

The new Science and Engineering Hall, seen in this artistic rendering, has quickly become a symbol of GW's emphasis on research. "To be truly the world-class university that we are every day becoming, we need facilities equal to our world-class faculty," President Knapp told a crowd at the project's groundbreaking.



With the new Science and Engineering Hall, GW aims to expand the student experience and bring together a diversity of researchers to tackle 'big questions.'

BY DANNY FREEDMAN

It is being called "transformative," a scholar magnet that will foster a new era of research, and, in the down-to-earth words of one Foggy Bottom resident, "a more than fair trade for a parking garage."

The Science and Engineering Hall has become a symbol of the university's emphasis on research—an effort to bring into the limelight the work of GW researchers and to fuel an expanding pursuit of answers.

"To be truly the world-class university that we are every day becoming, we need facilities equal to our world-class faculty," GW President Steven Knapp told 500 or so people gathered at a groundbreaking ceremony in October.

"To be a powerful institution devoted to making advances in the realm of policy, in today's world you have to have credibility and power and competence and excellence in science and engineering. This project is absolutely integral to everything we're trying to achieve as a university," he said.



BALLINGER

SCIENCE AND ENGINEERING HALL STATISTICS:

Floors: 14; eight floors above ground and two floors below for programming space, and four floors below ground for parking, with room for 379 vehicles.

Eco-friendly design: Plans for the building target silver certification on the U.S. Green Building Council's Leadership in Energy and Environmental Design rating system. Features include dedicated parking spaces for recharging electric cars, a green roof, a cistern for collecting storm water runoff for reuse, and reduced energy demands through strategically located sunshades on the exterior.

Completion: Late 2014

Preliminary cost estimate: \$275 million, funded primarily with lease payments from the newly opened mixed-use building, The Avenue, across from GW Hospital; indirect cost reimbursement from grants and contracts supporting faculty research; and philanthropic gifts from the GW community.

For more information about the Science and Engineering Hall and to sign up for a monthly newsletter, please visit www.gwu.edu/scienceandengineeringhall.

The new building, located on the former site of the University Parking Garage at 22nd and H streets, will nearly double the space on the Foggy Bottom Campus available to several science and engineering disciplines. And it will bring under one roof a mix of departments currently spread across a dozen buildings.

The notion of bringing researchers together—as much as providing state-of-the-art facilities for research and teaching, and a slew of eco-friendly components—is a concept at the core of planning the Science and Engineering Hall, university officials say.

“The answers to the big questions—like the environment and energy—require multidisciplinary approaches,” says Peg Barratt, dean of the Columbian College of Arts and Sciences. “The open layout of this new building, with its teaching and research ‘neighborhoods,’ will facilitate and encourage collaboration.”

Laboratories, teaching facilities, and offices will be interspersed, increasing the exposure of building occupants to

one another and to the classes and experiments around them. Plans also call for open social spaces where people can gather—a recognition that the spark of inspiration can occur just as readily in a line for coffee as in a lab.

“The reality is that despite the invention of the telephone and the fax machine and the computer and the Internet and texting, nothing works better than face to face if you’re going to work with somebody and learn from them,” says David Dolling, dean of the School of Engineering and Applied Science.

Throughout the Science and Engineering Hall, students will find greater opportunities for hands-on learning.

Classes held in several small studio labs and in two much larger, so-called “scale-up” labs, seating up to 108 students each, will weave together lecture and laboratory sessions. The instructor, in this case, is “more like a coach,” says Gerald Feldman, a professor in the physics department. “You don’t have your team sitting there watching a guy draw on a



Among the highly specialized labs being built in the Science and Engineering Hall is a three-story-tall “high bay,” where researchers will work on creating more earthquake-resistant bridges and buildings, along with other projects. Other lab facilities will include a highly scrubbed “clean room” for nano-scale research and a 3,600-square-foot greenhouse.

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Several highly specialized research facilities also will help bring a new dimension to coursework and training, while reshaping the landscape for GW investigators.

Among these labs, a three-story-tall “high bay” will facilitate research on safer and more earthquake-resistant bridges and buildings, along with other projects. Plans call for the vast glass-walled lab—visible to passersby on the street—to have reinforced floor and wall spaces capable of withstanding intense horizontal and vertical loads, a dedicated loading dock, and a crane capable of toting 20 tons of material.

The building will house a 3,600-square-foot greenhouse for teaching and research projects, with a focus on plant-herbivore interactions and the role of plants in developing a more sustainable economy.

And a lab for nano-scale research also is hotly anticipated by a growing slate of physicists, chemists, biologists, engineers, and others.

The lab will be housed in a specially-built “clean room,” where the tidiest areas will contain no more than 100 parti-

cles larger than 0.5 microns—roughly half the width of a red blood cell—per cubic foot of air. Particles such as dust and dead skin are important to filter out: The impact of a single falling hair could spell doom for research at the nano level.

“This is where innovative engineering and science is occurring now. It’s at these dimensions,” says Can Korman, associate dean for research and graduate studies at the engineering school. Without capabilities to design, build, and test at the nano level, a university isn’t really competing, he says. “You’re just an observer.”

Professors say the specialty labs will provide opportunities to bring to Foggy Bottom research that GW scientists currently must conduct elsewhere, to compete more effectively for funding, and to create new streams of revenue, like offering services to local industries.

Michael Keidar, an engineering professor and director of the GW Institute for Nanotechnology, says the nanolab will mean “basically a completely different ballgame” for his research. But it also will “open a different level of conversation” when recruiting faculty members and students—an impact of the building that has been felt long before any shovel hit the ground.



Small studio labs and two much larger, so-called “scale-up” labs will allow lecture and laboratory sessions to be woven together, offering students a more hands-on experience. The instructor in this type of classroom is “more like a coach,” says physics professor Gerald Feldman. “You don’t have your team sitting there watching a guy draw on a blackboard all day. You might have a little bit of discussion, but then you go out on the field.”

“A big factor in my decision was to see the commitment that GW has in engineering. And of course the Science and Engineering Hall, which is a very big investment, is certainly a demonstration of that,” says computational mechanics researcher Elias Balaras, who last year left University of Maryland-College Park to join GW’s mechanical and aerospace engineering department.

He also saw an opportunity to get in on the ground floor of that investment, he says, and to help shape the future it’s creating.

“It was a tipping factor for me,” says Adelina Voutchkova, who joined the faculty of the GW chemistry department in January from Yale University, where she was a research associate. “Everything else about the department is fantastic,” she says: The faculty members are leaders in their fields, the students are enthusiastic. It was only missing an updated building.

She was excited, too, to learn that several departments will be housed there. “That’s where a lot of the really good science happens—when you see connections between what you’re doing and what people in other fields are doing.”

The mere potential of a new building, back in 2009, was a “significant factor” for Joost Santos, who came to the Department of Engineering Management and Systems Engineering from the University of Virginia. “I feel like a new building creates an impression that the university as a whole is caring about the growth of the engineering program,” he says.

Adding faculty researchers, university officials say, will mean more opportunities for engaging students—a crucial step toward the vision of an environment where student research is as much

a norm as internships and study abroad, and where the impact of research is routinely felt far beyond Foggy Bottom.

“GW is in the heart of the Washington metropolitan area, which has become a center for world science,” says Columbian College’s Dean Barratt. “With this new building, we have the opportunity to be a node and a convener for scientific research on a global scale.” **GW**

For further details, videos, and to sign up for a monthly newsletter about the building and the researchers who will be working in it, visit www.gwu.edu/scienceandengineeringhall.

PHILANTHROPY is playing an integral part in funding the Science and Engineering Hall, officials say, and is creating lasting impacts on the building and its future occupants. Gifts made so far have included:

- an \$8 million gift from local entrepreneur and GW trustee emeritus A. James Clark, board chairman and CEO of Clark Enterprises Inc., to launch the A. James Clark Engineering Scholars, a scholarship and leadership training program;
- a dollar-for-dollar matching gift from GW trustee Scott Amey and his wife, Deb, in which they agreed to match up to \$1 million in gifts made toward the building by graduates of the School of Engineering and Applied Science during 2011, 2012, and 2013;
- funding for the building’s 3,600-square-foot greenhouse, scholarships, and support for the Department of Biological Sciences through a foundation established by the estate of the late Wilbur V. (Bill) Harlan, AA ’35, BS ’35;
- and a gift from GW trustee Mark Hughes and his wife, Susan, to name an auditorium in honor of Donald Lehman, PhD ’70, who retired in 2010 after four decades on the faculty and long service as GW’s executive vice president for academic affairs and chief academic officer.