Professor Emeritus Ben McCoy said it best: “Explaining concepts verbally, I am convinced, is key to learning. So the one tutored and the one tutoring both benefit from the experience.” It’s no wonder the Chemical Engineering and Materials Science Department’s fund that helps supports the new Tutoring Program is named after him. The Program first took flight in Spring 2013, when tutoring was offered for two courses, ECH 142 and 143. Since then, with key support from Chevron it has blossomed into a much larger endeavor, providing tutoring for eleven of the key courses offered in the first three years of Chemical Engineering and Materials Science curriculum. As the very first department-based tutoring program at UC Davis, the Program is a prime example of human-centered design – a definitive indication of the department’s dedication to students’ academic success.

With this program, everyone in the CHMS community benefits: students are given the chance to learn from and collaborate with each other.

Continued on Page 2
Tutoring Program Growth (Continued from page 1)

other, tutors are able to reinforce the material they’ve previously learned by teaching it, and professors are happy with students’ performances in their classes. Tutors for the Program are senior-level students selected by the department (in consultation with the faculty) for their excellent academic standing, as well as their outstanding grades in the courses they provide help for. The department is proud to be able to provide financial support for the exceptional students that are hired and encourage their professional growth.

Tutoring is offered six days a week at varying times to provide students with as many options to get help as possible, and so far attendance has reflected that with numbers ranging from thirty to eighty students per session. Quarterly surveys regarding attendance, tutor performances, content quality, and overall usefulness of the sessions demonstrated that the program has been living up to its potential and most students have learned to take advantage of this great resource. To quote one student: “I really appreciate the dedication and patience these tutors showed and how much they really wanted all of us to succeed in class.”

We hope to continue offering this service to support our students striving for academic excellence. If you would like to contribute financially to the Ben McCoy Undergraduate Student Award Fund that helps support this program, please contact Jeff de Ropp at jsderopp@ucdavis.edu.

*Quotes taken from online student survey.
Professor Emeritus Ben McCoy

Professor Emeritus Ben McCoy was inspired at an early age by periods such as the Enlightenment and Industrial Revolution, wherein rational thinking and scientific reasoning prevailed. It seemed like a natural step for him to pursue engineering, which he believed to be a way toward improving human existence.

After obtaining his Bachelor’s from the Illinois Institute of Technology in 1963, Professor McCoy went on to further his studies at the University of Minnesota, receiving his Master’s and Ph.D. in 1964 and 1967, respectively. As a brand-new Ph.D., he found his way to Davis and began teaching right away. Not only did he find organizing lectures and solving problems satisfying and rewarding, but also felt that guiding students in research was deeply gratifying.

In 1980, McCoy became chair of the Chemical Engineering Department (and hired several of the faculty still active today) before being appointed Associate Dean of Research for the College of Engineering in 1988. He retired from UCD in 2002 and accepted an endowed chair position at Louisiana State University. After his three year adventure in Baton Rouge, he and his wife returned to Davis, where their daughter completed her residency at UCD Medical Center.

McCoy is also a man of varied musical talents: he plays classical music on the piano, Celtic music on the Irish tenor banjo, and electric bass in a folk rock group. He stays active with running and is still entering 10K races at the age of 73, and is an avid reader of the New York Times. Perhaps most proudly, he is a devoted grandfather to two-year-old twins living in Davis.

With a lifetime of wisdom in tow, Professor McCoy has a few words of advice for the younger generation: “Be skeptical of advice from overly self-assured advisers. Do the things that turn you on, that are exciting and satisfying. Seek out and be friends with others who share your interests. Mind the imperatives of making a living, and don’t forget to give back (or give forward) as you progress in your career.”

“Engineering [is] a way toward improving human existence.”
William D. Ristenpart

“Chancellor’s Fellow”

Every year, UC Davis recognizes several associate professors early in their careers for outstanding research and teaching, as well as service to the university. These exceptional faculty members are honored with the title of “Chancellor’s Fellow” for five years and awarded with $25,000 to support their academic and professional endeavors. This year, our very own William (Bill) D. Ristenpart has been chosen by Chancellor Linda P.B. Katehi, department chairs and deans, and his colleagues to receive this very prestigious award. This is the third consecutive year that someone from the Chemical Engineering and Materials Science Department has been chosen.

Professor Bill Ristenpart began his journey as a chemical engineer here at UC Davis, where he obtained his B.S. in Chemical Engineering in 1999. He then went on to further education at Princeton University (Ph.D., 2005) and completed postdoctoral work at Harvard University, before returning to Davis as an assistant professor in 2008 and became an associate-level professor in 2013. His research team focuses on investigating complex transport in dispersed phases by using advanced imaging techniques to extract quantitative measurements from a variety of phenomena, ranging from electrification of emulsions to dispersal of pathogen-laden aerosols.

He currently has two active grants from the National Science Foundation, and is co-principal investigator on a National Institute of Justice grant to study the forensic-evidence properties of cut vs. torn duct tape. Since 2012, he has held the Joe and Essie Smith Endowed Chair of Chemical Engineering, which was instrumental in funding the preliminary work (done by recent Ph.D. graduate Siobhan Halloran) for his recent grant from the National Institute of Health, focusing on the fluid mechanics of airborne disease transmission.

Chancellor Katehi said, “UC Davis is a world-class university because we have a world-class faculty.” We are proud and honored to have such an esteemed individual who is so well-respected by students and faculty members alike. Congratulations, Bill!

“UC Davis is a world-class university because we have world-class faculty.”
Robert H. Davis

Alumni

Robert H. Davis was a Chemical Engineering student at UC Davis, where he earned his B.S. and the University Medal in 1978. As an undergrad, he was very active in the Chemical Engineering community and even served as president of AIChE. He recalls the strong friendships formed with other students in his class: “We were very close during our junior and senior years, often taking 4-5 courses together per quarter, including labs for which we stayed up all night taking measurements!” Davis was also a student leader of the Young Life club at Davis High School where he met some of the great people he has remained friends with today.

Davis has seen a tremendous amount of success in his career, but the trajectory wasn’t always that clear or easy. When he first enrolled at UC Davis, he had never heard the words “chemical” and “engineering” in the same sentence; he excelled at math and chemistry, but thought he would have to choose one or the other. Despite being “easily the worst student in the lab” in an advanced chemistry course during his first quarter due to inexperience, he aced the first midterm and the TA took an interest in him, eventually guiding him to the field that conflates math and chemistry – chemical engineering.

From that point on, things became a little clearer. Despite the fantastic job market at the time of graduation, Davis knew he wanted to get into teaching and thus pursued his Master’s (1979) and then Ph.D. (1982) from Stanford University. During his time in graduate school, he really enjoyed doing research, which led him to take a job as an assistant professor at the University of Colorado Boulder due to its good balance of teaching and research. After ten years on the faculty, Davis became department chair for Chemical Engineering; he served in that role for another ten years before ending up as dean of the College of Engineering & Applied Science. His success was never motivated by “a desire to move up the academic ladder but rather through a willingness to serve [the] college and help it excel.”

Aside from his teaching and administrative capacities, Davis also conducts research in the area of complex fluids. He heads the Davis Research Group, which focuses on the applications of complex fluids in biotechnology, materials processing and membrane separations. For example, they have studied flocculation or aggregation of...
CHMS News

**MASC Fall 2014 Recap** The Material Advantage Student Chapter (MASC) at UC Davis began the 2014-2015 school year with their first and second General Meetings, as well as a Tips and Tricks Info Session. At this session, members of MASC helped underclassmen choose their Winter Quarter classes and provided brief descriptions about what to expect from their impending upper-division Materials classes.

In the coming weeks, MASC will be busy with a variety of events in addition to their normal General Meetings. They will be hosting a graduate student panel, which will be a great opportunity for undergraduate students to ask their graduate counterparts (Masters and Ph.D. candidates) what influenced their decision to go to grad school, and what advice they have regarding what to pursue after graduation. MASC will also be giving laboratory research tours of five different professors’ labs to enable underclassmen to discover what research is currently being done on campus, and to hopefully inspire them to engage in undergraduate research in the near future.

As per tradition, MASC will hold their annual Decision Day event this spring, which includes taking incoming freshmen and their families on tours of labs in the Kemper Basement as well as providing them with a Q&A session to discuss any questions regarding Materials Science at UCD. Perhaps the biggest event of the year, though, is their traditional magic show on Picnic Day, which will be held on April 18th this year. The show successfully incorporates Materials Science demonstrations and theatrics to portray what the science is really about in a fun and approachable, yet still informative, way. They expect a full house for every show, as they do each year. To close out the year, MASC will have a general meeting/social event, and will partake in the Senior Send-Off that CHMS holds for graduating seniors in the department.

**AIChE Fall 2014 Recap** The UC Davis Student Chapter of the American Institute of Chemical Engineers (AIChE) started off the 2014-2015 school year with a few changes. They created new officer positions, designated as Junior Transfer Representatives, to meet the demands of the increasing student number of Chemical Engineering majors. Previously, transfer students were underrepresented in the club; with these new officers, they are getting the help they need to adjust to the UC Davis lifestyle and chemical engineering course load.

AIChE also continued with the family-style mentorship...
microbial cells (yeast and bacteria) and how it can be controlled to selectively separate desired cells from undesired ones and improve the productivity of a bioreactor.

In Davis’ eyes, highlights of his career thus far include leading CU’s chemical engineering department during a period of growth in size and stature, and now doing the same for the College of Engineering & Applied Science, helping both achieve a high level of national prominence. Though he has received a multitude of grants and also served as director of the Colorado RNA Center and co-director of the Colorado Institute for Research in Biotechnology, he says, “I am most proud of the students and faculty members whom I have known well and seen succeed.”

He stays active outside of academia, too – he rides his bike to the office every day, jogs at lunchtime, hikes when he can, and even travels overseas as often as he can with his wife and two daughters (one a senior in engineering at Cal Poly and one a Ph.D. student in anthropology here in Davis). Despite his twelve-hour workdays, he also helps with the college ministry of his church in Boulder. Davis absolutely loves everything he does, both for work and outside of work, and wants to continue as dean for a few years; he hopes to rejoin the chemical engineering faculty before retiring, at which point, he will fully dedicate himself to enjoying the outdoors, traveling, and volunteering.

In his lifetime, Davis has seen a lot of progress and technological advancements in chemical engineering, but despite burgeoning number of sophisticated tools available, he advises aspiring and younger chemical engineers, “[D]o not lose track of people skills: communication, leadership, mentoring, and respect.”
Christy Turcios Undergraduate Student

Christy Turcios emigrated from Guatemala in 1994 with her family in search of better academic and professional opportunities, and settled in Culver City, CA. After high school, she needed to work in order to afford college; that did not deter her, though, as she simultaneously took classes at a junior college in preparation of transferring to a UC. During a trip to Davis on Decision Day, Turcios saw the wealth of opportunity her parents envisioned for her when they emigrated. She could picture herself surrounded by professors who were enthusiastic about their research and teaching and students who preferred bikes to cars; after that, her decision to come to Davis was a no-brainer.

Throughout the years, Turcios has always been deeply intrigued by chemistry, biology, and mathematics. As she searched for possible career choices, she realized she wanted a career that conflated these subjects in real world applications and would also allow her to contribute to society in ways she found personally fulfilling. She

Adam Hoffman Graduate Student

Chemical engineering PhD candidate Adam Hoffman is from Lebanon, New Jersey, by way of Villanova, PA, where he obtained his Bachelor's and Master's from Villanova University. When searching for opportunities to continue his academic pursuits, specifically in catalysis research, he was told by multiple faculty members to find Bruce Gates at UC Davis.

As a member of Professor Gates’ Catalysis Research Group, Hoffman investigates the structure-activity relationship of supported metal catalysts. His specific goal is to show that highly crystalline metal oxide supports, like magnesium oxide, contain multiple surface sites, each site uniquely influencing the catalytic properties of a metal bound to it. This work poses many challenges, from working with traditionally extremely low loadings of metals to pushing the detection limits of analytical equipment to identify the surface sites, the structure of the sites and metal on them, and the structure's influence on the catalytic activity of the metal site.

Two years ago, Hoffman had the incredible opportunity of interning at Chevron Energy Technology Company under C.Y. Chen and Howard Lacheen, two renowned research and development engineers. Under their guidance, he synthesized and catalytically characterized zeolite based catalyst with various hydrocarbon reactions relevant to the petroleum industry, and developed methods and reactor setups to test the reactions. He also worked on the structure-property relationship in zeolites and new materials, which were tested using nitrogen, carbon dioxide, and hydrocarbon absorption.

During his internship, Hoffman realized his expectations regarding a career as a research and development engineer very much aligned with reality, and reaffirmed his decision to continue on to a PhD. While he has always dreamed of becoming a professor, Hoffman hopes for an industry career as a research and development engineer before teaching at a liberal arts university.

Outside of academia, Hoffman has two major passions – fish and Halloween. He maintains three large fish tanks in his home, the largest seventy-five gallons in size. On average, he spends 200-300 hours a year designing and fabricating Halloween costumes for himself and his girlfriend, a process he describes as very involved, rewarding, and educational. He often finds himself learning everything from electrical engineering and robotics to foam fabrication and tailoring to complete a single project.
Faculty Spotlight

Subhash Risbud  Materials Science

Professor Subhash Risbud began his career as an undergrad at the Indian Institute of Technology. During the time that he pursued his B.S., he did a thesis project on crystal growth and became fascinated with how crystals grow and form shapes ranging from thin films to beautiful diamonds with different colors. This led him to apply to graduate schools in the U.S. and he eventually obtained his M.S. from UC Berkeley in 1971. He then worked as a Crystal Grower at Stanford for three years before returning to Berkeley for his Ph.D.

After obtaining his Ph.D., Risbud worked in industry as a Ceramic Process Engineer at GTE Sylvania in Belmont, California, before deciding that academic life allows more creative flexibility and branching out into other fields. Now a dedicated professor, he believes that teaching is the most appealing aspect of professorial life, and derives a lot of positive energy from giving lectures, teaching classes, and engaging students in conversations about their career goals.

The Risbud Research Group focuses on new processes and materials for applications in biotechnology, nanophotonics, and electronics. They also create fabrication methods to fashion unusual structures at nanoscales, including in porous but robust solids.

Last year, Risbud was elected to the World Academy of Ceramics, a recognition he was honored to receive from his professional colleagues. However, his proudest moments come when he hears that his former students have achieved success in their varied professions (such as academia, private entrepreneurship, and leadership positions in industry).

Not only does Professor Risbud excel academically but also artistically. He is an amateur musician who takes vocal lessons in Indian classical music on the weekends, and is also interested in stage acting. He has even acted in plays and a small independent film made by a friend in the Bay Area.

With many intellectual and artistic abilities in his arsenal, Risbud has a few simple goals in mind. He hopes to keep his teaching going and create innovations in it, and most importantly, he is always working towards being a good mentor to his students, and a friend to his staff and faculty colleagues across the campus and all over the world.

Christy Turcios  (Continued from page 8)

saw potential in chemical and biochemical engineering, with opportunities to impact lives in fields such as biotechnology, consumer products, and environmental solutions.

Turcios has been working in Dr. Tonya Kuhl’s research group since March 2013; she investigates the thermodynamics of ternary lipid mixtures, constructs lipid phase diagrams, and calculates the Gibbs excess free energy of the compositions as a function of temperature and pressure. Her work has applications for revealing the fundamental physics behind these complex biological systems, development of biosensors, and for biomimetic drug delivery systems. She also tutors students in Mathematical Methods and Fluid Mechanics courses; she truly enjoys seeing others thrive and finds it incredibly gratifying in both a personal and academic sense to have students credit her efforts for their success.

Ever since she began tutoring, Turcios has considered pursuing a career as a professor in order to continue helping students fulfill their true potential. However, she would also love to find employment in the medical field, where her work can benefit humanity on a personal level. She hopes that during her career her ideas and discoveries will have the potential to improve the quality of people’s lives in many facets.

In addition to her academic and professional interests, Turcios enjoys hiking, salsa dancing, surfing, and golfing. She is also a black belt in tae kwon do, and recently joined the on-campus triathlon team and is training to compete in an Ironman race.
Calling all Alumni!

The CHMS website has been updated with richer yet simplified content for both current and prospective students as well as alumni. The URL is: [http://chms.engineering.ucdavis.edu](http://chms.engineering.ucdavis.edu)

One special feature is the alumni page:

Featured on the alumni page are labeled photos of all graduating classes back to 1976! Here you can have a look at your graduation photo, find other alumni, and post information about yourself.

Stay Connected!

Don’t forget to “Like” us on Facebook to connect with past, current, and prospective students while getting exciting industry and career updates.


For career and networking opportunities, join our LinkedIn group where we regularly post career opportunities sent to the CHMS department:

[http://www.linkedin.com/groups/UC-Davis-Department-Chemical-Engineering-4721224?goback=%202Egna_4721224](http://www.linkedin.com/groups/UC-Davis-Department-Chemical-Engineering-4721224?goback=%202Egna_4721224)

Photos for the CHMS 50th Anniversary Celebration (as well as other department photos) are still available at:

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Special Thanks to our Newsletter Staff

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