What do you call a Physics major doing computer science research, an Exercise Science major doing physics research, and an Economics major doing mathematics research? At Roanoke, we call it URAP, the Undergraduate Research Assistant Program. This unique program pairs first year students with faculty members to work on specific research projects for four years.

Daniel Ballou of Falls Church, Virginia, is a sophomore Honors student majoring in Exercise Science. His ultimate goal is to become a physical therapist, but in URAP he works with a physicist, Dr. Balasubramanian, testing various catalysts for producing small, magnetic nanotubes. This is part of Dr. Bala’s research in the area of nanotechnology, one of the most promising new areas of scientific research. Daniel sees both intellectual and practical benefits to his participation in URAP. He enjoys thinking about new and interesting problems beyond his coursework, and his developing research skills will be invaluable in graduate school.

Timmy Balint of Williamsburg, Virginia, is a senior Physics major. In the fall, he will begin graduate school in computer science at George Mason University, working in the general area of robotics. Timmy credits URAP with sparking an interest in pursuing research in applied computer science. He has worked with Dr. Hughes and Dr. Bouchard in the CAVE (Cave Automatic Virtual Environment) on gesture recognition algorithms. This is part of Dr. Bouchard’s research in Laban Movement Analysis, with the goal of promoting nonverbal human/computer interactions. Timmy completes his tour of MCSP disciplines with a minor in mathematics.

Danielle Shiley of Camp Hill, Pennsylvania, is a 2010 graduate of Roanoke College who is now in health policy graduate school at Boston University. She majored in economics and was very active in residential life and the Greek system. Danielle worked with Dr. Minton on the fourth edition of his calculus books. She spun off two interesting problems to develop as research projects. Her work modeling the spread of HIV/AIDS won first place in the poster competition at the 2008 MAA Sectional meeting.

MCSP has sponsored other URAP students, including Paul Vines (profiled inside). Paul is a double major in computer science and biology. His URAP is in...physics.
Message from the Chair: Dr. Roland Minton

Welcome to the first edition of our departmental newsletter. We hope that this is an annual production, but you don’t have to wait for the newsletter to get the latest in departmental news. Our web site at www.roanoke.edu/mcsp is updated regularly with links to pictures and videos. Come visit us, in person when you’re in the area or virtually when you’re not. And please send us news about where you are and how you’re doing.

My teaching interests are anything mathematics — it’s all great”
Dr. Roland Minton
MCSP Department
Chairperson

RC Team Earns Finalist Honors in MCM

The team of Ed Hrinya, Bonnie Gumpman and Michael Kluge were named as Finalists in the 2011 Mathematical Contest in Modeling. From February 10 to 14, three-person teams throughout the world constructed solutions to one of two open-ended problems. The Hrinya/Gumpman/Kluge team explored improvements for half-pipe snowboarding tracks. From the 2775 entrants, 8 teams were named Outstanding Winners and the next 23 teams were named as Finalists. Roanoke and the United States Military Academy had the only two United States teams to be named as Finalists for their work on the half-pipe problem. Bonnie and Michael are senior mathematics majors, and Ed is a freshman Physics major who is considering options for a second major. The spring version of Math 271 Problem Solving is dedicated to preparation for the MCM. Congratulations to Michael, Ed and Bonnie!

FEMMES Inspires Young Girls

FEMMES (Females Excelling More at Mathematics, Engineering and Science) is a new organization on campus founded by mathematics and art history students Lindsay Van Leir and Charlotte Fraser. On Saturday, March 26, FEMMES hosted 4th grade girls for a day of science and mathematics activities. From MCSP, faculty Karin Saoub and Jan Minton gave workshops and Jane Ingram gave the keynote address. It looks like everybody had a good time!
Student Profile: Paul Vines

You could say that Paul Vines is a junior majoring in MCSP-BHF; or you could just say that he is a model Roanoke College student. Officially, Paul majors in Computer Science and Biology and minors in Mathematics. Add in summer research at Georgetown University in Physics and the Honors Program and you get an image of a talented, busy guy. But Paul is also President of the RC student chapter of the ACM, and is organizing a robotics project using LEGO Mindstorm in a Tower Defense scenario.

With all of that, you might be surprised to know that MCSP faculty member Jan Minton’s lasting image of Paul is of his feet – upside down. Supervising an Honors Program trip, she was horrified to see Vines several feet up a brick wall doing a back flip. After he landed safely and she recovered, she found out that Paul is a free runner. This means that he uses the stairs, walls and objects that we encounter every day in creative ways to get from one place to another. He describes himself as “very cautious” and practiced the back flip off the wall in gyms and at home until he could do it. Free running is “fun that you can do by yourself.”

One of the most difficult tricks that Paul does is scheduling his classes. With two majors, a minor, Honors classes, and numerous interests, he sometimes needs help from the Computer Science faculty to change meeting times so that he can “wrap the computer science courses around my biology and Honors classes.” This is one of several benefits of being at Roanoke College. But Paul knew that before coming here: his older sister Maury and older brother Mason are both graduates of RC.

Paul’s 2010 summer work at Georgetown gave him a taste of life at a bigger school. His work involved carbon nanotubes, tiny (diameter less than one-fifty thousandth of a human hair) cylindrical molecules that are the focus of much research and publicity. Paul’s project explored their use in miniaturizing flash memory. His favorite part of the work was using the electron scanning microscope, but this was tempered by the fact that he only had access to the equipment between 8pm and 3am.

Paul’s eventual career goal is to do research in Computational Systems Biology, building accurate and computer simulations of various molecular and cellular activities. This would make use of several of the many skills he has developed at Roanoke College. But, first, he has summer research at Virginia Tech in 2011, and classes to schedule, and walls to climb.

Faculty Profile: Dr. Karin Saoub

With four recent hires, the mathematics faculty has been getting younger. Dr. Karin Saoub, who is in her second year at Roanoke, likes to point out that she is the youngest.

Dr. Saoub (would rhyme with “loud” if loud ended in “b”) does research in graph theory, filling an important role in faculty expertise. Graph theory is a good area for undergraduate research, and Dr. Saoub will be supervising her first student research project this summer.

For all of us, teaching is the most important part of the job, and she has excelled in the classroom. She has developed her own section of INQ 241, titled Efficiency, and our first offering of Geometry. Her favorite course so far is Discrete Mathematics, and she would like to develop an upper level course in graph theory and combinatorics. Seniors Bonnie Gumpman and Lizzie Franz both appreciate Dr. Saoub’s encouragement of independent thought (“she wants us to succeed”) and availability outside of class, which Bonnie notes extends to the informal Thursday “Tea Time” that Karin introduced.

Karin was raised in Richmond, Vermont. Her sister taught her to multiply and divide fractions before she knew what a fraction was, so abstract mathematics has always been in her life. She attended Wellesley College as an undergraduate, and did her graduate work at Arizona State. She had intended to major in architecture at Wellesley, but switched to math after two years. She chose Arizona State because (1) it was in the West, (2) it was well known for graph theory research, and (3) it was in the West. Although Virginia in the East may be as close as she would like to get to the cold of the Northeast, she maintains her loyalty to the Red Sox, Patriots and Celtics.

Karin spent a semester abroad as an undergraduate, near London. She remembers a professor who was temporarily flustered by a student raising his hand to ask a question, and finally blurting out, “I talk, you listen. You ask questions of the teaching assistant.” (That course did not have a teaching assistant.) She prefers the culture at Roanoke, where she encourages her students to ask questions. She likes getting to see students in more than one class, and having students stop by to say hello and chat. She is a co-sponsor of the student chapter of the Mathematical Association of America and is active with the FEMMES program. This involvement with the students is one factor in the college’s growing number of mathematics majors. An increase in participation in mathematics (majors, minors or just having fun) is one of her ongoing goals at Roanoke.

If you have not done so yet, stop by and meet Karin Saoub. Along with being the youngest mathematician, she also has the lowest Erdos number (2). Ask her what that means!
MCSP at Work and Play

A-Timmy Balint discusses motion capture.
B-Natalie Horvath discusses strategies in the Ride-and-Tie race.
C-Dr. Matt Fleenor discusses evidence for planets in our and other solar systems.
D-NC State grad student Jessica Young (Roanoke '07) discusses security issues.
E-Guess which MCSP faculty member used to play basketball?
F-The annual Pi Day catastrophe: Dr. Childers, Dr. Spielman and Chaplain Henrickson looking Cool Whipped!
G-Sarah Witt wins the 400m hurdles in a meet at Roanoke College.
H-A volunteer navigates an archaeological site in the CAVE.
I-Computer science students present their Android apps in the Colket Atrium.
J-Bonnie Gumpman finishes her "Small Ball of Fire" at a workshop run by Dr. Eve Torrence of Randolph-Macon.
Dr. Richard Grant is the Coordinator of the Physics program at Roanoke College. As a winner of Roanoke College’s Exemplary Teaching and Outstanding Service Awards, he is one of the few two-time winners of the College’s faculty awards. He is also a two-time new father.

Rich and his wife Jackie traveled to Ethiopia in March 2010 to meet and bring home their adopted sons, Teketel (6 years old) and Aklilu (4 years old). The boys had been living in an orphanage in Addis Ababa, the capital of Ethiopia. Rich and Jackie visited the village in the southern region of the country where the boys grew up, a collection of thatched-roofed huts without any of the conveniences that we Americans take for granted.

Imagine, then, a sudden transition to a large house with race-car beds built by Rich and a closet full of clothes. Rich and Jackie eased the transition by learning to fix Ethiopian food and by learning some of Amharic, the language that Teketel and Aklilu spoke. Rich taped the boys speaking to each other in Amharic, a spur of the moment idea that quickly paid off when the boys adapted so well to English that they forgot most of their Amharic.

It has been an unbelievably eventful year for the Grants. From experiencing their first Thanksgiving, Christmas, and trip to Disneyworld, to playing organized soccer, ice hockey, and competing in swim meets, Teketel and Aklilu have embraced their new lives in America. Aklilu attends pre-school while Teketel is in kindergarten. Both are doing extremely well in school and Rich and Jackie look forward to the boys attending Roanoke College some day. Of course it will be on to Caltech or MIT for graduate school in physics if Rich has anything to say about it.

Now a year after bringing them home, Rich and Jackie say it’s clear that regardless of where you’re from, boys will be boys; rough housing, playing with trucks, and conversations about being policemen and firemen are now a daily event. “Our lives have certainly changed”, Rich says, “but we wouldn’t have it any other way”.

Pi Mu Epsilon Inductions

On March 31, 2011 the MCSP Department inducted new members into Pi Mu Epsilon, an honorary national mathematics society. This year’s new members of the Virginia Delta Chapter are Justyn Dooley, Charlotte Fraser, Anne Kyner, Miao Jing Li, Stephanie Morford, April Saul and James Riggs. They along with current members Ahmad Dahche, Timmy Balint, Sarah Witt, Akram Sublouban, Lindsay Van Leir, Amanda Coughlin and Natalie Horvath enjoyed a presentation by MCSP Department Professor Dr. Adam Childers titled “Do Good Guys Always Finish Last?” Congratulations to all members of Pi Mu Epsilon!
Faculty News

Adam Childers and David Taylor presented “An Inquiry-Based Approach to Introductory Statistics using a Central Theme” at a poster session at the CIDER Conference on Higher Education Pedagogy.

Anil Shende was on sabbatical in the spring.

Anil Shende, Adam Childers and Roland Minton presented posters at the Fall Faculty Showcase.

David Taylor is the Director of Quantitative Reasoning for Roanoke College.

David Taylor is Vice Program Chair for the Maryland-DC-Virginia section of the MAA.

Durell Bouchard gave a Conversation Series talk on “Microsoft Kinect and Motion Capture.”

Jan Minton is finishing up a term as Treasurer for the Maryland-DC-Virginia section of the MAA.

Jane Ingram won the College Service Award for outstanding service to the college.

Matt Fleenor was an invited speaker at the Virginia Association of Astronomical Societies meeting in October 2010. The department co-sponsored the on-campus event; Laura Bair and Matt helped organize the event.

Matt Fleenor and David Taylor were invited speakers at the Teagle Conference for Integrative Learning at Moravian College, PA, in October 2010.

Rama Balasubramanian was granted tenure and promoted to associate professor.

Rama Balasubramanian gave an invited talk on “Synthesis of Carbon Nanotubes with Y-junctions” at the International Argonne-Nassau Mossbauer symposium, Garden City, NY in January 2011.

Rich Grant was promoted to full professor.

Rich Grant is working on a calculus-based physics textbook for Cengage.

Roland Minton was named the M. Paul Capp and Constance Whitehead Endowed Chair in Mathematics and Physics.

Roland Minton is co-author of Calculus, now in its fourth edition.

Student News

Anne Kyner, Paul Vines, Timmy Balint and Nick Guendel gave poster presentations at the first campus wide student research conference in March 2011.

Lindsay Van Leir was co-organizer of the FEMMES workshop for 4th-grade girls in March 2011.

Natalie Horvath presented her work on the Ride-and-Tie problem in a talk at the April Maryland-DC-Virginia section of the MAA.

Paul Vines participated in an REU at Georgetown University, working with carbon nanotubes.

Paul Vines gave a poster on “Transformation of Maghemite Nanocrystals” at the International Argonne-Nassau Mossbauer symposium, Garden City, NY in January 2011.

Timmy Balint was accepted into the Ph.D. program in Computer Science at George Mason University, VA.

Congratulations to our Senior Scholars: Timmy Balint in Physics, Natalie Horvath in Computer Science and Lindsay Van Leir in Mathematics

Alumni News

If you are missing from this list or are misrepresented, please get in touch with us!

Adam Gray works at Lash Group – AmerisourceBergen Consulting Services in Charlotte.

Adam Peters is a Mathematics teacher at Franklin County High School.

Alan Moore teaches Mathematics and coaches baseball at Cave Spring High School.

Aleah Dillon is an Application Developer at Servpro Industries.

Alex Moore is lead technician at Pyrotecnico in Baltimore.

Anibah Avalos is a Mathematics teacher at Dominion High School in Loudon County.

Ashley Francis is an Operations Research analyst at the Center for Army Analysis and is pursuing her Ph.D. in Computational Science and Informatics at George Mason University.

Billy Scott is a software engineer at Wake Forest University Health Sciences.

Blaire Conner teaches Mathematics at Liberty High School in Fauquier County, Virginia.

Brittany Shelby is a financial reporting assistant in Boston.
Alumni News (Continued)

Casey Gearheart Turner works for the Army and lives in Maryland.
Chad White is back in the Roanoke Valley after several years abroad doing missionary work. Chad works for ABS Technology Architects.
Charles Cooley is a Computer Science professor at Eastern Mennonite University.
Connie Baker Jones is a lawyer with Finnegan, Henderson, Farabow, Garrett & Dunner in Atlanta.
Danny McNamara teaches Mathematics at Colonial Beach High School.
David Hill is an associate at Booz Allen Hamilton in Houston.
David Myer teaches Mathematics at Porter-Gaud School in Charleston, SC.
Drew Fleming is a software developer at CGI.
Emily Wooge is Special Projects Manager at Roanoke Gas Company.
Frank Clayton is a manager at Community Health Systems in Tennessee.
Geoff Boyer teaches Mathematics and coaches volleyball in Craig County. He is the “Voice of the Rockets” at athletic events.
Hampton Smith is in the PhD program in Computer Science at Clemson University.
Jack Gerdeman is an economics/business analyst at Mitre Corporation.
Jake Bennett is in the PhD program in High Energy Physics at Indiana University.
James Kohlhaas works for Datatel near DC.
James Pennix is Dean of Admissions at Radford University.
Jason Turbyfill works for Datatel.
Jennifer Jennings teaches Mathematics at Salem High School.
Jessica Young is finishing up her Ph.D. in Computer Science at NC State.
John Paul Roop is a Mathematics professor at North Carolina A&T.
Julie Critchfield Moore works for Fayette County Public Schools in Kentucky.
Katrina Palmer is a Mathematics professor at Appalachian State University.
Kelly Beeman founded the comedy sketch group The Uncomfortables.
Kim Thomas Emory teaches Mathematics at Staunton River High School.
Kimberly Schlitt Ciccarelli is a business analyst with Honeywell International.
Krista Pickle works at Acadian Asset Management.
Kyle Allen is a tennis professional in Roanoke.
Laura Beth Viventi-Collins works for the Naval Surface Warfare Center.
Laura Cassels in the PhD program in Material Sciences and Engineering at the University of Delaware.
Maria Cupples Hudson is a programmer for Mathematica Policy Research in DC.
Mark Lucas is a software developer for Integrated Imaging in Roanoke.
Mat Miller is a graduate student in Applied Physics at Johns Hopkins University.
Matt Troutman finished his Michelson Fellowship this year and continues his Ph.D. in Astrophysics at Clemson University, SC.
Matthew Browning teaches Mathematics at Lord Botetourt High School.
Pam Armata Schweighart is a biostatistical research analyst for Blue Cross of Tennessee.
Patrick McCleary is a statistical analysis manager at Capital One.
Philippe Moore works at Tenable Network Security.
Richard Goeres is studying at Lutheran Theological Southern Seminary in Columbia, SC.
Rick Pingry is the owner of Gremlin Games.
Scotty Smith is in the PhD program in Computer Science at George Washington University.
Steve Garren is a Statistics professor at James Madison University.
Steve Wheatley teaches Mathematics at Montgomery County Community College in Maryland.
Steven Nunnally is in graduate school in Computer Science at the University of Pittsburgh.
Tom Ward is finishing his MS in Applied Physics at the University of New Orleans and has a job with Gallo Mechanical.
Do you know who these star basketball players are? If so, you may have information that we need. Please send us emails and information about you and your classmates who majored in mathematics, computer science or physics. We hope that all is well with you and that you enjoy the newsletter!