Announcements

Career Connections Night

A chance to meet with, learn from, and talk to many different Syracuse graduates in various fields; April 4, 1995, 7-9:30 p.m., Schine 304A, B, & C (sponsored by the Syracuse University Student Alumni Association).

Actuarial Examination

There will be an Actuarial Exam on May 9, 1995. Sign up with Professor John A. Lindberg, Jr., in Room 317B, Carnegie Library.

Grader Positions Available in the Fall

The Department of Mathematics plans to hire several undergraduate students at the beginning of the fall semester to assist with grading in lower-division courses. This year the pay was $7 per hour and assignments ranged from five to 15 hours per week. The pay next year will be comparable. Preference will be given to mathematics majors. If you are interested, come to the main office and fill out an application.

Open Hours in the Math Computer Cluster

The Department has 15 Mac IIci computers in a computer laboratory in Room 100 Carnegie. These machines are available for use each week at the following times, although occasionally these times get preempted by classes:

Monday	Tuesday	Wednesday
8:30 - 10:30a.m.	2:30 - 4:00p.m.	9:35 - 10:30a.m.
1:00 - 3:00pm		11:45am - 1:45p.m.
		2:00 - 3:00p.m.
Thursday	Friday	
2:30 - 4:00p.m.	9:00a.m. - 12:30p.m.	

These machines offer access to the Internet, as well as such software as Mathematica, Maple, TeX, and Minitab.

Undergraduate Mathematics Conference

The 2nd Hudson River Undergraduate Mathematics Conference will be held at Siena College on Saturday, April 8, 1995. For information and registration forms, contact Professor John A. Lindberg, Jr., Room 317B Carnegie Library, 443-1497.

Syracuse University's Community Internship Program (CIP)

The CIP office (313 Huntington Hall) has many directories, binders and announcements containing information about almost all types of internships in Syracuse and in major cities across the USA. Although CIP will accept national internship applications until June 30, 1995, they urge you to apply early because some placements have early application deadlines and they fill up fast!

Five Steps Toward Attaining a National Internship

1. VISIT CIP
Look through their directories and binders to get an idea of where you want to apply.

2. SPEAK WITH PROGRAM COORDINATOR
Mrs. Carmel Piccoli will advise you on additional internships in your areas of interest and will provide assistance with the application process.

3. APPLY (by June 30, 1995!)
Complete one CIP National Application, and have your faculty sponsor approve it. Your faculty sponsor must have expertise in the career field of your internship. Return your completed, approved application, cover letters, resumes, etc., to CIP. Mrs. Piccoli will write a personal letter of introduction and CIP will mail all of your application materials free of charge. There is no limit to the number of placements to which you may apply.

4. FOLLOW-UP
Students are responsible for follow-up with placements within two weeks after their materials are forwarded by CIP. Interview arrangements should be made as soon as possible.

5. YOU'RE AN INTERN!
Visit the CIP office and complete the forms to register. Register for your internship before leaving campus for the summer or pick up a mail registration packet at CIP. Meet with your faculty sponsor before leaving to discuss any required assignment(s).

The Syracuse Archimedean

Co-editors:
Thomas B. Hansen, John A. Lindberg, Jr.

Carnegie Library

Then... and Now

Part 1: The Building

By Thomas B. Hansen

1920

At the south side of the quad sits majestic Carnegie Library.

Four large pillars guard what used to be the main entrance to the University's library. But the doors at the top of the steps are locked and sealed, for the main entranceway is now a classroom, and it has become a tradition to watch freshmen trudge up these steps and begin pulling fruitlessly at each of the wooden doors.

It was in March of 1905 that Andrew Carnegie announced to Chancellor James Roscoe Day that he would donate $150,000 for the construction of a university library, provided that the University would match that amount to pay for the upkeep of the library.

Shortly thereafter, according to Erik Hemmingsen, former professor in the Department of Mathematics, Chancellor Day was on a train bound for New York City. Near the Hudson river, the train passed a brickyard, which had a "Bankrupt-For Sale" sign. Day proceeded to pull the emergency brake and asked the conductor to back up the train. Day bought the brickyard, and in the months that followed, students stared curiously at the piles of bricks being dumped daily on the Quad. These characteristically tan bricks were used in the construction of Carnegie Library, completed in the fall of 1907 and opened in September of the same year.

Today, Carnegie Library houses the Department of Mathematics, the Erik Hemmingsen Mathematics Collection, and the Science and Technology Library. Next issue: Part 2: The Department.

Solution To Last Issue's Brain Teaser

Theorem: Suppose that the coefficients of the polynomial $p(x) = a_n x^n + a_{n-1}x^{n-1} + ...+ a_1 x + a_0$ satisfy the equation $\frac{a_n}{n+1} + \frac{a_{n-1}}{n} + ...+ \frac{a_1}{2} + a_0 = 0$. Then, $p(x) = 0$ has a solution in (0, 1); that is, there exists an $r \in \Re$ such that $0 < r < 1$ and $p(r) = 0$.

Proof: $p(x) = a_n x^n + a_{n-1}x^{n-1} + ...+ a_1 x + a_0$ is a polynomial function so that, for all $x \in \Re$; $Lim_{x\to c}p(x) = Lim_{x\to c}(a_n x^n + a_{n-1}x^{n-1} + ...+ a_1 x + a_0)$ $=Lim_{x\to c}(a_n x^n)+Lim_{x\to c}(a_{n-1}x^{n-1}) +...+Li\ m_{x\to c}(a, x)$ $+ Lim_{x\to c}(a_0) = a_n c^n + a_{n-1}c^{n-1} +... a_1 c + a_0 = p(c)$. Therefore, $p(x)$ is continuous on $\Re$, and $p(x)$ is certainly continuous on [0, 1]. It follows, by the Mean Value Theorem for Integrals, that there exists an $r \in (0, 1)$ such that: $\int_0^1 p(x)dx = (1 - 0)p(r) = 1p(r) = p(r)$, where $\int_0^1 p(x)dx = \int_0^1 (a_n x^n + a_{n-1}x^{n-1} + ...+ a_1 x + a_0)dx = \int_0^1 a_n x^n dx + \int_0^1 a_{n-1}x^{n-1}\,dx + ...+ \int_0^1 a_1 x dx + \int_0^1 a_0 dx = \frac{a_n}{n+1}(1^{n+1} - 0^{n+1}) + \frac{a_{n-1}}{n} + ...+ \frac{a_1}{2} + a_0$. Thus, $p(r) = \int_0^1 p(x) = \frac{a_n}{n+1} + \frac{a_{n-1}}{n} + ... + \frac{a_1}{2} + a_0 = 0$. (By Assumption)

Contributed by Jeffrey Procopio
Senior mathematics major

Myers (continued from page 2)

surroundings for graduate work.

Becoming a graduate teaching assistant was a dream come true, she says, and the satisfaction that she gets out of teaching is priceless.

"It makes my day when I can communicate math to my students," she says. "If they're stuck on a problem and I can get them unstuck, I feel like I've accomplished something special that day."

Moments like these far outweigh others spent tackling the tough, competitive courses that graduate students have to endure, Andra says.

During the few moments when she is not in Syracuse studying or attending to the needs of her excitable dachshund "Shadow," Andra travels to her family's summer residence in Ogdensburg, New York, to spend time with her two horses, "Duncan" and "Bandit."

Her ultimate goal is to one day become a college professor and, judging from her track record of handling obstacles in the past, this one will probably be a speedbump.

Dow (continued from page 2)

involved in distributing insurance policies to a variety of customers. Anthony is fortunate to have an aunt who is an actuary, serving as his guide and mentor.

Anthony says that to become an actuary, he must take about 10 exams over a period of five years.

But the prospect of this does not concern Anthony, a student not afraid of hard work.

"I like being challenged, and I like challenging myself."

Past and Current Undergraduate Math Majors

Andra J. Myers

By Thomas B. Hansen

Realization in life can come from many sources. For Andra Myers, a graduate teaching assistant in the Department of Mathematics, that realization came when her high school social science teacher told her that her gender should dictate her career choice, namely one that was anything but academic.

"I decided right then and there to strive to become a better teacher than him," she says with a brave, confident smile. "One that encourages his/her students, not discourages them."

Her math teacher in high school, whom she describes as "inspiring," encouraged Andra to pursue a degree in mathematics.

She chose Syracuse University for both her undergraduate and graduate work.

"I love this place," she says. "It's comfortable and makes me feel at home."

In 1994, she received her Bachelor's degree in mathematics education and mathematics.

Based on her wonderful experiences with professors and graduate students, Andra decided to stay in her comfortable, familiar

(continued on page 3)

Anthony J. Dow

By Thomas B. Hansen

Several factors can contribute to students experiencing culture-shock when going away to college. Some never fully recover.

Mathematics major Anthony Dow, a resident of New Haven, Connecticut, has recovered quite well.

Anthony began his college career at the University of Vermont as an engineering major.

But the rural environment did not suit his tastes, and he transferred to Syracuse University.

The surroundings here were pleasing, but he was quickly losing interest in certain science courses he was required to take.

Mathematics courses were also required, but college had fueled his high-school love for mathematics, and it seemed a logical decision that he change his major to mathematics, says Anthony.

Now a senior, Anthony is "very satisfied" with his major, and is anxiously awaiting responses from his actuarial applications.

According to Anthony, actuaries work mainly in large insurance companies, using statistical analysis to calculate the risks

(continued on page 3)

Helen Lau

By Katherine E. Jackson

Helen Lau, a senior here at Syracuse, is a math major, but she didn't start out as one. She came to SU thinking her interest was in biology, but she continued to take math courses and did well in them. She liked them so much that she decided to change her major to mathematics.

As a math major, Helen has had the opportunity to take a variety of courses—some more abstract than others. Topology, which she calls "very abstract," is the most challenging course for her—one which makes her use her imagination in addition to her math skills. She has particularly enjoyed learning analysis, and is taking an independent study course (Mat 490) in functional analysis now. Helen likes analysis because it is like "playing around, dissecting and manipulating what you know to prove something else."

Helen is currently applying to graduate programs. She wants to pursue a Master's in mathematics and also work on coursework in computer science, then move on to get her Ph.D. in math. Eventually, she wishes to teach mathematics at the college level.

Brain Teaser

Consider the function $f(x) = \frac{1}{x^2}$ defined for $a \le x \le b$, $0 < a < b$. The points $a = x_0 < x_1 < ... < x_{n-1} < x_n = b$ divide the interval [a, b] into subintervals. Choose $c_k = \sqrt{x_{k-1} x_k}$ from the subinterval $[x_{k-1}, x_k]$, $k = 1, 2..., n$, and show that the sum $A = \sum_{k=1}^{n} f(c_k)(x_k - x_{k-1})$ is exactly equal to the area under the graph of f.

Submit solutions to Professor Iwaniec
in Room 304F or 215 Carnegie Library.

(Contributed by Tadeusz Iwaniec)

NSF Research Experience for Undergraduates (REU) Program

The Center for Discrete Mathematics and Theoretical Computer Science (DIMACS) at Rutgers University invites applications for the REU program.

The program begins with 8 weeks of intensive work during summer 1995 and continues through the academic year 1995-96. Up to five undergraduates will be selected, and each will have a DIMACS faculty member as a supervisor. Research topics this year will include computational biology, combinatorial optimization, combinatorics, computational geometry/graphics, and computational group theory. Pending National Science Foundation (NSF) approval of funding, the program will provide each student with a stipend which will include summer living expenses and travel. For more information, contact Professor John A. Lindberg, Jr. in Room 317B, Carnegie Library.

SU MATH

The Syracuse Archimedean

Undergraduate Mathematics Newsletter

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Syracuse University Math Major To Give Talk

By Thomas B. Hansen

"I'm not nervous, I'm anxious," says senior math major Joel Sachs, speaking about his upcoming talk at the 2nd Hudson River Undergraduate Mathematics Conference, being held April 8, 1995, at Siena College in Loudonville, New York.

His talk is entitled "Norms of operators on finite dimensional linear spaces."

Undergraduate math majors don't often have the opportunity to give talks at colloquiums, but through a special Independent Study course (Mat 490), students are encouraged to apply what they have learned to locations outside the classroom.

Sachs, who highly recommends the course, says that it is interesting, mostly because of its unpredictability.

"You don't know what you will be doing week to week, and there is no syllabus. The course takes its own shape," he says.

The 3-credit pass/fail course meets Sundays and is taught by Professor John A. Lindberg, Jr.

Sachs still does not know whether or not he will pursue graduate study in mathematics. With experiences like this one, he may very well land a job with only a Bachelor's degree in hand.

IN THIS ISSUE:

Upper Division Advising Hours for Mathematics Majors and Minors

Professor John A. Lindberg, Jr.
317B Carnegie Library, ext. 1497
Math Majors, last names beginning A-L

March 21 - May 11	
Tuesdays, Thursdays	1:30 - 2:35 p.m.**
	6:00 - 6:30 p.m.*
March 24, Friday	noon - 2:00 p.m.*
March 31, Friday	2:00 - 4:30 p.m.*

Also available on weekends.
* Sign-up sheet on office door
** Regular office hours

Professor Gregory C. Verchota
Rm. 203, 113 Euclid Ave., ext. 1579
Math Majors, last names beginning M-Z

April 3 - April 11	
Monday	9:00 - 10:00 a.m.
Tuesday	11:00 - noon
Wednesday	2:30 - 3:30 p.m.
Thursday	10:00 - 11:00 a.m.
Friday	2:00 - 3:00 p.m.

Professor Gerald T. Cargo
304E Carnegie Library, ext. 1494
Math Minors

March 20, March 27,	
April 3, April 10	4:00 - 5:15 p.m.
March 21, March 28	8:30 - 11:00 a.m.
	1:00 - 4:00 p.m.
April 4, April 11	9:00 - 11:00 a.m.
	1:00 - 5:00 p.m.
April 5	4:00 - 4:15 p.m.
April 6	9:30 - 11:00 a.m.
	1:00 - 5:00 p.m.