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From the Los Angeles Times

## A break from classes to learn how waves break

UC San Diego's 1-unit freshman seminars combine entertainment with academic rigor. The Physics of Surfing, for example, uses accelerometers and GPS to examine the science behind the perfect wave.

By Tony Pery

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Reporting from San Diego — Blake Cole, 19, of Redondo Beach emerged from the surf Saturday morning, longboard under his arm, and professed himself satisfied.

"Having fun and doing science," he said. "That's what it's all about."

Indeed, the essence of the Physics of Surfing, a 1-unit course for freshmen at UC San Diego, is to mix physical exertion and intellectual rigor.

As Cole surfs near Scripps Pier in La Jolla, a Global Positioning System receiver and an accelerometer taped to his board collect data about the speed, direction and acceleration of the waves.

Later, Cole and his classmates will analyze the data to calculate the relationship between the surfer and the surf in catching the perfect wave -- all under the tutelage of David Sandwell, professor of geophysics at UCSD's Scripps Institution of Oceanography.

Sandwell spends his weekdays teaching graduate students at Scripps. He finds the surfing class a good way to end the week and maybe hook some freshmen on the romance of scientific inquiry.

Today's surfers, he figures, may be tomorrow's doctoral candidates. Besides, he's a surfer himself and has been known to ride a wave as part of the class.

"It's fun," he said.

The surfing class -- co-taught by Stefan Llewellyn Smith, associate professor of mechanical and aerospace engineering -- meets weekly, with lectures and lab experiments.

One lecture covers the fluid dynamics of the surfboard. Another explores what makes Black's Beach -- just down the coast from Scripps Pier -- one of the top surf breaks in the world. Short answer: It's the canyon on the ocean floor.

The class is part of a program started at UC campuses in 2003, 1-unit classes exclusively for freshmen. The classes are academically worthy but give students a break from the grind that comes from carrying four 4-unit classes heavy with reading lists, term papers and exams.

The classic large lecture-hall approach is still a big part of undergraduate education. But the 1-unit classes are conducted like seminars: a professor and no more than 20 students. And they are pass/no pass -- to eliminate the pressure of grades.

Among the freshman seminars offered at UCSD for the spring quarter are Urban Agriculture; Crime Scene Investigations; Cult Films of the 1950s - 2000s; Art, Language and Culture of Flamenco; Math in the Movies; Beginning Ukulele ("prior experience not needed but should not be afraid of singing"); Slavery in the Work of Mark Twain, Psychology of Humor; and Christian Exorcism in Modernity.

The surfing class attracted surfers and nonsurfers alike.

Chicago native Mike Sierks, 19, was drawn to the class by curiosity: "I've always been interested in why there are no waves on Lake Michigan but there are here."

Now he knows: It's because of storm patterns that migrate across the ocean and crash onto the shore beneath the La Jolla campus. Even the robust storms of the Upper Midwest can't match that.

Some of the students are experienced surfers who want a scientific underpinning to the sport that is their passion. "Now I can really appreciate how it is we're surfing what we're surfing," said Daniel Perez, 18, of San Diego.

Kendra Pivaroff, 18, of San Diego prefers to surf at night but likes the class even if it means getting up early. "If I'm going to wake up early on a Saturday, I'd rather be at the beach than anywhere else," she said.

Like other professors who teach the freshmen seminars, Sandwell is a volunteer. In faculty-ese, the seminars are "off-load," meaning they do not count toward a professor's teaching requirements. The administration does kick in a small stipend.

"We buy equipment," Sandwell said. "Then we have a pizza party."

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