

Introduction

This special freshman issue of the *Technique* is published yearly during the first week of school. Regular publication begins next Friday and continues throughout the semester, except during midterm break, dead week, and finals. The *Technique* is Georgia Tech's student newspaper—a unique group of journalists at a school with no journalism department.

Cover Photo

Summer Architecture Design Studio students Jorge Bazan and Mieke Preston design a model for the Italian design contest ATER, an Italian acronym which indicates the contest's focus, social housing for the third millennium.

Help Wanted

Are you doing research on campus? Do you think you can handle our abusive interrogations? Our contestants are decided in a weekly full-contact Parcheesi tournament. For more information, contact columnists Benjamin Small at bas@isentropo.org or his sidekick, The Amazing Joe Gezo at mojo@sps.physics.gatech.edu.

Technique's new Focus section works to bring issues to light

By Matthew Bryan
Editor-in-Chief

The word "focus" means the point at which rays converge after reflection or refraction. It was the need for focus that prompted the creation of this section by the same name.

The *Technique's* News section acts like a mirror to reflect the events and happenings on campus with a straightforward, unbiased approach to news reporting.

The new Focus section converges trends and broad issues reflected in the News section in order to bring to light their place in the big picture.

In short, News has its origins outside the *Technique* office, but Focus is formed from within. For example, the new Campus Research Review column from Ben Small and Joe Gezo illustrates what innovative research Georgia Tech

holds within its brick walls. No specific event or topic prompted the column, but rather the perceived need for information about campus research made the column essential, the idea came from within.

Additionally, as trends form in the news section their impetus will be discovered in Focus. For example, a string of campus burglaries might generate a feature on campus crime, or a series of administrative changes in a particular department might prompt a story indicating the changes are a sign of growth or of decline.

Previously, these issues appeared, albeit rarely, in the News section. Stories such as "What is Honor?" or "What is Hazing?" were feature-style responses to honor code violations and a pair of fraternity hazing incidents. These 'features' are important because of the format of the *Technique*.

As a weekly publication, the

Technique must grow out of the mold of a daily newspaper and take on a more news-magazine style in the feature-reporting Focus section; big-picture, feature-length stories and the addition of infographics and pull-out stories reflect that change.

The new Focus section replaces Campus Life in these pages. Ironically, the Campus Life section of the *Technique* seemed to lack a central theme or focus and became simply a repository for anything that didn't fit in News or Entertainment. Focus replaces Campus Life but doesn't resemble it. Focus fills a gap in coverage not previously filled by the *Technique* and splits Campus Life between News and Entertainment.

In the past, News echoed mainly items from the administration, and news generated from students was sent to Campus Life. Now, as events happen, whether student-based or

from the administration, they will appear in News. A club collecting food to feed children in a starving Third World nation, or a vice president declaring all students exempt from finals, will appear in News. Something like fun weekend get-aways or the haunted house in Towers hall will be covered as Entertainment.

This change is one of the first of those being made to the paper in the coming year. A change that came from the recognition of a shortcoming in years past.

The *Technique* is being called to a new level of professionalism. As the Institute improves academically, Auxiliary Services improves in its service to students, and the quality of students improves, so must the newspaper.

We're committed to this new standard and excited about our new Focus and excited about the upcoming year at the *Technique*.

Tutoring programs encourage students to ask for help

Tech offers a variety of tutoring programs to meet the often unique requirements of students. From on-air question and answer sessions to personally crafted one-on-one appointments, students have every opportunity to get the support they need.

By Gray Gunter
Assistant Campus Life Editor

The first step to recovery is admitting you have a problem. When it comes to academic difficulties, many students are hesitant to ask for help. Robert Busch, a third year Chemistry student, echoed these sentiments, "Going to someone, other than somebody else in my class, is usually the last thing I do when I'm stuck on a problem," Busch said.

The reasons behind this plague of apprehension are varied. Many students fall victim to general social anxiety, understandable at a school renowned for attracting introverts. Others aren't sure where to go for answers, although there are entire departments dedicated to providing student support. The final, and often most prominent culprit, is laziness, though I just don't feel like writing anything about that.

For those willing to overcome the daunting forces of shyness, confusion and laziness, there are plenty of tutoring resources available on campus for free. This article focuses on the broadest programs available to students of all majors. Yet, for each specific major and course there are a number of alternatives for academic assistance. For more information on these services, students should contact the office of their particular school.

Entering freshmen enrolled in the Freshman Experience Program can obtain help in their core classes without having to leave their dorm. From Sunday through Thursday,

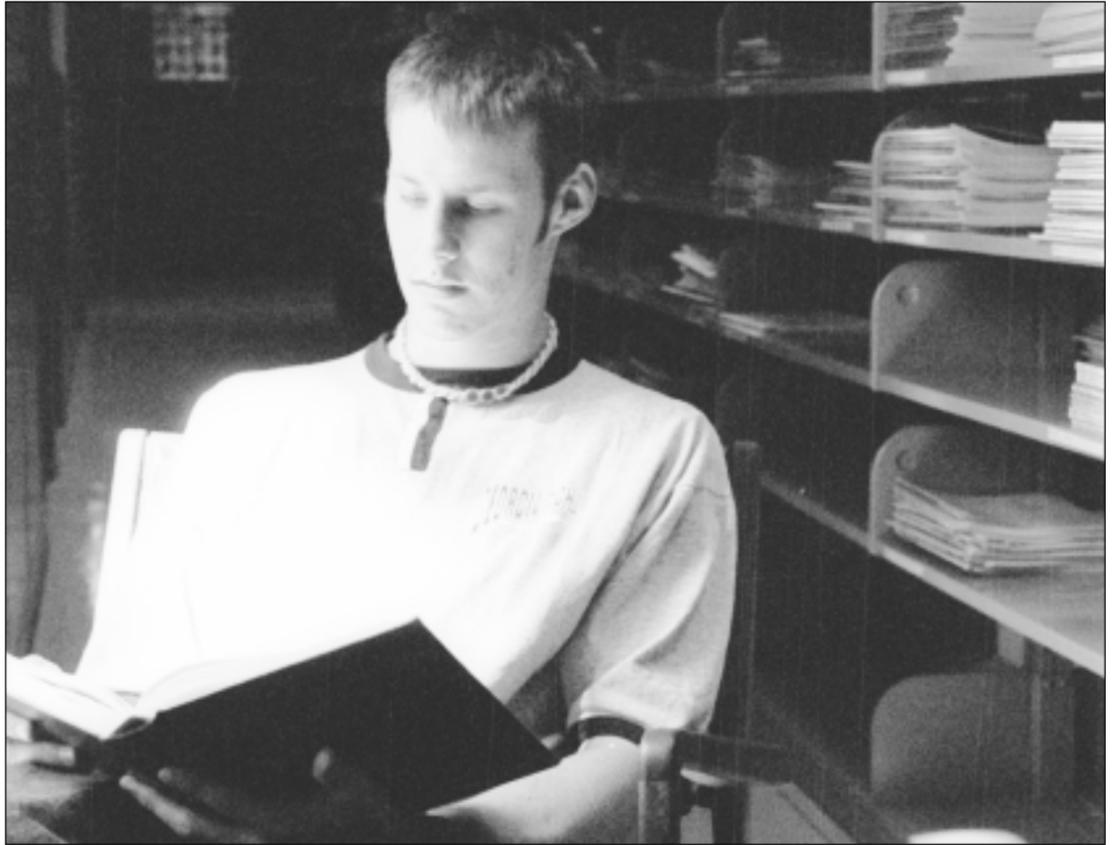
for three to four hours each night, Freshman Experience provides free tutoring in the basement of each Freshman Experience dorm.

Instructors are trained to provide help in calculus, chemistry and physics, which compose the majority of a student's first year curriculum. Tutors are predominately upperclass students currently enrolled at Tech who have already completed the introductory courses. Elizabeth Eubank, a former student in the Freshman Experience said, "Most of them are very knowledgeable and willing to help you as much as they can." The student tutors for each dorm are easily distinguished by their blood-red collared shirts.

In addition to the group tutoring provided by Freshman Experience, the Office of Success Programs offers one-on-one tutoring by request in subjects such as: Civil Engineering 2020, Chemistry 1310, 1311, 1312, Math 1501, 1502, 2401, 2403, Computer Science 1311, 1312, ECE 2025, 2030, Physics 2211, 2212, Spanish 1001, 1002, 2001 and 2002.

In the 1-to-1 program, students are allowed one session per week regardless of the course. Students should know, however, that the program has strict guidelines concerning cancellations and no-shows. For example, when a student cancels by phone or by email three separate times, access to tutoring will be restricted for one week after the third cancellation.

Also, when a student does not attend a tutoring session and does



By Jon Purvis / STUDENT PUBLICATIONS

A lone student studies in the library. In order to support all students needing academic assistance, the Special Programs Office, OMED and Freshman Experience provide a widely diverse selection of tutoring alternatives.

not notify the Success Programs Office or the tutor by phone or email (no-show), the student will be restricted from receiving tutoring assistance for the remainder of that semester. Thus, it is important that students use their one-on-one sessions wisely.

Luckily, if a course or time is not

available for you, special arrangements can be made to get you the help you need. Instruction in other subjects is available by request, which comes in handy for that tricky thermo class. Overall, the sessions are generally informal and extremely helpful.

Students interested in 1-to-1 tu-

toring can schedule an appointment online at lotus.stucen.gatech.edu/1to1/ or call 404-894-1945. To cancel an appointment, call 894-1945 or 894-1970. If you are interested in tutoring students, contact Paddy Kennington at 894-1970 or

See *Tutors*, page 11

Campus Research Review *Fuel Cell Champion*

Benjamin Small and Joe Gezo
Columnist

Professor Jack Winnick of the School of Chemical Engineering is striving to make this planet a better place. No really—he's involved with some projects that will help us save the environment as well as produce electricity more efficiently. This amazing prospect is because of one little chemical device—the fuel cell. (Perhaps certain presidential figureheads ought to pay attention.)

And what are fuel cells, you say? I'm glad you asked. Fuel cells are perhaps the most promising development for alternative power. If you live in California, you're probably having dreams about them.

See, most current power plants burn a fossil fuel (like coal), and the heat produces steam, which is used to turn a turbine and generate electricity. Inevitably, a certain amount of power is lost in this system (normally around 50 percent), since the chemical energy is transformed into thermal energy, which produces mechanical energy and finally electrical energy. Additionally, burning large amount of anything tends to have some rather undesirable side effects (soot in the air, acid rain, Greenpeace getting on your case, etc.).

Fuel cells, on the other hand, take in fuel and air in one end, do



By Marques McMillan / STUDENT PUBLICATIONS

Professor Winnick's research is devoted to recovering waste materials and reusing them, making fuel cells a "sustainable technology."

some fancy electrochemistry in the middle and leave only harmless water at the other end. (You remember reaction potentials from freshman chemistry, right?) No pollution, no moving parts, and great efficiency (sometimes better than 90 percent), since they convert chemical potential directly into usable electricity.

So why haven't we switched entirely to fuel cell power yet? First, they're substantially more expensive to build than a coal power plant, even though they're much cheaper to operate. As fuel costs continue to rise and fuel cell technology develops, we'll start

to see more people making that initial investment. Helping this progress is professor Winnick and the Georgia Tech Center for Innovative Fuel Cell and Battery Technologies (www.fcbt.gatech.edu/). He explained to us some of the specifics of modern fuel cell technology.

A Proton exchange fuel cell (PEFC) is a sort of membrane sandwich and generally runs near room temperature. Encased between two thin sheets of platinum-containing electrode, there is a proton exchange membrane,

See *Fuel Cells*, page 8

Undergraduate research a lasting benefit for students

By Josh Boutwell
Staff Writer

Once students get out of school, most find that employers don't really care that they got an A in Fluid Dynamics or passed Calculus. What employers really want to know is that you can complete the job for which you were hired. For most of us here at Tech, that job will be some form of research, whether it is designing circuits, cloning sheep, building lasers or irradiating stuff.

Experience in appropriate research will show a prospective employer that you can be productive in a lab. To some employers, this can be even more important than grades. After all, knowing about d-Tubocurarine chloride is vastly different from synthesizing it.

Perhaps the easiest way to get into research as an undergrad is to join the Cooperative Education Program. This program involves working for a company in the business world every other semester. There are several advantages to this system, including not having to attend classes every semester. This provides students with a break from the crunch of academia while garnering priceless work experience. Of course the other advantage is the money. Co-op employment pays extensively more than most on-campus jobs and is a great resume builder for the next time you're scoping out that high paying research and development job at Cisco.

Yet, there are some major disad-

vantages to the co-op program as well, the biggest being time. Since students are only attending classes every other semester, it takes at least an extra year to graduate. For many students on the fast track to graduation, this is simply too high a price to pay for work experience.

If interested in the co-op program, get in on the ground floor as a freshman so that your graduation is delayed as little as possible. You should contact the co-op department or visit their web site at www.coop.gatech.edu.

If you decided that co-oping is not for you, consider working with a professor. Most colleges at Tech offer classes known as "special problems." These classes are for highly motivated undergraduate students interested in specific course immersion and research. They come in two basic flavors. The first is similar to a regular course, for instance Public Policy offers a special problems course where students participate in a mock trial. These type of classes provide students with role-playing and hands-on experience while instructing them in business etiquette, proper work ethic, and the insides and outs of the judiciary system.

Yet most students, when contemplating research, envision wearing a lab coat and mixing the contents of various beakers, a la Dr. Frankenstein. While there aren't many professors synthesizing seven foot tall monsters, there are plenty who

See *Research*, page 8

Tech offers liberal arts degrees with a technology flair

By Rob Hill
Contributing Writer

There is a certain strangeness to writing about the liberal arts programs at Georgia Tech, a certain *je ne sais quoi* that might have something to do with the fact that Georgia Tech is an engineering institution that only confers its undergraduates with Bachelor of Sciences.

"If Georgia Tech really wants to be in the top ten [universities], its liberal arts program needs to be expanded greatly," James Bradshaw, undergraduate Physics major, said.

Anything to do with the eternal search for truth and beauty through such mediums as paints and poetry sound as out of place here as the Discovery Channel's crocodile hunters Steve and Terri making a guest appearance on *The Young and the Restless*.

Yet Tech does offer a liberal arts education. Although the program is definitely integrated with technology, it offers a hybrid take on the classical liberal arts degree for students interested in the study of technology and culture. In fact, Tech actually supports an entire college dedicated to the liberal arts, Ivan Allen, and they're doing some really amazing stuff.

"Our goal is to integrate the Institute's traditional professional strengths with the kind of liberal education that prepares students to manage information, design and plan projects, communicate clearly, think critically, and work effectively in teams across disciplines and cultures," Dean of Ivan Allen College, Sue Rosser, said.

To begin, the School of Literature, Communication, and Culture (LCC) is playing an integral part in redefining the fundamental foundation of humanities education.

With course offerings such as Evolution and the Industrial Age (LCC 2112), the Rhetoric of Scientific Inquiry (LCC 3310), Tech-

nologies of Representation (LCC 3314) and Science, Technology, and Postcolonialism (LCC 3316), LCC is altering the preconceived notions surrounding liberal arts degrees.

Most importantly, LCC is striving to integrate contemporary electronic mediums into classical modes of communication, cultural studies and humanities.

You don't have to be an LCC major to get involved, though. LCC provides minors in Women, Science and Technology (WST) and Performance Studies and certificates in American Literature, Literature and Culture Studies and Film Studies.

If you haven't the time to pick up a minor, you should check out Prometheus, an organization that supports History, Technology, and Science (HTS) majors at Tech by sponsoring D-Day discussion forums.

The group organizes discussion topics with panelists who either give supporting or negating evidence to argue a debate. Afterwards, a discussion is initiated between the panelists and the members of the audience.

Past topics included "The Greek System: Yea or Nay," "Affirmative Action: Free Ride or Leveling the Playing Field," and "Jesus Christ the Resurrection: Fact or Fiction."

LCC is also heavily involved in DramaTech, Photography Club and STAC Society. They even sponsored a Cannes screening group, led by LCC professor Paul Young, to generate discourse among film students.

If you can't find what you're looking for at Tech, Ivan Allen also supports cross enrollment opportunities with Georgia State and Emory, a program that diversifies an already impressive academic curriculum.

"Programs like HTS are liberal arts on steroids," HTS alumnus, Andrew Pae, said.

In addition, most students don't realize that Tech offers an extensive



Photo by Robert Hill / STUDENT PUBLICATIONS

Yuri Gitman, senior STAC major, takes part in a STAC Society discussion on the implementation of an audiovisual performance studies course at Tech. Gitman has plans to continue his film studies at NYU in the fall.

media studies program. STAC, Science, Technology and Culture, is a distinctive program that combines traditional mediums of study with current technical and scientific expertise. The program emphasizes communication, cultural interpretations and textual analysis in order to analyze texts ranging from novels to films and webpages. STAC majors prepare for careers in film, television, and the evolving discipline of webdesign and digital art. They also enter fields like e-commerce, media specialization and academia.

LCC students have also gone on to programs in policy, law, and jour-

nalism.

Yet perhaps you're more interested in the social context and legalities surrounding information technology. If so, Public Policy is the place for you. Public Policy concentrates on understanding technological change and making the appropriate and responsible decisions that come along with it. Public Policy majors assess issues such as economic development and technology, hazardous waste management and smart economic and ecological growth.

If Ivan Allen isn't your niche, the Georgia Tech College of Architecture offers a challenging program

in the art of Industrial Design. Undergraduates concentrate on "form, color, proportion, and composition in a process of visual and manual training in both two and three dimensional design." Students learn problem solving techniques, model construction, sketching, drawing and concept formation and design.

"I can't imagine world without art," graduate ID student, Sue Rinker, said.

Students also master computer-aided design, ergonomics, human factors and materials manufacturing. ID graduates secure jobs ranging from product designers to mass-transportation layout specialists.

print

wax

repeat

It's not that difficult with the production of the *Technique*. Why not stop by Thursday mornings, room 137, Flag Building? Free bagels.

paste

tape

Majors, minors and certificates offered at Tech

College of Architecture:

Majors Offered:
Architecture
Building Construction
Industrial Design

Certificates Offered:

Building Construction
Fine-Arts Music (Fall of 2001)

College of Computing:

Majors Offered:
Computer Science

Certificates Offered:

E-Commerce Technology -
E-Commerce Solutions
E-Commerce Site Admin.
E-Commerce Technology for Managers

UNIX -

UNIX Systems Management
UNIX Systems Programming

LINUX -

Using Linux Systems
Linux Systems Admin.

Internet -

Web Page Design
Web Programming

Networking -

Network Operations
Admin. of Open Systems

Software Engineering -

Software Engineering
Object-Oriented Dev.
Info. Tech. for Managers
Database Management
IT Project Management
Cognitive Science

College of Engineering:

Majors Offered:
Aerospace Engineering
Chemical Engineering
Civil Engineering
Electrical Engineering
Computer Engineering
Industrial Engineering
Materials Engineering
Mechanical Engineering
Nuclear and Radiological Eng.
Textile and Fiber Engineering

Certificates Offered:

Chemical Engineering
Polymer Eng. and Polymers
Electrical and Computer Eng.
Textile Manufacturing
Biomedical Engineering

DuPree College of Management:

Majors Offered:
Management

Certificates Offered:

Accounting
IT Management
Finance
International Management
Marketing
Operations Management

Ivan Allen College:

Majors Offered:
Economics
History, Science & Technology
International Affairs
Literature, Comm., & Culture
Public Policy

Certificates Offered

Economics
African-American Studies
Asian Affairs
European Affairs
History
Sociology
International Affairs
American Literature
Drama and Film
Science, Tech., and Culture
Technical and Business Comm.
Western Traditions
Performance Studies
Women Science & Technology
French
German
Japanese
Linguistics
Spanish
Pre-Law
Political Science
Philosophy, Science & Tech.
Minors Offered
Economics

History
Sociology
Women, Science, & Tech.
International Affairs
Public Policy
Political Science

College of Sciences:

Majors Offered:
Biology
Chemistry and Biochemistry
Earth and Atmospheric Sciences
Applied Mathematics
Discrete Mathematics
Physics
Applied Physics
Psychology

Certificates Offered

Biology
Molecular Biology/Genetics
Environmental Biology
Microbiology/Microbial Tech.
Health Sciences
Chemistry and Biochemistry
Biochemistry/Organic Chemistry
Chemical Analysis
Physical/Inorganic Chemistry
Earth & Atmospheric Sciences
Surficial Geochemistry
Solid Earth Geophysics
Mathematics
Acoustics
Atomic, Molecular, Chem. Physics
Applied Optics
Biophysics
Computational Physics
Nonlinear Dynamic and Chaos
Solid State Physics
Sec. Education Preparation
Psychology
Biopsychology
Experimental Psychology
Cognitive Psychology
Industrial-Organizational Psych
Engineering Psychology
Social/Personality Psychology

Minors Offered

Biology
Earth & Atmospheric Sciences
Cognitive Science

Dreamy geek-centric paraphernalia rules

By Benjamin Small
Staff Writer

Everybody likes toys. Especially geeks. So if you're trying to win the heart of some technologically-affluent or otherwise nerdy classmate, here are some gift suggestions. And if you yourself are a geek and are trying to stay with the latest in geek trends, here are some übercool suggestions, yo.

It is important that I first make you familiar with one of the greatest online purveyors of cool swag ever: thinkgeek.com. Check them

"Now, don't be fooled by all this new technology—books are definitely still in. O'Reilly Books are perennial geek favorites."

out sometime if you haven't already. They sell all kinds of geek-centric paraphernalia: caffeinated beverages, trendy t-shirts, books, and gadgets.

Most of these items can be purchased online or from your local neighborhood technology store. On with the list then.

A small poll of some of my geek buddies indicates TiVo to be a must-have. If you haven't heard of this novel digital recording system, get with it—visit www.tivo.com.

According to this website, "because it's smart, TiVo automatically finds and records your family's favorite programs so you can watch what you want, when you want."

Sounds pretty cool right? And it mostly is too. TiVo recorders start at about \$200 with a monthly subscription of \$10 or so.

Related to this digital entertainment is HDTV (high-definition TV). Everyone who watches television regularly should certainly have HDTV. More and more TV broadcasters are switching to this substantially higher-resolution standard, but only a few stations in the Atlanta area are on top of things yet. Too bad the appliances themselves are more than twice as expensive as ordinary TVs.

And everybody knows flat-panel displays are also crazy-cool. You know how crowded your desk already is—imagine replacing that big, bulky CRT monitor that's a good 14 inches deep with something only two inches at most.

Thanks to the magic of liquid crystal or even plasma technology, SGI, Apple, Samsung, Sharp, Panasonic, and Philips-Magnavox all make these obviously expensive but kick-ass computer monitors.

Now, don't be fooled by all this new technology—books are definitely still in. O'Reilly Books (www.ora.com) are perennial geek favorites. These are the books with pictures of random animals on their covers—the "animal books" of computer programming.

Best-sellers include the "nutshell" series, especially UNIX, Perl, Linux, Apache, and XML. And of course *Evil Geniuses in a Nutshell*.

Another stupendously popular set of books is Donald Knuth's trilogy *The Art of Computer Programming*, which is \$134.95 from online bookstores like amazon.com and barnesandnoble.com. These books cover nearly everything a CS needs to know. Classics.

Digital cameras have recently been hot too. Kodak, Canon, Fuji, and Olympus all have some really great models, but they're up in the \$100s. The quality on digital cameras has increased drastically over the last few years; they're certainly worth the investment.

Many even have features present in good-quality analog cameras like control over shutter speed, focus depth, and brightness.

Yeah, all these are pretty hefty investments, so you'd better be pretty serious about attracting that dream geek. But if you're still in the "getting-to-know-you" stage, there are still some cool things for under \$100.

The Happy Hacking Keyboard is "the ultimate personal keyboard." See, computer geeks value their keyboards like appendages ('cause they are), and these are some of the neatest keyboards out.

The key layout itself is like an older UNIX keyboard, but there are only like 60 keys instead of the inflated 100+ of contemporary keyboards. They start at about \$50.

Barcode scanners are also spiffy as far as peripherals go. The :Cue-Cat made by Digital Convergence (www.crq.com) is definitely the most widely-known of these, and all kinds of software is being developed to interface them with our favorite OpenSource operating systems.

Speaking of the OpenSource movement, t-shirts sure are cheap. And all geeks like to wear t-shirts supporting their favorite project, Linux distribution, section of code from DeCSS, or whatever.

Now that we're on to non-electronic toys, might as well discuss LEGOs. There's not a geek alive who hasn't at some time played with LEGOs possibly for days on end—mindstorm and the old sk00l sets alike. The website www.lego.com is pretty well-done: you can make a

"There's not a geek alive who hasn't at some time played with LEGOs possibly for days on end—mindstorm and the old sk00l sets alike."

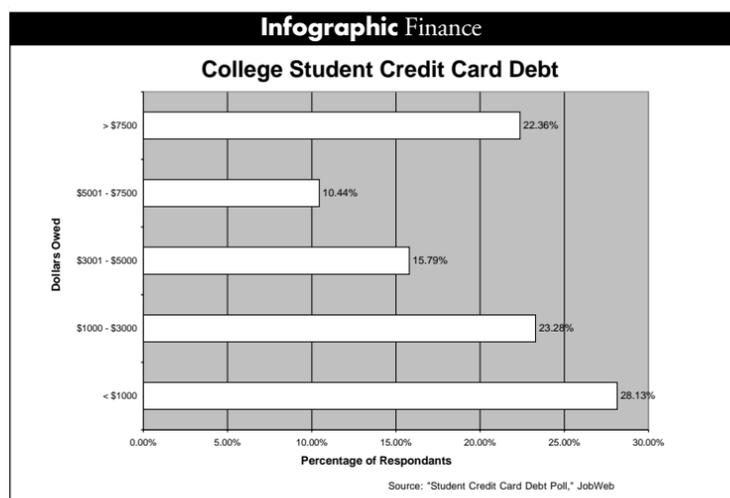
wish list, view all the current sets, and get information on visiting the LEGOLAND nearest you.

And some honorable mentions: oscilloscopes, inflatable furniture, the Robomower, pinball machines, more RAM, MP3 players, global positioning systems, gigabit switching hardware, 802.11b paraphernalia, and *Encyclopaedia Britannica*.

So there's my brief list of things to get for that geek-of-your-dreams. Or for yourself. Happy hunting.

If you know someone who is amazingly proficient with cool swag, drop us a line at focus@technique.gatech.edu

Student credit card debt on the rise



By Gray Gunter
Assistant Focus Editor

In a world of so much rejection, it's good to have a few credit card solicitations in the mail. The language is flattering to the point of embarrassment "you've been selected for this invitation because of your personal accomplishments," "you've been selected to receive this special invitation." After just a few letters, even the most humble person will start to feel honored. You have to wonder how many people the creditors turned down before you were handpicked. Despite the tone of the letters, credit card solicitations are issued with little deliberation. The policy behind credit card offers break down to one simple rule: if you are a college student you will be offered a credit card.

College students are the natural target demographic of credit card companies for two reasons. First, there is a need, or at least an urgent want, of money among students. When asked about his current economic situation Chris Hammers said, "Money is my number one concern right now, outside of finishing *Boulder's Gate 2*." Next, much to the shock and amazement of parents around the world, a lack of restraint and forethought in regards to spend-

ing money among young people. These two facts put most 18 year-olds squarely in the sights of the major credit providers.

The sole criterion for first-time approval by most credit card companies is age. Lenders must ensure that students are available for lots of nice, legally binding contracts. Anyone over 18 years of age can decide which credit card to get and how much to borrow without having a parent or guardian cosign. More importantly, young people are able to do so without having to show a means of paying off the debt they will incur.

With increasing frequency, the decision facing students is not whether or not to get a credit card but how many to own and operate at one time. The average undergraduate has \$2,200 in credit card debt, according to Nellie Mae, the nation's largest maker of student loans. That figure jumps to \$5,800 for graduate students. Since so many student credit cards have high annual percentage rates, the longer students wait to pay the cards off, the worse it gets. A Nellie Mae study conducted in 2000 found that 32 percent of undergraduate students have four or more credit cards. This figure is up from 27 percent in 1998.

According to the 2001 Report

to Congressional Requesters, by the United States General Accounting Office (GAO), 86 percent of students said that they paid their own monthly credit card bills in full each month. According to the Student Monitor study, 36 percent of students obtained their cards by responding to mail offers, 15 percent by filling out an application from a display on campus, and 14 percent by applying at a bank. In addition, the report noted that more than half of the students reported credit limits of \$1,001 to \$5,000, and that 24 percent of students had combined credit limits exceeding \$5,000.

One major credit card company is pioneering a creative way to bring its services to even younger clientele. Visa International has recently introduced the Visa Buxx card, which is obviously hip and cool given the number of x's used in its name, and marketed directly to teenagers. The official Visa web site touts the card as, "Specially designed for teenagers, Visa Buxx may look like a credit card, but it's actually a stored value card to teach teenagers practical money skills that will benefit them throughout their lives. Though it's accepted at over 18 million locations worldwide, on the Internet, and even at ATM machines, it's purchasing limit is restricted by a pre-set balance. This will help teach teens how to set a budget, prioritize what they want to buy, and decide how often they can afford to buy."

Debt management organizations recommend a few guidelines when choosing a credit card. First, decide whether or not you really need a credit card. Figure out if you have a regular income to pay off your debt. Then determine which credit card has the best payment system for you. Ignore the introductory rates and pay attention to the regular APR of the card. Finally, and though this seems simple, it is the downfall of many students--don't buy more than you can pay for.

Word to the Wise

Eight ways to protect your card privileges and credit rating

Budget:

Establish a monthly budget for yourself, one that includes realistic figures for credit card payments. Keep your monthly debt obligation below 10 percent of your monthly net income.

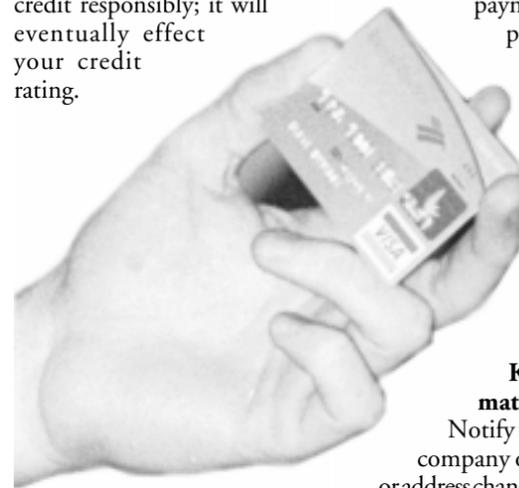
Use your credit:

The best way to establish a credit history is to "exercise" the credit already given to you. Use your credit responsibly; it will eventually effect your credit rating.

quickest way to destroy your credit rating. Your payment must reach the financial institution or business by the payment due date. Otherwise, it is considered a late payment and will incur expensive penalties, extra fees, or additional finance charges.

Minimum Maxim:

Be sure that you are capable of making your minimum payment. However, paying more than your minimum payment will reduce your finance charges and, of course, lower your total bill.



Keep all information current:

Notify your credit card company of all name, job, or address changes immediately. Misinformation could easily turn into a late payment because of forwarding errors and processing lags. Take the time to update your personal information.

Set reasonable limits:

Limit your limit. Avoid spending up to your limit. The credit limit shown on your statement is the maximum amount that the institution that issued your card is prepared to lend you. You don't have to spend it all. Emergencies may arise where you will need that money and spending over that limit will incur additional fees or penalties and often spawn the cancellation of your account.

Pay with cash:

Statistics show that consumers spend 50 percent more when they are paying with plastic. When you decide to make a major purchase, save up and use cash.

Be on time:

Pay your credit card bills immediately. Late payments are the

Cancel miscellaneous cards:

Cut up your credit card offers when they come in. Not seeking out new credit is one way to help reduce your chance of running up new credit.

Keeping track of life: the PDA

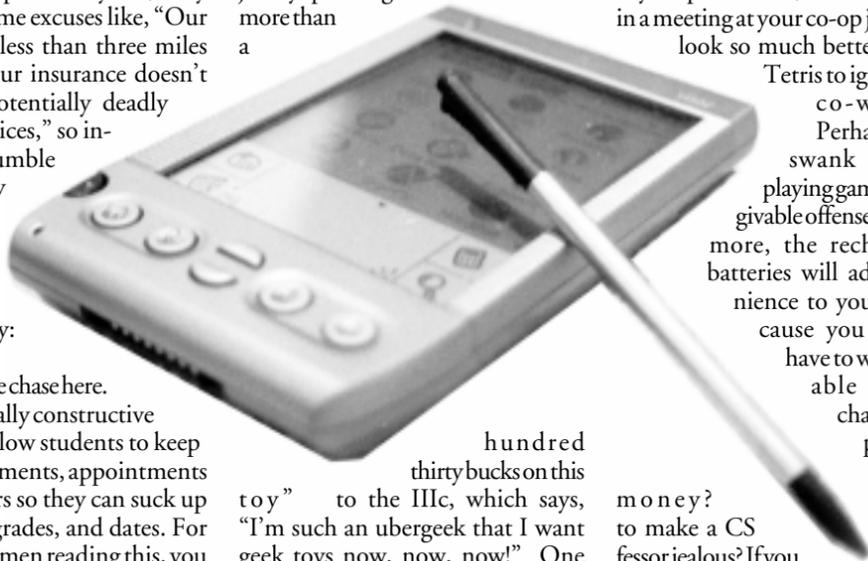
By Jon Kaye
Staff Writer

The Technique Staff wants to help you along with useful advice on one of the handiest devices geek culture has ever known: the atomic supercollider. No, not really. Even though members of the Tech community have been rallying metro Atlanta office supply stores to carry those for the past five years, they keep giving lame excuses like, "Our stockroom is less than three miles across" or "Our insurance doesn't underwrite potentially deadly electronic devices," so instead, this humble writer can only offer you advice on the second most useful geek toy: the Palm.

I'll cut to the chase here. Palms are socially constructive devices that allow students to keep track of assignments, appointments with professors so they can suck up to raise their grades, and dates. For the upperclassmen reading this, you may not remember that third one, so I'll jog your memory; they're those things you used to have on Fridays in high school. Useful perhaps, but socially constructive, how? A recent poll of Tech students conducted by myself and ECE Senior, Billy Barott revealed that by and large, students view the Palm as a positive device. Notably, when asked about her views on dating men who own Palms, third year ISyE major, Janeen Anthony commented that she would have no prejudice against dating a man who owns a Palm. However, as the Technique staff is committed to pointing out the socially constructive ways that a Palm can enhance a freshmen's life, it is important to point out the potential faux pas of malfearantly using

one. As Anthony said, "Playing games on [a Palm] is kinda dorky."

Palms come in a variety of models to meet a student's needs. For the economically minded, there is the Palm III series; while these models are only a couple years old, in computing terms, that's roughly the equivalent of several eons. These models range from the IIIe, which says, "I'm a geek, but I couldn't justify spending more than a



hundred thirty bucks on this toy" to the IIIc, which says, "I'm such an ubergeek that I want geek toys now, now, now!" One can imagine the chagrin of the people who paid a premium on the IIIc, Palm's first foray into the realm of color video, when the m505 was released a few months later with a sleeker design and more standard features. Palms in the III series feature PalmOS 3 or greater, so they are compatible with most any of today's applications. CS Major, Sven Roepke, the only student surveyed who owned a Palm, noted that his Palm IIIx with 4MB of memory is "good for keeping my memos and scheduling, but I don't really use it for assignments." While Roepke does note that he sees the general benefits of Palm ownership, they are an expensive luxury. Despite the fact that his IIIx is one of the conservatively priced models, he observes

that "it was expensive to get, and I don't use it as much as I should."

For students who like to dress for success, there is the Palm V series. These models are marginally superior to the III series in terms of functionality (specifically, they offer a somewhat faster processor and a rechargeable battery,) yet they offer profound benefits in style. With a sexy, thin exterior, this series fits in your pocket well, and when you're in a meeting at your co-op job, you'll look so much better playing

Tetris to ignore your co-workers.

Perhaps with a swank Palm V, playing games is a forgivable offense. Furthermore, the rechargeable batteries will add convenience to your life because you will not have to waste valuable seconds changing triple-As.

Got Want to make a CS professor jealous? If you answered yes to either of those questions, you need a Palm VII. While they lack the sleek styling of the V series, the VII earns its stripes as a wireless doodad. Just raise the antenna, and you can connect to the Internet from virtually anywhere. The Palm VII is the last bastion of decadent gadgetry, so much so that I have never personally seen a Palm VII outside of an electronics store. If you buy this device, you will have ultimately won the contest that advances you to the top rung of the geek ladder. Heartbroken, your geeky friends will cower in shame as you have an IRC conversation with a thirteen-year-old in Jakarta. Aww, isn't that cute? a/s/l plz? Of course,

See PDA, page 11

Need to get organized fast? Listen up and take some notes

By Martin Hildebrand
Contributing Writer

Have you ever made a to-do list? I'm certain that you have because we have so much to do—all of the time—that we can't possibly remember everything.

I am a to-do list freak. In fact, my affliction—if you find this obsession a problem, that is—is more than just writing lists of things I need to accomplish. I also make lists of world destinations that I want to visit; lists of Atlanta restaurants at which I would like to eat; lists of pleasure-reading books to devour; lists of movies to watch that are in theaters now; lists of movies to rent from the video store, etc.

These are all separate lists, mind you. One cannot combine all these various to-dos onto one universal to-do list! This is the first no-no to remember when making to-do lists. But, you say, I can combine the *movies* onto one list, right? No chance, amateur. Listen up.

While you may *think* that you occasionally formulate to-do lists, I assure you that you are strictly a recreational list maker. I assert this bold claim because list making is a fine art that only few have perfected. While I admit a bit of intellectual arrogance on this matter, I have a penchant for horn tooting.

After you learn the basics of proper to-do list construction and have practiced them sufficiently on real lists, one can indulge in improvisation, provided that the fundamental list-making rules are not violated.

First, a word on the variety of list formats that exist and the proper storage of said lists. Lists

can take several forms, principally the old-fashioned handwritten list. Just like a fine hand rolled cigar and Single Malt scotch whiskey, the handwritten list is, and always will be, a classic. I prefer this method as I am a purist list maker—word to the wise.

But, a handwritten list—in bullet form—in red ink on a yellow legal pad is rarely mistaken as commonplace class work. Please, plebes, do not abscond with my patented trademark list design because I will promptly set all plagiarized lists ablaze with my Prometheus cigar lighter.

If a list is of critical importance, foreign language-lists are quite adept at preventing unwanted eyes from reading the most important facts of your life.

Due to the rarity of Americans reading languages not based on Latin; Arabic, Russian or Korean would be the ideal ruse to protect your secrets. But, I can't write in Russian, you say. Well, while I have a special place in my heart for the Cyrillic alphabet of Mother Russia, foreign-language lists may not be the answer for you (I may be a List Nazi, but I am a Communist at heart.) In that case, lists written in a short hand notation system of your own, utilizing abbreviations, alphanumeric code words or binary code if you're a computer dork, will certainly be sufficient. While crooks may be intelligent, they are too lazy to try to decipher a list that is in anything but plain English. Torpidity explains why crooks have to steal and swindle to survive.

To return to a topic I alluded to earlier, each list is limited to

See Lists, page 9

Research

from page 2

are conducting super cool research.

Let's say, for instance you're a pyromaniac, you should check out propellant combustion research in Aerospace Engineering. But if you're instead a fan of Asimov, you could always join the Microelectronics Research Center. This type of research is the second flavor of the "special problems" class.

Sometimes, however, to get into undergraduate research, you have to be either very lucky or just plain crazy. As an example, we will review the School of Chemistry and Biochemistry. The first step in securing a research position is to scope out the areas of research you're interested in. This means meeting the professor who is conducting the research and letting them know that you're ready and willing to be their research slave. You need to become more than a face in the crowd and a name on the ledger. Go up to the professor after class and ask him questions. Take advantage of office hours. But most importantly, do well in the class! If the professor likes you, you can ask him if he has any room in his lab for you. If it turns out that there is room, and he accepts your support, you will be given a permit to take the courses 2901, 2902 or 2903.

Students sign up for each course in series and upon completion of their lab work, are given course credit by their sponsoring professor. In these introductory courses you learn basic research techniques and how to perform literature searches. While this is certainly not the glamorous high-tech project students dream of, it is a necessary step to getting your foot in the research door. If you manage to stick it out, you will eventually be able to take 4901, 4902 or 4903. In these courses, students are given the opportunity to conduct hard core research with professors.

As for when you should get started, Dr. Tom Moran, who manages



Photo by Robert Hill / STUDENT PUBLICATIONS

James Bradshaw is an undergraduate researcher in physics. Students volunteered in areas ranging from microelectronics to foreign policy.

undergrad research, said, "I actively encourage all students to start looking as early as possible. Even your first semester."

Science isn't the only place to look for research, though. The School of History, Science and Technology (HTS) and the School of Literature Communication and Culture (LCC) both offer research opportunities for devoted undergraduates. While engineering and science majors usually get course credit, it's not always guaranteed. LCC, STAC, and HTS go at it from a different perspective.

Once you and a professor have agreed to work together, the professor applies for grant money. Usually the grant awarded is around the range of fifteen hundred dollars and is used for travel and other expenses. LCC conducts research in several ultra cool areas including multimedia webdesign, CD-ROM development, film theory and elec-

tronic communications. One group in LCC is creating a virtual reality meditation chamber. The disadvantage of this system for students is the lack of a course or course credit. Dr. Greg Noble, of HTS, said, "An undergraduate must have a real fire in his belly or else this research will end up in the background." STAC conducts research on the social issues associated with technologically advanced societies and the cultural implications of this advancement. If interested, check out the Ivan Allen College webpage at www.iac.gatech.edu/.

Undergrad research can be a very important addition to your career at Georgia Tech. It will give you a competitive advantage over all those hum drum students who simply took regular classes and played DOOM all year. It is best summed up by Dr. Noble, "The real benefit is not so much financial, the lasting benefit is working closely with faculty."

Fuel Cells

from page 2

made of a Teflon-like electrolytic polymer and surrounded by some nifty chemicals.

One of these is the fuel itself, which could be hydrogen or even an alcohol. On one side of the polymer membrane, electrons are stripped off of hydrogen. On the other, the hydrogen, which is now missing its electrons, combines with oxygen in the air to create water.

We get to keep those electrons, which gain about 0.8 volts of electrical potential, so 150 individual cells can be tied together in series to produce the standard 120 V. Vast arrays of fuel cells could produce substantial quantities of power. Although the platinum electrodes keep PEFCs too expensive for large-scale power plants, smaller units are already in mass production for powering homes and vehicles.

Solid Oxide Fuel Cells (SOFC) operate at higher temperatures (~1000°C) but can use a variety of fuels; electricity can be generated from natural gas, diesel fuel, kerosene, gasoline, and even coal. They use the same sort of proton and electron exchange as PEFCs, but since the electrodes can be made from cheaper metals (like copper), the cost of SOFC is low enough to make them applicable for larger gigawatt-range power plants.

Moreover, waste heat from the reaction can be used to generate even more electricity from a turbine, just like traditional plants, which makes SOFCs insanely efficient alternatives to coal power.

Sounds great, doesn't it? Feel like running outside and shouting "it's a great time to be alive"? Don't leave just yet—it gets better. Dr. Win-

nick and his research group are developing techniques to make fuel cells even *more* efficient; he is "very big on any energy-producing device being environmentally benign." Much of the research is devoted to recovering waste materials and re-using them, making fuel cells a "sustainable technology."

Hopefully, the group's work will be able to convince large utility corporations to adopt fuel cells as a financially efficient source of electricity. They have constructed systems for recovering chlorine from waste hydrochloric acid (a common product in many industrial processes

like microelectronic fabrication) and for using hydrogen sulfide (that foul-smelling product of petrol refinement) as a reactant for fuel cells.

Professor Winnick believes in breaking down every potential barrier

to the introduction of fuel cells into the market. We couldn't agree more since, to the best of our knowledge, electricity is good and smog is bad. These new technologies are definitely the solution to our electricity shortages and energy cost increases, and they're also the answer to our many of our environmental concerns.

The only hindrance that remains is educating corporate and government entities so that they realize fuel cells are the best economic solution too.

If you'd like to help this cause and are interested in this sort of research, please e-mail professor jack.winnick@che.gatech.edu; a thorough understanding of thermodynamics and physical chemistry is suggested.

Winnick is "very big on any energy-producing device being environmentally benign."

Dr. Jack Winnick
Chemical Engineering

Lists

from page 7

specific bullets. I strongly advise, no, I forbid a grocery list to include your cousin's new phone number. That great book tip your French-Canadian-hating conservative best friend gave you? Nope. You can't jot it in the margins of your cigars-to-smoke list. The phone number of the gorgeous-yet-anorexic, 26-year-old Indian girl you met in Spain last summer? If I see you writing her number on that kinky places to have sex before I die list, I'll throw you out like the trash on a Thursday.

The question on the tip of each of your tongues is, why all the formality for list making? I learned the hard way that if you include the random phone number of the place your cousin in Wisconsin is staying while the fleas his neighbor gave him are being exterminated from his apartment on a list of projects to complete at work, you will go weeks without speaking to your offended relative and you will be snubbed at the Friday night Fish Fry at Okiewitz's in rural Wisconsin. Word to the wise, order the Perch. At least your stomach will be full when his unique-yet-lovable mother pins you against the cartoon map of Germany with stories of the weekend of silence she spent on a ranch in Taos, New Mexico with that strange saddlebag-with-eyes blood relative.

Often, I will make so many lists that I cannot find the one for which I search. Labeled manila envelopes are the brilliant solution to this vexing problem. They are perfect for the list of your friends' birthdays that you wrote on a napkin. Please don't try that at home. Napkins for lists are positively reserved for experts such as myself. Those guilty of improper list etiquette are likely to wipe their mouths with the napkin and completely forget to put a half-filled bottle of cognac and a red rose at the tombstone of Edgar Allen Poe in Baltimore on the January 19th anniversary of his birth.

Spotlight on the Campanile: For whom does the bell toll?

By Josh Boutwell
Staff Writer

So you're in. You got accepted to Tech and you're on your way to surviving one of the most academically challenging institutions in the nation. You slowly emerge from the mental fog of appreciation and find yourself with 60 pounds of books worth a hard-earned \$200.

As you struggle back to your new dorm room and a mildly scary roommate, you decide to rest your weary legs by the pleasant fountain in front of the Student Center.

As you sit, you see a gleaming shard of metal piercing the sky. You shrug and think, "Hey, this is a technical school." As you slowly begin to relax, you suddenly feel the insanity begin to rise again. You hear bells chiming "You Are My Sunshine," seemingly from nowhere!

Don't worry, you're not insane. The Campanile, also affectionately known as the "Shaft," has a series of speakers in the base which play a variety of songs. The speakers are specially designed to reproduce the carillon "chime" sound of authentic bells.

The Kessler Campanile is an 80-ft tall stainless steel tower that plays carillon version of songs ranging from the "Ramblin' Wreck" to "You Are My Sunshine."

Music selection is controlled from the Box Office in the Student Center. Typically, a student by the name of Derrick Brown selects which songs are broadcast to the Tech campus.

But don't blame him! Two CDs came with the speakers. They contain approximately 100 songs spe-

cifically developed to sound on the speakers.

Obviously, students weren't polled when these CDs were purchased. Students probably wouldn't have voted on the classic show tunes or Christmas ballads.

Yet there was a system involved to select the music flowing from the fountain. The Student Center actually organized an informal committee of campus members to vote on songs relevant to the Tech community.

Committee members choose a diverse mixture of songs, including ditties that had special meaning to the South, seasonal ensembles, and of course, Tech-themed ballads like "Up With the White and Gold" and the *Alma Mater*.

While "When You Wish Upon the Star" and "The Music of the Night" are all well and good, the administration should maybe think twice about playing songs like "You Are My Sunshine."

The songs for the Campanile should uplift the mind and spirit and encourage you to tackle chemistry yet again.

Georgia Tech students have many varied opinions on the vocalizations of this monument. Danny Hurley, an ECE graduate student who has attended Tech for several years, felt that "the Shaft should be upgraded from bells to THX; then you can use the THX test instead of the whistle and you can play the shaft theme song."

Other suggestions for appropriate tunes included "We Are the Champions" by Queen, or a few of the more humorous ballads from *South Park*. Rachel Glover, an AE, felt that the best song for the shaft



Photo by Daniel Uhlig / STUDENT PUBLICATIONS

The Kessler Campanile is one of Tech's newest icons, incorporating the traditions of the past with a contemporary emphasis on the future.

would be the theme from *Mighty Mouse*, "Here I come to save the day!"

But don't worry fellow students, there is hope! While the stereo system used to play the songs is far simpler than the stereos most GT students have in their dorm rooms, it is expandable.

Currently, it contains a six-disk CD player, a few equalizers and a scheduling system. Brown said, "You can play regular CD's in this system. In fact, one of the other students put in a Nirvana CD and forgot about it."

The only difficulty with this system is its simplicity. Apparently it cannot handle stereo input,

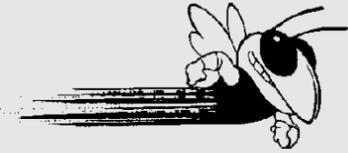
and the music must be converted to mono by throwing away half of the balance.

Since so many Tech students would like greater selection in their shaft music, someone should write a Web interface. Perhaps a system where people can upload MP3s to a server in the Box Office. This machine could then convert the tunes into mono and feed it into the amplifier. This sounds like an excellent senior design project. Any takers?

For more information on the Shaft, contact Rick Steele, Director of the Student Center, at 404-894-2788 or rich.steele@stucen.gatech.edu.

Technique
It's only funny if we
meant it that way.

Buzz Around the Campus



Question of the week

“What makes Georgia Tech unique?”

Feature and Photos by Alisa Hawkins



Frank Pyrtle
Ph.D. ME

“It’s got top-notch students in a cosmopolitan city.”



Rex Wolf
M.S. ME

“It combines great academics and athletics. Go Jackets!”



Perla Ortiz
ChemE Junior

“The fact that I hardly have any competition.”



David Wen
Psych Junior

“They let in more students than they have room for.”



Rajesh Rajaram
M.S. AE

“It’s the great profs which make it great!”



Duke Hutchings
M.S. CS

“The utter lack of a campus-wide personality.”



Amanda Spencer
ME Senior

“The atmosphere helps you focus on your studies.”



David Tamburello
Ph.D. ME

“They let me in and continue to put up with me!”

Tutors

from page 2

paddy.kennington@vpss.gatech.edu.

Students who are unable to get to a tutoring session in person can have their questions answered using the Georgia Tech Cable Network. Throughout the academic year, from 10PM to 12AM on cable channel 20, students can call in, 404-206-1811, and present problems to a team of tutors who will solve the question on air. This is great for those last minute Physics and Calculus questions.

For students who are struggling with the right combination of courses, the Office of Success Programs also offers SPAARC, Students Providing Academic Advisement, Resources and Communication, an organization established by students, for students, to provide an objective source of academic resources.

SPAARC provides academic advisement to students, with a students' perspective, in an effort to advise students on academic planning. The office also keeps a large

bank of resources on hand for students who have questions concerning their academic career including, course catalogs, course critiques, OSCARS, major handbooks and certificate information. Spaarc makes every effort to coordinate with faculty members to provide the best advisement possible.

Every student should know there are alternatives to using classmates or professors for help, and each student needs to be aware of exactly what those alternatives are.

As Jim Whitehead, a FASET leader and Georgia Tech Ambassador, explains to incoming students on his tours, "With the abundance of tutoring available there's no reason why students can't get free tutoring on campus."

For more information on tutoring alternatives available within your major, contact the undergraduate advisor at the origin school. Faculty and staff have flexible solutions.

Feature Photo CASE Summer Camp



Photo Courtesy of Robert Hill

Summer camp participants in CASE (Career Awareness in Science and Engineering), employ teamwork skills to effectively utilize limited resources to navigate their teammates through an obstacle course.

PDA

from page 7

your friends will have the last laugh when they look at your monthly PalmNet bill. While the Palm VII will put on top of the geek totem pole for a while, it will eventually be replaced, and when it does, you're stuck with an oversized PDA that lacks the one feature that made it cool.

Finally, Palm makes the m series. After years of successfully manufacturing the Palm, they decided to aggressively redesign the machines to have a new, modern look. Ranging from the entry-level m100 to their tour de force, the m505, these machines have a stylish new look while remaining compatible with the Palms of old. The m100, with just 2MB of memory is functionally similar to the classic IIIe, but the innovative m505 offers the utmost in geek bragging rights. Featuring a color screen, a thin silhouette, and copious amounts of expandability, this is the Palm to buy if you want to shame a friend who bought a IIIc when they were first released.

Personally, I have a Palm IIIe. While it is a low-end Palm, I find it useful for all of the things that most Palm users like. Not unlike your average busy person, I use it to keep track of phone numbers and appointments. I also write down my assignments and have my Linux box download my favorite websites every morning before I get up, so I can just sync my Palm and read them on the go. It's great, because a three-minute sync before I leave provides me with enough content to occupy my mind throughout an entire 8:00 class. Furthermore, I have it use Yahoo! to grab the latest news, weather, and movie listings, so on any given day, I know exactly what movies are showing at nearby theatres. Thanks to my Palm, and a very useful program called Plucker, I never have to hear that evil capitalist, Mr. Moviefone again! For a movie buff like me, that's a load off my mind.

The only real concern that students have for Palms is the somewhat high cost of purchasing one. As CmpE, Chris Lawless said, "if you lose it, it's wasted money from your parents." Likewise, ID major, Neta Ezer also noted that they are overpriced. When asked if she would consider purchasing one, she commented, "Maybe, if I ever have enough money."