

# WVSU's 2+2 engineering program

Offering students local study options in partnership with West Virginia University

By Ben Calwell

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Highway bridge construction is no laughing matter, given that lives depend on the safety of such structures. But in Mohammad Bhuiyan's Engineering 101 class at West Virginia State University, students were able to share some laughs as a model bridge they made came tumbling down under the weight of textbooks.

It was a hands-on lesson in basic engineering principles for students in WVSU's relatively new 2+2 engineering program. The 2+2 program allows students living in the local region to stay close to home while study engineering for two years at WVSU in Institute. They can then transfer to the West Virginia University system -- either in Morgantown or in Montgomery -- to complete their engineering degrees. The Montgomery campus is slated to move to Beckley.

Bhuiyan, a Ph.D., and assistant professor of civil engineering at WVSU, said the 2+2 engineering program began in 2014.

"We have civil engineering, mechanical engineering and industrial engineering. They take engineering classes here, and then they are directly transferable to WVU or WVU-Tech," Bhuiyan said.

He said the 2+2 program is gradually increasing in popularity, but more students, particularly those living near WVSU and who are considering careers in engineering, need to become more aware of it.

"Our student numbers are increasing; the thing is, many people don't know that engineering (classes) are here," he said.

Bhuiyan said WVSU's engineering program is ripe for success, given its location in the Kanawha Valley.

"I believe our engineering program is going to flourish; the heart of West Virginia is around this area -- Charleston



BEN CALWELL | Metro

West Virginia State University engineering professor Mohammad Bhuiyan, Ph.D., places textbooks on a model bridge made by students Donald May, left, and Martin Dye in Bhuiyan's Engineering 101 class. The bridge, made from thin card stock, supported nearly 14 pounds of books before collapsing. WVSU's 2+2 engineering program allows students to study engineering for two years and then transfer to West Virginia University in Morgantown or to WVU Tech to complete their engineering degrees.

and the Kanawha Valley."

Students can study engineering close to home and save money.

Studying away "can be a huge expense," he said.

With evening and daytime classes available, the 2+2 program allows students to get a basic grounding in engineering, while not committing to any particular engineering field.

Bhuiyan remembered one student who entered the program intent on studying electrical engineering but changed his mind and switched to civil en-

gineering. He is now studying at WVU.

Billed as the "gateway to an engineering degree," the 2+2 program helps students clarify their engineering interests, and Bhuiyan said he avoids advocating for any particular engineering specialty.

"It depends on their interest," he said, adding that many students coming out of high school don't have a clear understanding of what engineers do.

For students considering engineering as a career, Bhuiyan said the employment outlook

remains good, especially if students aren't afraid to relocate to another area.

"They don't have to be in West Virginia; I always encourage them to go outside, and they can go outside the country. You can get a job any where in the world. International experience will help you all your life -- it opens up your world," he said.

Student Donald Norman of St. Albans is a business management major. He enrolled in the Engineering 101 class at WVSU to broaden his

knowledge.

"I'm trying to get a better understanding of engineering, so that when I apply my management skills in the real world, I can use some of the stuff I learned in engineering to make better decisions," Norman said.

Martin Dye of Sissonville plans to eventually study civil engineering at WVU. Playing with Legos as a child sparked his interest in how things are constructed.

"I've always had an interest in building things," Dye said.

Using basic engineering principles, Norman and Dye worked as a team to build a model bridge from thin, manila-folder cardboard. To test its strength, Bhuiyan began stacking textbooks on the bridge. The light-as-a-feather bridge model passed the test, supporting nearly 14 pounds of textbooks.

"They applied their engineering knowledge," Bhuiyan said.

## Engineering Course Descriptions at WVSU

### • Engineering 101: Intro to Problem Solving I (2 credit hours)

This course provides the skills needed for beginning engineering students to succeed academically and professionally. This project-based course prepares students for an engineering career by providing opportunities to apply mathematics to solve engineering problems, acquire teamworking skills, practice written and verbal communication skills, enhance problem-solving and design skills and use a computer as a tool for analysis, design and communication. Prerequisites: Math 121 or Math 102 and Concurrent Enrollment in Math 206.

### • Engineering 102: Intro to Problem Solving II (3 credit hours)

This course is the second part of a two-course sequence that provides the skills needed for beginning engineering

students to succeed academically and professionally. The objective of this project-based course is to prepare students for an engineering career by providing opportunities to apply mathematics to solve engineering problems, to acquire teamwork skills, to practice written and verbal communication and to use a computer as a tool for analysis, modeling, and design. Students will learn to use MATLAB for programming. Prerequisites: Engineering 101 and Math 206 with a "C" grade or better.

### • Engineering 241: Statics (3 credit hours)

In this class, students apply the concept of force equilibrium to problems in engineering. Topics covered are: vector operations, couples and moments, resultants, centers of gravity and pressure, static friction, free-body diagrams, beam theory, trusses and frames. Prerequisites: Math 206 and Physics 231 with a grade of "C" or better for both courses.

### • Engineering 243: Mechanics of Materials (3 credit hours)

This course examines both the theory and application of the fundamental principles of mechanics of materials. Understanding of the mechanics of materials comes from examining the physical behavior of materials under load, formulating a physical explanation for this behavior and mathematically modeling the behavior. The ultimate goal is a comprehensive theory of mechanical behavior under load. Prerequisites: Engineering 241 and Math 207 with a grade of "C" or better.

For more information about WVSU's 2+2 engineering program, visit [www.wvstateu.edu/engineering.aspx](http://www.wvstateu.edu/engineering.aspx), or contact Dr. Mohammad Bhuiyan, 304-766-3087, or send email to: [towhid@wvstateu.edu](mailto:towhid@wvstateu.edu)



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