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MOOCs Comparison and Implications for Purdue NanoHub-U MOOCs

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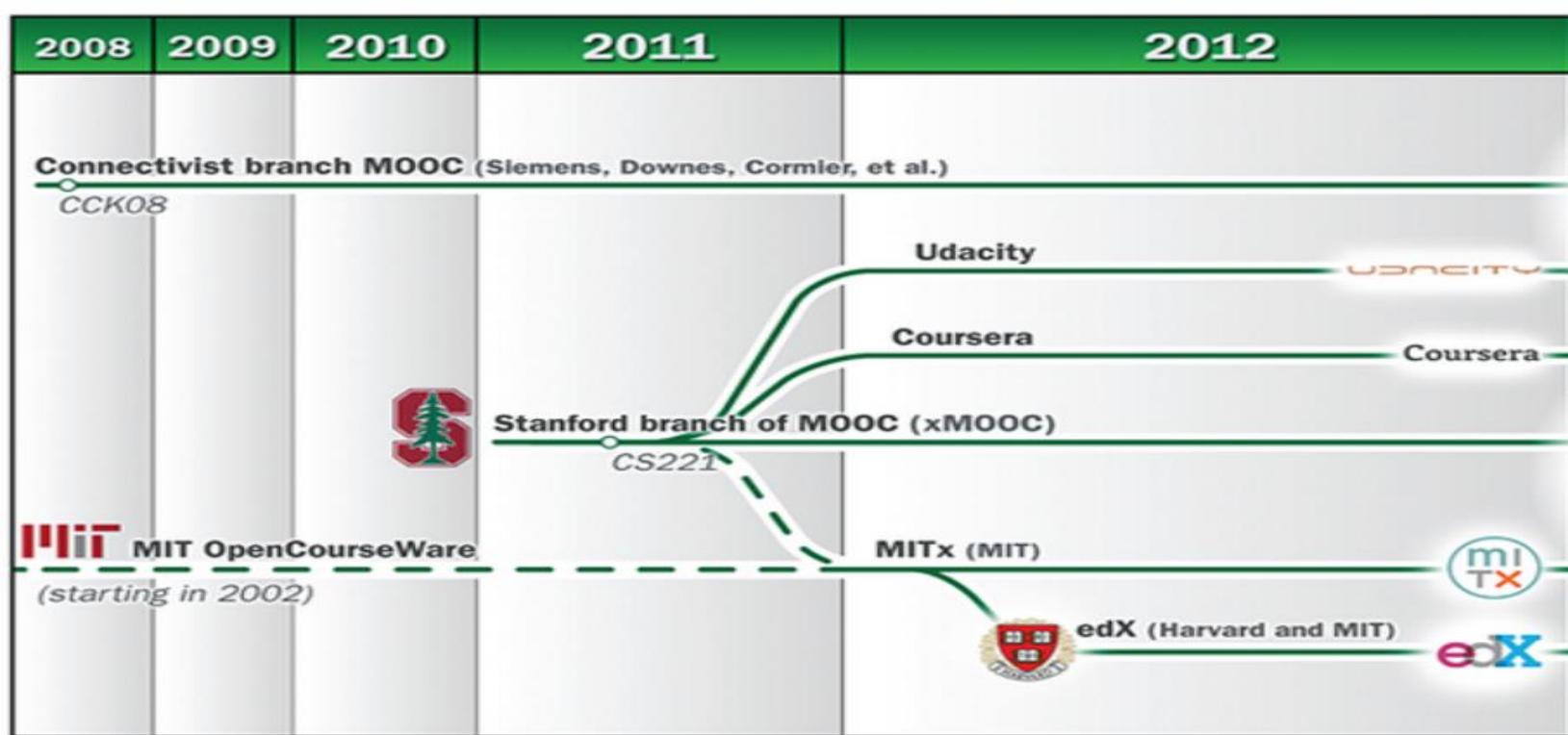
Comparison of MOOCs and Implications for nanoHUB-U MOOCs

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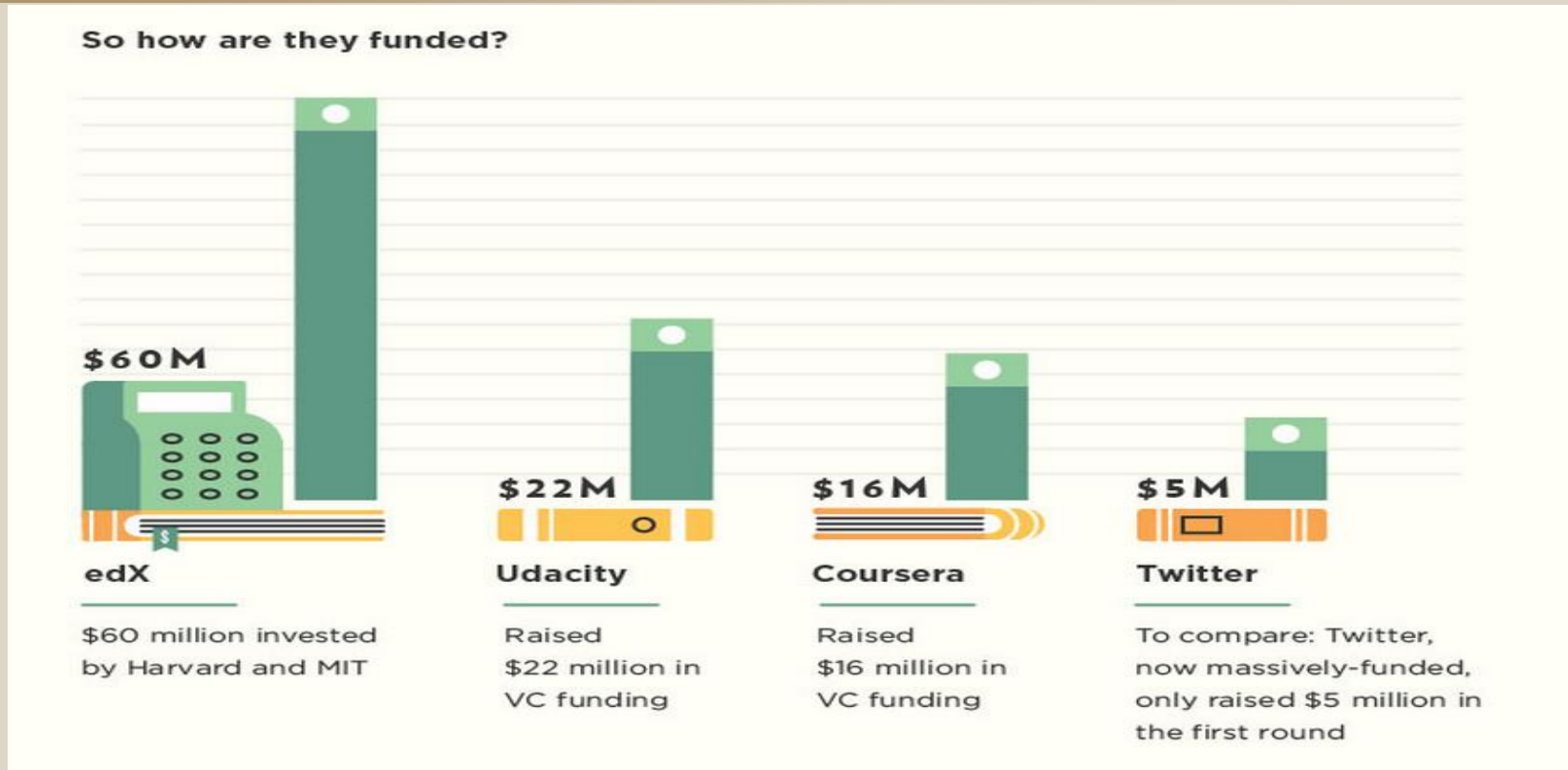
Udacity / Coursera / edX



Udacity was the earliest, Feb, 2012. Coursera was March, 2012. edX started offering courses in September, 2012.

<http://www.educause.edu/ero/article/online-educational-delivery-models-descriptive-view>

Where are they from?



edX is non for profit. Others were funded by venture capital and are for profit. All of them are exploring strategies to make sustainable.

<http://pandodaily.com/2013/08/22/infographic-how-will-the-moocs-make-money/>

Crucial Components

- Chunked video lectures
- Homework
- Reading
- Discussion

Social media, discussion forum

- Assessment

Randomized questions, multiple choice, formula entry, peer assessment, automated essay grading, proctoring...



nanoHUB-U MOOCs



- Launched in Spring, 2012
- Powered by HUBzero platform
- <http://nanohub.org/u>
- 8 five-week courses focused on nanotechnology
- Focus on seniors, beginning grad students, engineers



Demographics

More than 2500 students:

- 65 countries represented
- 318 universities represented
- 72 companies represented

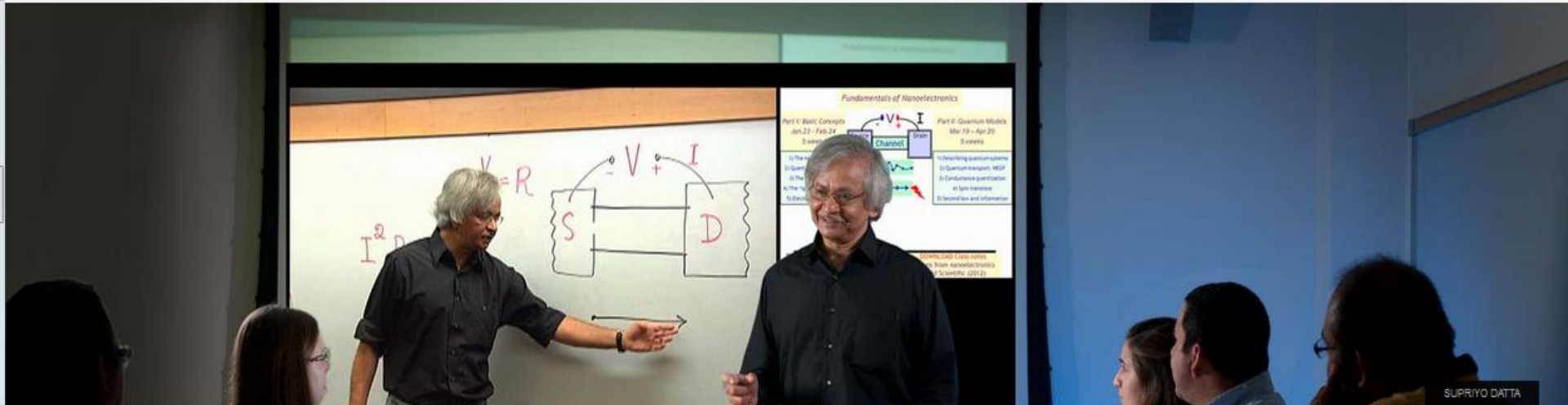


nanoHUB-U MOOCs



"Teaching was so awesome it has inspired me to become a nano scientist"

— past nanoHUB-U student



Welcome to nanoHUB-U

Transcending disciplines with short courses accessible to students in any branch of science or engineering.

Cutting-edge topics distilled into short lectures with quizzes, homework, practice exams.

SELF-PACED COURSES FOR FREE

Learn at your own pace.

INSTRUCTOR-LED SHORT COURSES FOR \$30

Interact with nanoHUB-U profs and earn a nanoHUB-U certificate

Thermoelectricity: From Atoms to Systems

Nano-tuts

Short tutorials taught succinctly by our award-winning professors.

Topics based on your suggestions!

Module (Video)



nanoHUB-U: Fundamentals of Nanoelectronics, Part 1: Basic Concepts

📄 Course overview Offering: 01a Section: Self Paced - Paid



☰ Outline

📄 Pages 2

📝 Notes

📊 Progress

📢 Announcements

💬 Discussions 288

WEEK 1: THE NEW "OHM'S LAW" FOR NANOSCALE RESISTORS

LECTURES

L1.1: The New Ohm's Law - Change in Paradigm

📺 Video 📺 YouTube 📄 Download MP4 ✍️ L1.1 Quiz

L1.2: The New Ohm's Law - Two Key Concepts

📺 Video 📺 YouTube 📄 Download MP4 ✍️ L1.2 Quiz

L1.3: The New Ohm's Law - Why Electrons Flow

📺 Video 📺 YouTube 📄 Download MP4 ✍️ L1.3 Quiz

L1.4: The New Ohm's Law - Generalized Ohm's Law

📺 Video 📺 YouTube 📄 Download MP4 ✍️ L1.4 Quiz

L1.5: The New Ohm's Law - Conductivity and Ballistic Conductivity

📺 Video 📺 YouTube 📄 Download MP4 ✍️ L1.5 Quiz

L1.6: The New Ohm's Law - Where is the Heat?

📺 Video 📺 YouTube 📄 Download MP4 ✍️ L1.6 Quiz

LECTURE NOTES

📄 Download PDF

HOMEWORK

Week 1 Homework

📄 Download PDF

Week 1 Homework Solutions

📄 Download PDF

Problem 1 Tutorial

📺 Video 📺 YouTube 📄 Download MP4

Problem 2 Tutorial

📺 Video 📺 YouTube 📄 Download MP4

Problem 3 Tutorial

📺 Video 📺 YouTube 📄 Download MP4

Problem 4 Tutorial

📺 Video 📺 YouTube 📄 Download MP4

EXAM

Week 1 Exam

✍️ Week 1 Exam

Module Layout

- Course – certificate/badge – consists of modules
- Modules in a course will have components
 1. 20 min lecture videos
 2. Self-test quizzes
 3. Multiple choice exams
 4. Homework with simulation tools
 5. Discussion forums



Learning Progress

Outline

Pages 2

Notes

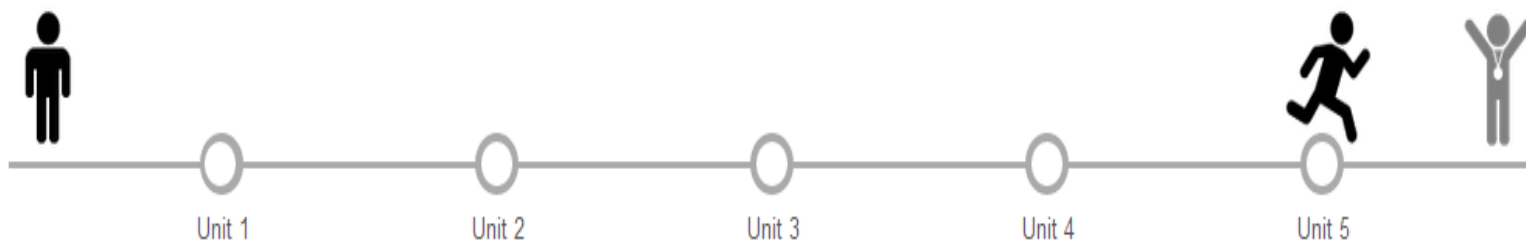
Progress

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Course currently in progress

UNIT 5 OF 5



YOUR CURRENT SCORE

i --

grading policy

QUIZZES TAKEN

0

out of 30

HOMEWORKS SUBMITTED

0

out of 0

EXAMS TAKEN

0

out of 5

WEEK 1: THE NEW "OHM'S LAW" FOR NANOSCALE RESISTORS

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WEEK 2: THE QUANTUM OF RESISTANCE: $h/2e^2 \sim 25,800$

--

WEEK 3: THE NANOTRANSISTOR: A DEVICE MORE NUMEROUS THAN ANTS

--

WEEK 4: THE "SPINNING" ELECTRON: A NEW DEVICE PARADIGM

--

WEEK 5: ELECTRICITY FROM HEAT: DEVICES FOR A GREENER WORLD

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Thank you!

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