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Subject: Fall 2013 Courses from Stanford Online

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To participate in these free public courses developed by Stanford faculty, please visit the course web page. You can find out more about Stanford programs and the courses we offer at online.stanford.edu.

Sustainable Product Development

Darius Rafinejad

Starting August 26th



This course focuses on strategies for the development of sustainable products and manufacturing processes from the perspective of senior executives. Course participants will form teams and develop a new sustainable product, or undertake field study projects to gain firsthand experience with sustainability practices in a company. The course will run for six weeks.

[Find out more](#)

Algorithms: Design and Analysis Part 2

Tim Roughgarden

Starting September 2



This course focuses on fundamental principles of advanced algorithm design, including the greedy algorithm design paradigm, with applications to computing good network backbones and good codes for data compression. The course assumes familiarity with the topics from Part I—especially asymptotic analysis, basic data structures, and basic graph algorithms. The course will consist of lecture videos, integrated quizzes, standalone homework assignments and a final exam. A version of this course is taught to Stanford sophomore,

junior, and senior-level computer science majors. The course will run for six weeks.

[Find out more](#)

Mathematical Thinking

Keith Devlin

Starting September 2



Mathematical thinking is not the same as doing math. The goal of this course is to help course participants think the way that professional mathematicians think to solve real problems—problems that can arise from the everyday world, or from science, or from within mathematics itself. Anyone over the age of 17 can benefit from participating in this course, but it is primarily intended for high school seniors or first-year college students who are considering majoring in mathematics (or a mathematically-dependent subject). The course will run for seven weeks and includes monitored discussion, group work, and an open-book final exam.

[Find out more](#)

Technology Entrepreneurship

Chuck Eesley

Starting September 16th



This course introduces the fundamentals of technology entrepreneurship, pioneered in Silicon Valley. Course participants will learn the process that technology entrepreneurs use to start companies, which includes: finding a commercial opportunity for a technology idea, gathering talent and capital, selling and marketing the idea, and managing rapid growth. To gain practical experience alongside theory, course participants will form teams and work on startup projects. The course will run for nine weeks.

[Find out more](#)

Organizational Analysis

Daniel McFarland

Starting September 17th



This course focuses on organizational challenges. Each week course participants will learn a different organizational theory and consider cases posing various organizational struggles: school systems and politicians attempting to implement education reforms; government administrators dealing with an international crisis; technology firms trying to create a company ethos that sustains worker commitment; and two universities trying to gain international standing by performing a merger. This course includes assigned reading, interactive assessments, a forum, and a final exam. The course will run for ten weeks.

[Find out more](#)

Quantum Mechanics for Scientists and Engineers

David Miller

Starting September 24th



This course offers a substantial introduction to quantum mechanics and is designed for anyone with a reasonable college-level understanding of physical science or engineering. It is specifically designed to be accessible not only to physicists but also to college students and technical professionals from a wide range of science and engineering backgrounds. The course will include “refresher” resources for the required mathematics and physics background. The course will run for nine weeks.

[Find out more](#)

Solar Cells, Fuel Cells, and Batteries

Bruce M. Clemens

Starting September 24th



This course focuses on technological solutions to the world's energy demands. It will examine the scale of global energy use and consider next generation solutions. It will cover the basic physics and chemistry of solar cells, fuel cells, and batteries. The course is structured in weekly units organized around a specific topic, and each unit will be followed by a graded problem set due that week. There will be reading, formative

exercises, and a final exam. The course will run for twelve weeks.

[Find out more](#)

Writing in the Sciences

Kristin Sainani

Starting September 24th



This course teaches scientists to become more effective writers, using practical examples and exercises. Topics include: principles of good writing, tricks for writing faster and with less anxiety, the format of a scientific manuscript, and issues in publication and peer review. Students from non-science disciplines can benefit from the training provided in the first four weeks (on general principles of effective writing). The course will run for eight weeks.

[Find out more](#)

Introduction to Logic

Michael Genesereth

Starting September 30



This course is a basic introduction to logic. It demonstrates how to reason systematically and produce logical conclusions, and it examines logic technology and its applications—in mathematics, science, engineering, business, law, etc. This course differs from other introductory logic courses in two ways: course participants will be taught a novel theory of logic that improves accessibility while preserving rigor, and will be able to see practical applications through interactive demonstrations and exercises. The course will run for 8 weeks and includes background reading and standalone quizzes.

[Find out more](#)

General Game Playing

Michael Genesereth

Starting September 30



This course is an introduction to General Game Playing (GGP). General game players are computer systems able to play strategy games based solely on formal game descriptions supplied at "runtime." (They don't know the rules until the game starts.) Course participants will learn GGP theory and develop GGP programs capable of competing against humans and against other programs. GGP provides a theoretical framework that has practical applications in areas like business and law. The course will run for 8 weeks.

[Find out more](#)

Practice Based Research in the Arts

Leslie Hill, Helen Paris

Starting October 9th



This unique online course in practice-based research is designed to facilitate and advance the work of students pursuing an arts practice within an academic framework. Using the online space as an open forum to make their work accessible to peers, the course will help equip artist-scholars with tools, frameworks and peer networks that will help them articulate their practice within the academy and beyond. The course will run for ten weeks.

[Find out more](#)

The Finance of Retirement & Pensions

Joshua Rauh

Starting October 14th



This course focuses on the financial concepts behind sound retirement plan investment and pension fund management. Course participants will become more informed decision makers about their own portfolios, and be equipped to evaluate economic policy discussions that surround public

pensions. Participants will do calculations in Microsoft Excel as part of the coursework. The course will run for eight weeks.

[Find out more](#)

Cryptography II

Dan Boneh

Starting October 15th



This course focuses on cryptography, an indispensable tool for protecting information in computer systems. Course participants will learn about the inner workings of cryptographic primitives and protocols and how to apply this knowledge in real-world applications. This course is a continuation of Crypto I. The course will consist of lecture videos with integrated quizzes, standalone homework, optional programming assignments, and a (not optional) final exam. The course will run for 6 weeks.

[Find out more](#)

Automata

Jeff Ullman

Starting November 4th



This course focuses on Automata Theory, and is based on material taught at Stanford in the Computer Science course CS154. The course will run for 6 weeks and includes assignments, quizzes and exams.

[Find out more](#)

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