At 71, Physics Professor Is a Web Star

Erik Jacobs for The New York Times

Prof. Walter H. G. Lewin, No. 1 on the most downloaded list at iTunes U for a while, with objects he uses for his physics lessons.

By SARA RIMER
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CAMBRIDGE, Mass. — Walter H. G. Lewin, 71, a physics professor, has long had a cult following at M.I.T. And he has now emerged as an international Internet guru, thanks to the global classroom the institute created to spread knowledge through cyberspace.

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Web Lectures

Here are links to some of Professor Lewin's online physics lectures.

- A Demonstration of Electrostatics
- Trajectories of Objects in Freefall
- How a Rocket Lifts Off
- A Lecture on Pendulums

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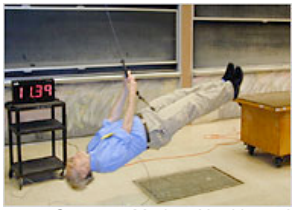

Courtesy Markos Hankin and M.I.T.

Professor Lewin demonstrates physics of pendulums.

Professor Lewin's videotaped physics lectures, free online on the OpenCourseWare of the Massachusetts Institute of Technology, have won him devotees across the country and beyond who stuff his e-mail in-box with praise.

"Through your inspiring video lectures i have managed to see just how BEAUTIFUL Physics is, both astounding and simple," a 17-year-old from India e-mailed recently.

Steve Boigon, 62, a florist from San Diego, wrote, "I walk with a new spring in my step and I look at life through physics-colored eyes."

Professor Lewin delivers his lectures with the panache of Julia Child bringing French cooking to amateurs and the zany theatricality of YouTube's greatest hits. He is part of a new generation of academic stars who hold forth in cyberspace on their college Web sites and even, without charge, on iTunes U, which went up in May on Apple's

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In his lectures at ocw.mit.edu, Professor Lewin beats a student with cat fur to demonstrate electrostatics. Wearing shorts, sandals with socks and a pith helmet — nerd safari garb — he fires a cannon loaded with a golf ball at a stuffed monkey wearing a bulletproof vest to demonstrate the trajectories of objects in free fall.

He rides a fire-extinguisher-propelled tricycle across his classroom to show how a rocket lifts off.

He was No. 1 on the most downloaded list at iTunes U for a while, but that lineup constantly evolves. The stars this week included Hubert Dreyfus, a philosophy professor at the University of California, Berkeley, and Leonard Susskind, a professor of quantum mechanics at Stanford.

Last week, Yale put some of its most popular undergraduate courses and professors online free. The list includes Controversies in Astrophysics with Charles Bailyn, Modern Poetry with Langdon Hammer and Introduction to the Old Testament with Christine Hayes.

M.I.T. recently expanded its online classes by opening a site aimed at high school students and teachers. Judging from his fan e-mail, Professor Lewin, who is among those featured on the new site, appeals to students of all ages.

Some of his correspondents compare him to Richard Feynman, the free-spirited, bongo-playing Nobel laureate who popularized physics through his books, lectures and television appearances.

With his wiry grayish-brown hair, his tortoiseshell glasses and his intensity, Professor Lewin is the iconic brilliant scientist. But like Julia Child, he is at once larger than life and totally accessible.

“We have here the mother of all pendulums!” he declares, hoisting his 6-foot-2, 170-pound self on a 30-pound steel ball attached to a pendulum hanging from the ceiling. He swings across the stage, holding himself nearly horizontal as his hair blows in the breeze he created.

The point: that a period of a pendulum is independent of the mass — the steel ball, plus one professor — hanging from it.

“Physics works!” Professor Lewin shouts, as the classroom explodes in cheers.

“Hi, Prof. Lewin!!” a fan who identified himself as a 17-year-old from China wrote. “I love your inspiring lectures and I love MIT!!!”

A fan who said he was a physics teacher from Iraq gushed: “You are now my Scientific Father. In spite of the bad occupation and war against my lovely IRAQ, you made me love USA because you are there and MIT is there.”

Professor Lewin revels in his fan mail and in the idea that he is spreading the love of physics. “Teaching is my life,” he said.

The professor, who is from the Netherlands, said that teaching a required course in introductory physics to M.I.T. students made him realize “that what really counts is to make them love physics, to make them love science.”

He said he spent 25 hours preparing each new lecture, choreographing every detail and stripping out every extra sentence.

“Clarity is the word,” he said.

Fun also matters. In another lecture on pendulums, he stands back against the wall, holding a steel ball at the end of a pendulum just beneath his chin. He has just

demonstrated how potential energy turns into kinetic energy by sending the ball flying across the stage, shattering a pane of glass he had bolted to the wall.

Now he will demonstrate the conservation of energy.

“I am such a strong believer in the conservation of energy that I am willing to risk my life for it,” he says. “If I am wrong, then this will be my last lecture.”

He closes his eyes, and releases the ball. It flies back and forth, stopping just short of his chin.

“Physics works!” Professor Lewin shouts. “And I’m still alive!”

Chasing rainbows hooked Mr. Boigon, the San Diego florist. He was vacationing in Hawaii when he noticed the rainbow outside his hotel every afternoon. Why were the colors always in the same order?

When he returned home, Mr. Boigon said in a telephone interview, he Googled rainbows. Within moments, he was whisked to M.I.T. Lecture Hall No. 26-100. Professor Lewin was in front of a few hundred students.

“All of you have looked at rainbows,” he begins. “But very few of you have ever seen one. Seeing is different than looking. Today we are going to see a rainbow.”

For 50 minutes, he bounds across the stage, writing equations on the blackboard and rhapsodizing about the “amazing” and “beautiful” physics of rainbows. He explains how the colors always appear in the same order because of how light refracts and reflects in the water droplets.

For the finale, he creates a rainbow by shining a bright light into a glass sphere containing a single drop of water.

“There it is!” Professor Lewin cries.

“Your life will never be the same,” he tells his students. “Because of your knowledge, you will be able to see way more than just the beauty of the bows that everyone else can see.”

“Professor Lewin was correct,” Mr. Boigon wrote in an e-mail message to a reporter. “He made me SEE ... and it has changed my life for the better!!”

“I had never taken a course in physics, or calculus, or differential equations,” he wrote to Professor Lewin. “Now I have done all that in order to be able to follow your lectures. I knew the name Isaac Newton, but nothing about Newtonian Mechanics. I had heard of the likes of Einstein, Galileo.” But, he added that he “didn’t have a clue on earth as to what they were all about.”

“I walk down the street analyzing the force of a boy on skateboard or the recoil of a carpenter using a nail gun,” he wrote. “Thank you with all my heart.”

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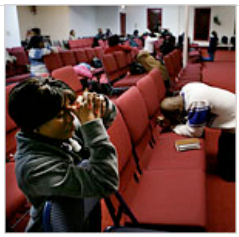

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