics department. By 1937 Olive Tilton was gone (presumably retired). Mahachek became head of the Mathematics Department and was joined by Leroy H. Schnell. Schnell held the B.A. from Albion College and the M.A. from the University of Michigan. The Mathematical Analysis course was separated into its subject components and new courses were added. One course in particular was special; we will see this later.

The required courses for “majoring in mathematics” along with their descriptions follow.

College Algebra I

This is a first course for students majoring in mathematics and emphasizes graphing, quadratic equations, exponents, logarithms, determinants, imaginary numbers, and progressions.

Trigonometry

This course treats the trigonometric functions of an acute angle, functions of any angle, functions of the sum and difference of two angles, double angles and half-angle, trigonometric identities, inverse functions, the use of logarithms, and the solution of triangles.

Analytic Geometry

The course provides for the study of the properties of the straight line, the circle, parabola, ellipse, and hyperbola emphasizing the relation between algebra, geometry, and trigonometry.

Differential Calculus

Basic ideas of calculus are developed together with the development of formulas which are applied to problems of slope, maxima and minima, and mechanics.

Integral Calculus

Basic ideas of integration are discussed and formulas developed and applied in problems relating to area, volumes, and science.

Teaching Mathematics in the Junior-Senior High School

This is a professional course including the study of the subject matter for these grades, methods of presenting units of work, writing lesson plans and the use of simple field instruments. It provides for the observation of teaching in these grades and for the discussion of the researches.

The elective courses for majoring in mathematics along

with their descriptions follow.

Teaching Mathematics in the Senior High School

This course provides for special study of the subject matter and methods of teaching in grades 10, 11, and 12 which topics were only briefly studied in the course in Teaching Mathematics in the Junior-Senior High School. Emphasis is placed on the psychology of teaching in these grades, on research done in the field and on more modern trends in senior high school.

College Algebra II

This course is a more advanced course than College Algebra I and includes work in complex numbers, theory of equations, probability and higher equations as well as an extension of topics begun in Algebra I.

Introduction to the Theory of Statistics

This course includes the usual work in statistics with special emphasis on the mathematics underlying the use and theory of statistics.

The final elective course and its description are of special importance to the author.

History of Mathematics

The course includes a study of the history of arithmetic, algebra, geometry, and some of the more advanced branches and of the men connected with the development of mathematics. Suggestions are made for using history to enhance the understanding and enjoyment of mathematics in the secondary school.

According to the “Courses on the History of Mathematics” web site [<http://mywebpage.netscape.com/jaimecarvalho/485/courses.html>], Florian Cajori offered a History of Mathematics course at Colorado College in 1894-95. It would be interesting to see when other schools began offering courses. This would determine if ISTC was following a trend of the time or was ahead of its time.

In 1938, the requirement for specialization in a particular field was raised to 24 s.h. for the first field and 18 s.h. for the second. With this in mind the statistics course was added to the list of required courses. By 1940 the courses had undergone some changes. College Algebra I was upgraded by the addition of linear and quadratic systems of equations, mathematical induction, logarithms, and permutations and combinations. College Algebra II was also upgraded to include infinite series, cubic and biquartic equations, and the mathematics of investment. Analytic Geometry now included a discussion of tan-

gents to conics, polar coordinates, and transformations. Differential Calculus added successive differentiation and partial differentiation, while Integral Calculus added integral as limit of a sum and multiple integration to the list of topics. The two methods courses were combined into one course. The description for the statistics course was more detailed, the history of mathematics course description was altered, and new courses in Applied Mathematics and Synthetic Geometry were added.

Statistics

This course covers the use of graphs, frequency distributions, averages, measures of central tendency and dispersion, sampling, correlation, curve fitting, the point binomial and the normal curve. Emphasis is placed on development of formulas as well as on skill in using them. Prerequisite: Differential Calculus.

History of Mathematics

The purposes of this course are: to develop a knowledge of the growth of mathematics through the centuries and of the men who contributed to it; to provide an enriched background for students preparing to teach mathematics; and to serve as an integrating course for units of mathematics previously taught.

Applied Mathematics

This course includes the solution of problems selected from many fields of study. The main purpose of this course is to give the student a broad understanding of the power of mathematics in order that his teaching of secondary mathematics shall be effective.

Synthetic Geometry

This course coordinates and extends the skills in geometry, presents some of the world's problems in geometry, and develops ability to make constructions of a higher order than that done in other fields of mathematics. The method of proof is extended to cover all those usually employed in mathematics.

Also by 1940, the secondary curriculum enrollments were increasing; there were 235 in the secondary program versus the 362 in the elementary curriculum. During the 1940's the mathematics curriculum added a new elective course in 1943, Spherical Trigonometry and Navigation, and not surprisingly Aeronautics was added to the choices for specialization. In 1942 ISTC was accredited by the Middle States Association of College and Secondary Schools as well as the American Association of Teachers Colleges. During the years 1943-1946 Leroy Schnell was listed as "on leave to the Armed

Forces." When he returned to was appointed Veterans Counselor in addition to his duties in the mathematics department. Also in 1943 Joy Mahachek carried the additional responsibilities of Director of the Division of Secondary Education a position she would hold until her retirement in 1963.

Other changes in mathematics that occurred during the 40's included the addition of the course General Mathematics, a remedial course in mathematics covering arithmetic, number systems, and graphs and equations, in 1948. The year 1948 also saw the addition of Isaac L. Stright to the mathematics faculty. Stright had a B.A. from Allegheny College, an M.A. from Cornell, and a Ph.D. from Western Reserve University in 1946. This degree was in the field of education; his dissertation was on "The Prediction of Successes In Baldwin-Wallace College." Stright's arrival signaled the beginning of the era where mathematics faculty typically had a doctorate in some field of mathematics education. The doctorate would become essential for future advancement at the college, and based on interviews with faculty of this and later years, a doctorate in education was the easiest way to accomplish this and still maintain a full teaching load and have a family life. Mahachek herself would obtain a Ph.D. from the University of Pittsburgh in 1949 for her dissertation "Growth in the Uses of Arithmetic Concepts and Processes."

New courses were added over the years. In 1951 courses were added in Field Work in Mathematics (construction and use of field instruments—the course remained until 1964), Mathematics of Finance, and Calculus III. By this time the Differential and Integral Calculus had become Calculus I and II and Calculus III completed the sequence with a syllabus much as it is today. By this time Synthetic Geometry had become College Geometry and came to include harmonic properties of the circle, inversion, and the theorems of Menelaus and Ceva. Two accelerated courses in Mathematical Analysis were created from the College Algebra, Trigonometry, and Analytic Geometry courses. A new mathematics requirement was added for all students, the course Fundamentals (later Foundations) of Mathematics. This course "is concerned with cultivating the students' general understanding and appreciation of mathematics." [1951-52 bulletin] The topics included the development of the number system, proof and reasoning, equations, graphs, and simple statistics, and "the place of mathematics in present day living." This reflects the fact that in 1951 the statement of the philosophy of the institution was broadened to reflect a general education approach. In 1957, the first graduate

programs were offered leading to the degree of Master of Education. I. L. Stright assumed additional duties as Director of Graduate Studies. Further strain was placed on the Mathematics Department in 1957 as Leroy Schnell left the department to be Dean of Men (as well as resuming duties as Veteran's Counselor). To take up the load, James E. McKinley and George Gavala joined the department. McKinley held the Ed.M degree from Penn State, while Gavala was a graduate of ISTC.

By an act of the Commonwealth in 1959, the state teachers colleges could become simply "colleges," and ISTC became Indiana State College (ISC) in 1961. By 1962, new degree programs that were not in education were added (but not yet mathematics). McKinley now held the degree of Ed.D from the University of Pittsburgh (he would eventually head the department from 1963-67 and the following mathematics faculty were added, all with Masters degrees: Ida Z. Arms, Edwin Bailey, Raymond D. Gibson, Marian J. Kipp, Carl P. Oakes, Glenn W. Olsen, William R. Smith, and Melvin R. Woodard. Woodard would eventually earn an Ed. D degree and head the department from 1967-80. By 1961 many mathematics courses were added to the curriculum: Differential Equations, Fourier Series, Vector Analysis, Abstract Algebra, Advanced Calculus, Theory of Matrices, and Theory of Equations. In 1963 ISC reorganized into the School of Liberal Arts, the School of Education, and the Graduate School, with I. L. Stright as Dean. In 1964 the first computer courses were offered in the department; FORTRAN was the standard. The year 1964 there were an incredible 434 mathematics education majors out of 4654 undergraduates. The course changes and additions will now come at a furious pace. Indiana University of Pennsylvania (IUP) is born in 1965. Can we write this history of the IUP era, or is it too soon? Stay tuned....

Remembering Dr. Jim Myers (1944-2007)

The Mathematics Department mourned the loss of a beloved colleague and Assistant Department Chair, Dr. Jim Myers, who passed away on February 15, 2007.

Here are some excerpts from the eulogy for Jim delivered by Gary Stoudt, February 2007

"I am proud to speak about Jim on behalf of the Mathematics Department and all of IUP. However, let me start with something personal.

"At IUP Jim is responsible for my better self. When the machinations of the department and the university got

me down or made me downright furious, Jim was there to soften my responses. He was the one who made me stop, reflect, and calmly move ahead with our business. Janet Walker's comment in her tribute to Jim really hits home: "I will always remember your calming presence."

"Yesterday at the viewing Elaine told me how highly Jim spoke of me. It gave me a strange, but warm, feeling, like when a son receives praise from his father. You see, in our case the terms "chairperson" and "assistant chairperson" always seemed strange. Jim was MY counselor, MY mentor, and often, MY conscience. That sounds very fatherly to me!

"He will continue to give through the scholarship fund we are setting up in Jim's memory. We will have a scholarship plaque placed prominently in the hallway. It will be right by the door to the second floor of Stright Hall. My colleagues and I will be able to see it every day. I hope when we see it there we will remember, and I hope it brings us together.

"As for IUP, there is not enough time to discuss all of the things that Jim did for her. The wide range of colleagues responding on his tribute page and the many faces I saw yesterday at his viewing speak to his wide-ranging work on behalf of IUP. He was certainly just like a member of the College of Education—the many flowers from people in Stouffer Hall are a testament to that.

"I would like to let Mary Lou Zanich, our colleague from the Psychology Department, whom I have the utmost respect for, especially now, have the final word:

"At times such as these, when cynicism seems to abound and our public - and private - dialogue has become coarser, it is good to remember that the world has people like Jim to serve as counterweights. As we talked about Jim over here today two words kept popping up: "decent" and "nice." Throw in his sense of humor and you have a pretty fine tribute. I will miss Jim."

"As will we all."

Please contact the Mathematics Department if you wish to make a contribution to the Jim Myers Memorial Fund.

REU Experience

by Liz Hartung (B.S. in Mathematics 2006)

I was looking for something to do during the summer of 2004 ... I was thinking that I wanted to travel, and maybe do something related to math. I had heard the word "REU" somewhere before, so I searched Google and found a bunch of websites on Research Experiences for Undergraduates. After looking at a few sites, I was really interested. The NSF sponsors them, and gives students free living arrangements, free food, and a decent stipend. There were about 40 in math, and many were in fields that I knew nothing about. So I picked around 12 that I had some kind of background in, and applied. The applications were fairly uniform, and required a statement of interest, two recommendations, and filling out a form that listed the classes you had taken, etc. Out of the 12, I received one "yes" and one "maybe," but the "yes" came from Southern California, so I was ready to go.

A few months later, I arrived in San Bernadino, California, and met my professors and the other seven students in the program. The REU was eight weeks long and the research was in knot theory and graph theory, neither of which I knew anything about. Luckily, no real background was necessary; both of these fields were chosen partially because little knowledge was necessary in order to be able to research. Our advisors spent the first two weeks giving us a crash course in knot and graph theory. We learned some of the basics in relation to the possible research we would perform, and also looked at recent results in the fields, many of which were from previous participants in this REU. After those two weeks were up, we were to pick a research topic, either on our own or from a list of unsolved problems. Most of us hadn't done original research before, so we were all pretty worried, either that we wouldn't get any results, or that we would be bored or stressed trying to find them. Our advisors didn't help, and only joked that we wouldn't be paid if we didn't produce anything new.

I chose to work in graph theory, and picked the problem of trying to minimize the wirelength of complete bipartite graphs. While I'm a math major, I could not have envisioned an 8-week period in which I consistently worked with math for 6-10 hours a day, and if I did, I probably would have expected it to be monotonous and tiresome. But the research was far from boring; it was one of the most exciting and emotional experiences that I have had. To prove my first theorem was thrilling, and to work with others in an intellectual way ("math jamming," as I sometimes refer to it), is so satisfying and

forms such a connection. Halfway through my research, and after I had proved my first original theorem, I was talking to another student and found that our problems were very similar, and so we worked together for the rest of the program. Together with our advisor Dr. Joseph Chavez, we found a much more concise proof of my first, proved another paper wrong, and came up with several more theorems about complete bipartite and tripartite graphs.

We never got to call the professor's bluffs about not getting paid, because all of us did complete original research. This was confidence boosting for everyone involved. Many of us who weren't sure about grad school decided that it was for us, although not everyone did. Of the eight of us, one wanted to get work in the field right away, and one decided he just wanted to play the stock market.

I really can't say enough good things about this program. Aside from all the math-based benefits, I got to visit California for the first time, and the landscape and climate was beautiful. For the whole eight weeks I was there, it didn't rain once. There were mountains that we went hiking in right next to our apartments, as well as a swimming pool right outside. We all lived together in two apartments, and spent all our time together and with the professors. We usually only worked four days a week, and on the fifth day, our advisors would take us kayaking, or hiking, or to the beach with the REU funds. I was a bit scared of not getting along with everyone at first, and although we were all really different, we had a blast. We had prank wars, recorded music together (most of which was a cappella), hiked, swam, and spent the weekends exploring Southern California and going to the beach. Our goodbyes were sad; one of the advisors wrote us a poem, one of the students cried, and most of us were a bit choked up. The students are all still in touch through phone or e-mail, and we had a reunion when we presented at the poster session at the Joint Meetings math conference in Atlanta over winter break. To reiterate, I would definitely recommend an REU to any undergraduate who is thinking about grad school. There are also REUs in computer science, statistics, and most sciences. For those in math, a good Web site is <http://www.ams.org/outreach/reu.html>, which lists all the REUs in math. Applications for the summer are generally due somewhere between February and March, with a few in April. I would recommend applying to as many as you think could fit you, and getting professors from fields related to the topics you want to study to write recommendations.

We Get Mail

- Herve Dovoedo (MS in Applied Mathematics, 2006): I had a last minute admission in the PhD of Business Statistics at University of Alabama, Tuscaloosa with some financial aid. So finally I decided to attend this university instead of Montana State University.”
- Brian Luksik (MS in Applied Mathematics, 2006): “I will be teaching at a small private high school in Rocky Mount, NC called Rocky Mount Academy. I’ll be teaching AP Calculus, Honors PreCalculus, and Honors Physics. I’m really looking forward to teaching AP Calc. Due to the recommendation of my headmaster at the school, I will be attending an AP Calculus summer class for teachers at LaSalle University in Philadelphia during a week in July. It should be interesting and I hope to learn a lot. So I finally am moving south as I’ve always wanted to.”
- Kevin Barry (BS in Mathematics and Economics, 2006) writes: “Hi Dr. Stoudt. I was browsing the IUP Math Department website and noticed the “Looking for Alumni” section. I graduated in December of 2006 with an Economics/Mathematics degree. I figured I would touch base. I am currently working in West Chester, PA with ING and I deal mostly with variable annuities. I hope the semester is going well. Feel free to email me about IUP events. Thank you!”
- Tiffany (Pritt) Schwanger (BS in Mathematics, 2001) I graduated from IUP in 2001 and earned a Master’s Degree in Mathematics in 2003 from Penn State University. I am currently teaching and doing administrative duties (evaluating transfer credit, academic advising, coordinating our Math Placement Exam, serving on the Curriculum Committee and many other things) at the Rochester Institute of Technology in Rochester, New York. This summer is the first year for our REU and I wanted to pass along the information to you so you could possibly post our flyer in your department. The flyer is available at the following link: http://www.rit.edu/~dansma/index_files/NSFREU_Flyer.pdf. By the way, our 1st REU was this past summer and will run again in the Summer of 2009 (the person organizing the REU will be on sabbatical this year so it

won’t run this coming summer (‘08)).

- Gary Stoudt writes: I heard from one of my friends at the University of Scranton that they hired Jen Franko, Math ‘01 to a tenure track position. She is finishing up at Indiana in knot theory. And she didn’t even take topology here.
- Mark Rayha (BS in Mathematics/Economics, 1993): Mark is working at Epic Systems Corporation, which is located in Madison/Verona, WI, and implements software in hospitals. “Epic is recognized across the country as a leader in helping move doctors from a paper medical record to a completely computer based medical record.”
- Jessica Kaliszewski (BS Ed in Mathematics Education, 2007): Jess is teaching at East High School in the Erie School District.
- Cynthia Taylor, (Mathematics Education Doctoral Student, University of Missouri - Columbia, cetq35@mizzou.edu) wrote to Dr. Janet Walker:

It has been a long time, but I am a former student (graduating in Dec. 1998). I just returned from AMTE in Tulsa, OK and met Judy Werner from Slippery Rock. Your name came up and that prompted me to send a hello your way.

I just completed 8.5 years in the classroom as a high school math teacher (spending 1 year in England teaching 10-14 year olds) and I am currently in my first year as a doctoral student at the University of Missouri. I am interested in completing my degree and teaching prospective teachers at the college level -- where, is still open, especially since I have 3.5 years to go.

I also wanted to say that I think frequently of my undergraduate methods courses, especially since that is my primary interest. I feel I received an excellent education from IUP that prepared me for the classroom and I really enjoyed the methods courses offered by the department.

If you plan to attend any national conference in the next several years (AMTE (in Orlando next year), NCTM (I am only attending the pre-session this year in April), etc.), let me know. I would really enjoy saying hello.

Mathematics Department Alumni Business Card Tree

Often our students and prospective students wonder what kind of a job they might be able to get with a Mathematics Degree. When they ask us that question we can certainly mention some careers, but we would like to have a simple and effective visual display of the jobs that our alumni have.

We would like to have a “Mathematics Department Alumni Business Card Tree”. What we would like from you is simple: Take one of your business cards, on it write the year you graduated, and please send the card in an envelope addressed to:

Mathematics Department Alumni Card Tree
Mathematics Department
Stright Hall Room 233
210 S. 10th Street
Indiana, PA 15705-1087

Once we have sufficient cards we will create a tree that will be housed in one of the display cabinets by the Mathematic Department Office. When students ask us the question as to the kind of jobs they can do with a mathematics degree we will be able to give them an answer and direct them to the tree to see what kind of jobs some of our graduates do.

We would like to have a majestic tree, like the trees in the Oak Grove. So we need all of you to send us your cards! Thanks in advance!

From the Math Department Web Site ...

YouTube Co-Founder Remembers Liberal Studies Synthesis Course

Chad Hurley, IUP alumnus and co-founder of YouTube, comments on his Liberal Studies senior synthesis course with mathematics professor, Dr. Ed Donley, in an IUP alumni magazine article.

Tessa (Polenik) Anodide, BS Applied Math 2003, has been honored with this year’s NSM Alumni Ambassador award. Tessa was on campus October 12-13, 2007 for Homecoming Weekend.



Recent Retirees

The following faculty have retired from the Math Department since the last issue of Stright Lines appeared:

Jerry Buriok

Jerry was last seen in the Dean’s office, but he is now officially retired. He seems to be keeping a low profile.

Doug Frank

We had a retirement party for Doug in January 2008. Last we heard, Doug is off to Southeast Asia to teach English as a second language.

Barb Lamberski

We know that Barb is hoping for warm weather to arrive so she can get out on her motorcycle. She has Yu-Ju Kuo convinced to be her new riding buddy.

George Mitchell

George built a house on the side of a mountain in State College, and he sometimes ventures down to Indiana for a surprise visit.

Welcome!

Stright Lines is back in print!

We're happy to bring you news from the IUP Mathematics Department, after a break that has been far too long.

Please send any news or announcement to us!

Sincerely,

Mary Lou Metz,
Chair, Math Department Alumni Relations Committee
mlmetz@iup.edu

Mathematics Department

Indiana University of Pennsylvania
233 Stright Hall
210 S. 10th Street
Indiana, Pennsylvania 15705-1048

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