Stanford Perspectives on Online Education

John Mitchell
Stanford offers more free online classes for the world

In an ongoing experiment to leverage new educational technologies, the university is launching five free online classes this month.

BY JAMIE BECKETT

Stanford University is introducing five free online classes this month, following a successful pilot last fall that drew more than 350,000 participants around the world.

The online classes are part of a university initiative to creatively use new technology to improve education both on campus and off.

"Stanford has been a pioneer in online education for many years, and we are pleased to continue expanding and refining our online offerings to benefit both our own students and students around the world," said Stanford University Provost John Etchemendy.

Three classes will launch on March 12 – Design and Analysis of Algorithms, Natural Language Processing and Cryptography. Two more, Game Theory and Probabilistic Graphical Models, are scheduled to launch on March 19.

Demand has been strong; total enrollment in the five new classes is nearly 335,000.

Last fall, 356,000 people from 190 countries expressed interest in one or more of the first three classes offered, and approximately 43,000 successfully completed a course. Participants came from as close as Stanford’s Palo Alto campus and as far away as Ghana, Peru, Russia and New Zealand.
Tremendous Opportunity

• Evolving technology give us an opportunity to expand and reinvigorate education at all levels

• Example: “flipped classroom”
  – Lecture material shifted to interactive video
  – Class time used for human interaction
<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Instructor(s)</th>
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<tr>
<td>CCC101</td>
<td>CourseWare Crash Course for Beginners (Spring 2012)</td>
<td>Karl Rasmussen, Mike Winik</td>
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<tr>
<td>CME213</td>
<td>Introduction to parallel computing using MPI, OpenMP, and CUDA (Spring 2012)</td>
<td>Eric Darve</td>
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<td>CS11U</td>
<td>Practical Unix (Spring 2012)</td>
<td>Sam King</td>
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<td>CS107</td>
<td>Computer Organization and Systems (Spring 2012)</td>
<td>Julie Zelenski</td>
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<td>CS115</td>
<td>Computer and Network Security (Spring 2012)</td>
<td>John Mitchell, Dan Boneh</td>
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<td>CS181</td>
<td>Computers, Ethics, and Public Policy (Spring 2012)</td>
<td>Steve Cooper, William Rowson</td>
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<td>CSE 441</td>
<td>Advanced HCI: User Interface Design, Prototyping, and Evaluation Part II (Spring 2012)</td>
<td>James Landay, University of Washington</td>
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<td>Cognitive Science 102C</td>
<td>Cognitive Design Studio (Spring 2012)</td>
<td>Whitney Friedman, Daniel Frysinger, Professor Hollan</td>
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<td>EE282</td>
<td>Computer Systems Architecture (Spring 2012)</td>
<td>Sue George, Christos Kozyrakis, Jacob Barton Leverich, Matthew Murray</td>
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<td>ICS121V</td>
<td>Social Media Toolkit (Spring 2012)</td>
<td>Burton Lum</td>
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Evolving technology

• *Interactive video:* embedded questions
  – 15 min segments, question every 3-5 minutes, auto-graded
  – lecture video capture or tablet-based studio recording

• *Automated assessment:* quizzes, exercises
  – Opportunity for new approaches
  – Can we grade calculus? Software design? English papers?

• *Social networking:* online discussion forum
  – for online courses, schedule and timeline have huge effect
  – crowd-sourcing provides new opportunities

• *Collaboration software:*
  – student project groups work together
  – self-assessment, cross-group critique
Winter quarter courses
University Goals?

• Leader in online education
• Advanced courses reflecting faculty expertise
• Group-taught highlights of specific areas
• Reach a broader audience
• Synergy with on-campus education