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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Teaching and Learning Technologies
Information Technology at Purdue (ITaP)
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
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.

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

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

LECTURES
- L1.1: The New Ohm's Law - Change in Paradigm
- L1.2: The New Ohm's Law - Two Key Concepts
- L1.4: The New Ohm's Law - Generalized Ohm's Law
- L1.5: The New Ohm's Law - Conductivity and Ballistic Conductivity
- L1.6: The New Ohm's Law - Where is the Heat?

HOMEWORK
- Week 1 Homework
  - Download PDF
- Week 1 Homework Solutions
  - Download PDF

PROBLEM TUTORIALS
- Problem 1 Tutorial
  - Video
- Problem 2 Tutorial
  - Video
- Problem 3 Tutorial
  - Video
- Problem 4 Tutorial
  - Video

LECTURE NOTES
- Download PDF

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

Course currently in progress

UNIT 5 OF 5

YOUR CURRENT SCORE

QUizzes Taken

Homeworks Submitted

Exams Taken

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

WEEK 2: THE QUANTUM OF RESISTANCE: HfO2 ~ 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
Thank you!

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