

MOOCs

A Disruptive Innovation for Higher Education?

An attractor

A unique area in
the state space of the
Mandelbrot set

definition

William P. Hall

President

Kororoit Institute Proponents and Supporters
Assoc., Inc. - <http://kororoit.org>

william-hall@bigpond.com

<http://www.orgs-evolution-knowledge.net>



Attribution
CC BY

Revision 1 - 14/04/2013

Based on a presentation for Melbourne Emergence Meetup, RMIT Engineering, Building 57, Grattan St. Carlton, Vic. 11 April 2013

Access my research papers supporting the book
from Google Citations

Four part presentation

- Introduction
 - What is a MOOC
 - Who offers them
- Coursera - gold standard offerings by leading universities (go to part one)
 - Syndicated courses on offer
 - How it works
 - Sample course components from courses I am taking
- Saylor Organization - full course curriculum of a four year college (go to part two)
 - Legitimate non-profit educational foundation
 - List of courses
- Canvas Network / Instructure (go to part three)
 - Syndicated courses
 - Free open source course development platform can be used by anyone

Preliminaries

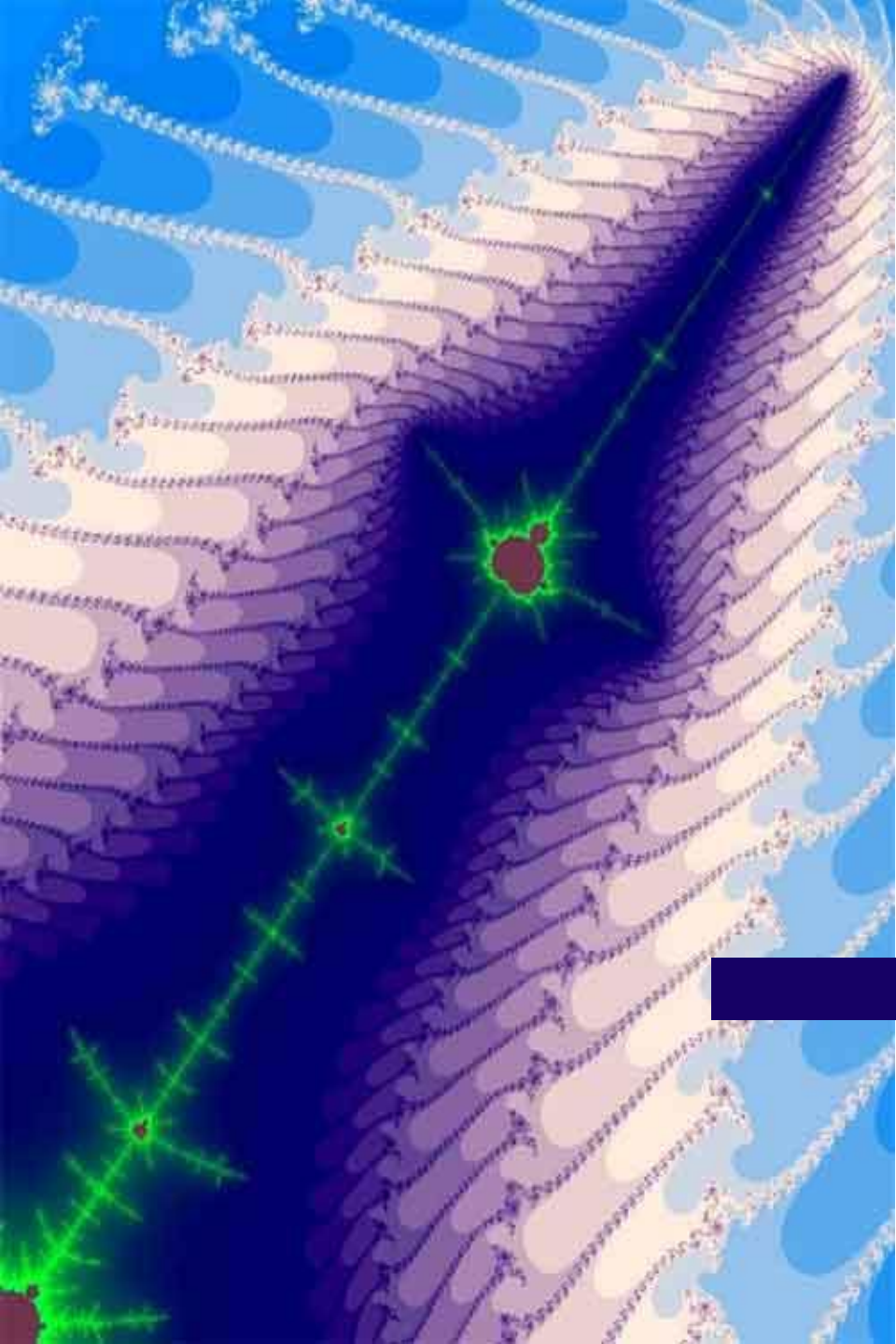
- This presentation is a hypertext linked to the web
 - Underlined text links you to explanatory materials, MOOC sites, MOOC tools, or examples within the referenced MOOCs.
 - It is associated with the author's nearly completed hypertext book, Application Holy Wars or a New Reformation: A Fugue on the Theory of Knowledge
- This presentation may be used under Creative Commons license: CC BY 3.0 AU
- *What is disruption?*
 - Disruptive innovations are those that help create new markets and value networks, and eventually go on to disrupt existing markets and value networks, displacing earlier technological paradigms leading to technological revolutions and sometimes even cognitive revolutions
 - **Warning: The innovations surveyed here may cause a revolution in your thinking about how education (teaching and learning) is delivered - especially in colleges and universities**

What is a MOOC?

- Massive Open Online Course
 - Thousands of enrollees
 - Normally offered for free (though may be fee-paid extras)
- Recent development in distance education
- Concept developed in Open Educational Resources movement
- Based on integrated amalgamations of Web 2.0 technologies
 - Active web pages
 - Embedded graphical and textual presentation material
 - Video (lectures) supporting pauses for instant quizzes and other interpolated material
 - Managed, topic-based forums with extensive hypertext capabilities
 - Fonts
 - Paragraph styles
 - Links
 - Graphics
 - Computer marked dynamic testing and recording
 - Document management
 - Managed peer-review and marking
- Face-to-face social networking encouraged and facilitated
 - Physical Meetups
 - Google Hangouts
 - Skype

Who offers MOOCs

- 10genEducation - training in the use of 10gen applications
- Canvas.net - commercial developer/provider MOOCs, 300 courses
- Class2Go - Stanford development / used by Stanford & UWA
- Coursera - multi-university consortium (62) / gold standard!
- MRUniversity - on-line economics courses by George Mason Uni?
- OpenLearning - estab. by Richard Buckland et al., UNSW
- Saylor.org - Saylor Foundation Washington DC / 283 courses / 2nd hand
- Udacity - another Stanford spinout - mostly computer sci stuff
- UniMOOC - Tec - University of Alicante, Spain - computer sci
- Venture Lab - another Stanford spinout - mostly business courses
- WEU - World Education University - offers degrees / accreditation??
- edX - Harvard, MIT, Berkely, UT, ANU, etc - mostly intro level?
- openHPI - Hasso Plattner Institute, Potsdam / few English & German
- Other Initiatives - multiple smaller initiatives: Caltech, Santa Fe Institute, Google Education (Power Searching), etc.



COURSERA

walkthrough






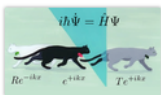



Coursera's current offerings

- Coursera offers a wide range of uni level courses.
 - Not all courses are in English,
 - Some given in multiple languages
- All courses are freely available
- Some courses also offer a fee-payable "signature track"
 - Biometric info is used to verify individual identity for marked work and course completion
 - Certificates of completion are issued

coursera | Explore Courses | Categories Universities About | William P Hall ▾

Search by course name, category, university, or instructor Sort by Starting soon ▾

STARTING SOON	ELIGIBLE FOR	LANGUAGE	CATEGORY	Course Title	Instructor	Start Date	Duration
<input type="checkbox"/> Starting soon	<input type="checkbox"/> Signature Track	<input type="checkbox"/> English <input type="checkbox"/> Spanish <input type="checkbox"/> French <input type="checkbox"/> Chinese <input type="checkbox"/> Italian	<input type="checkbox"/> Arts <input type="checkbox"/> Biology & Life Sciences <input type="checkbox"/> Business & Management <input type="checkbox"/> Chemistry <input type="checkbox"/> CS: Artificial Intelligence <input type="checkbox"/> CS: Software Engineering <input type="checkbox"/> CS: Systems & Security <input type="checkbox"/> CS: Theory <input type="checkbox"/> Economics & Finance <input type="checkbox"/> Education <input type="checkbox"/> Energy & Earth Sciences <input type="checkbox"/> Engineering <input type="checkbox"/> Food and Nutrition <input type="checkbox"/> Health & Society <input type="checkbox"/> Humanities <input type="checkbox"/> Information, Tech, and Design <input type="checkbox"/> Law <input type="checkbox"/> Mathematics <input type="checkbox"/> Medicine	 Duke University A Beginner's Guide to Irrational Behavior with Dan Ariely	Mar 25th 2013 6 weeks long		
				 Princeton University Algorithms, Part II with Kevin Wayne & Robert Sedgwick	Mar 25th 2013 7 weeks long		
				 Georgia Institute of Technology Computational Photography with Irfan Essa	Mar 25th 2013 5 weeks long		
				 Stanford University Cryptography I with Dan Boneh	Mar 25th 2013 6 weeks long		
				 University of Washington Designing and Executing Information Security Strategies with Mike Simon	Mar 25th 2013 10 weeks long		
				 University of Maryland, College Park Exploring Quantum Physics with Charles W. Clark & Victor Galitski	Mar 25th 2013 8 weeks long		
				 École Polytechnique Fédérale de Lausanne Functional Programming Principles in Scala	Mar 25th 2013 7 weeks long		

My courses

- These are courses I am taking while preparing this presentation
- Signing up for a course is very simple
 - Email address
 - Password
 - Agreement to honor code
- Courses given to specific schedules
 - ensures maximum simultaneous participation to provide adequate numbers for effective social networks, forum participation & peer assessment.

The screenshot shows the Coursera interface for a user named William P Hall. The page is titled 'YOUR COURSES' and lists five courses, each with a thumbnail image, a progress bar, and a 'Go to class' button. The courses are:

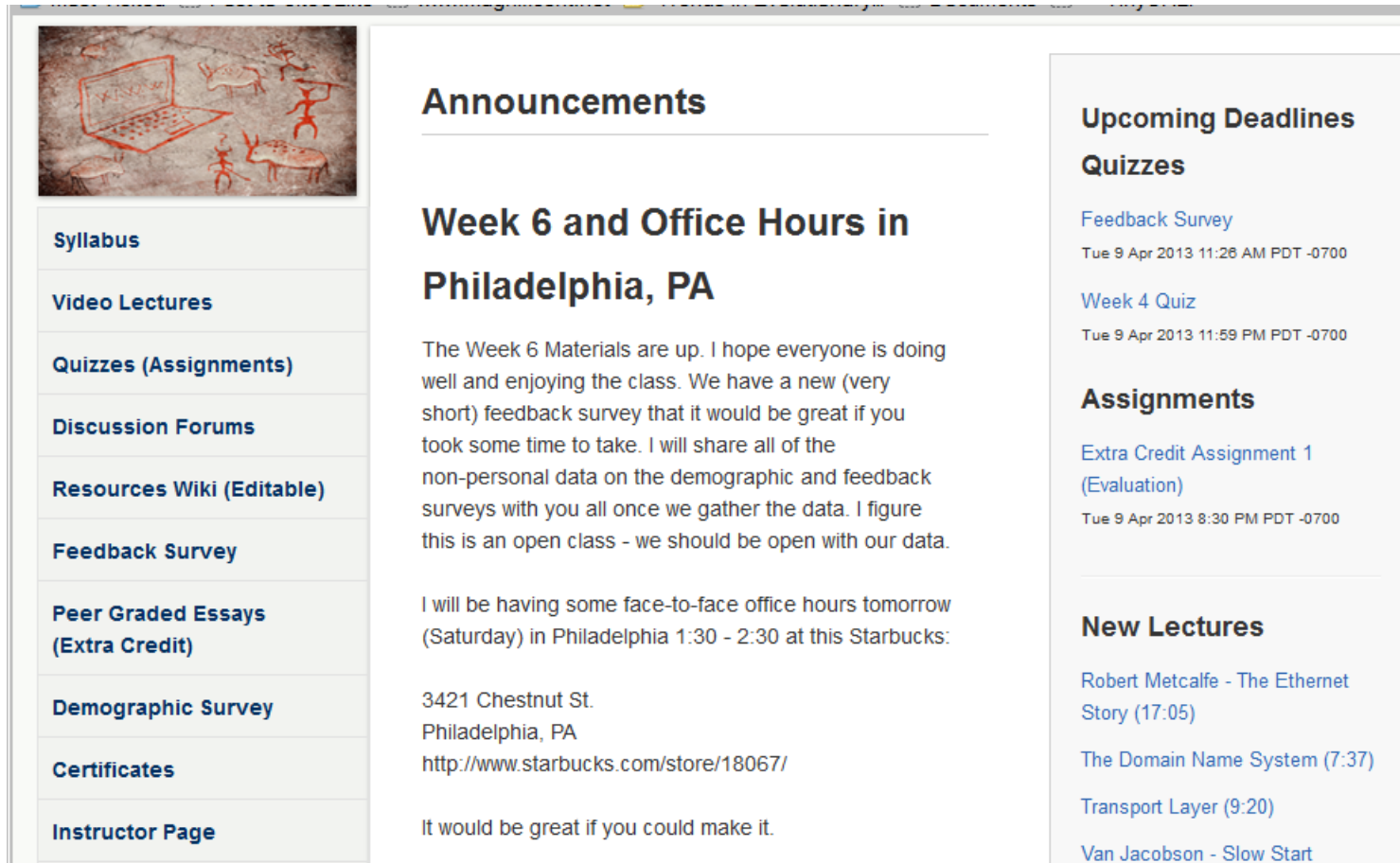
Course Title	Start Date	End Date	Duration	University
The Modern and the Postmodern	Feb 4th	May 13th	Feb 4th (14 weeks long)	Wesleyan University
Internet History, Technology, and Security	Mar 1st	May 17th	Mar 1st (11 weeks long)	University of Michigan
Social Network Analysis	Mar 4th	May 6th	Mar 4th (9 weeks long)	University of Michigan
Introduction to Sustainability	Mar 11th	May 6th	Mar 11th (8 weeks long)	University of Illinois at Urbana-Champaign
Surviving Disruptive Technologies	Mar 25th	May 13th	Mar 25th (7 weeks long)	

My courses (cont.)

- Each of these courses is equivalent to a solid college or uni level course
- I have a PhD. Even as a full-time student, I personally could not adequately finish the requirements for all of these.
- 3 or 4 of these courses would represent a full-time load for a college or university student

	<p>Human-Computer Interaction</p> <p>Mar 31st Jun 2nd</p> <hr/> <p>Stanford University</p>	<p>Mar 31st (9 weeks long)</p> <p>Twitter Facebook Google+</p> <p>Go to class</p> <p>View course info Un-enroll</p>
	<p>Science, Technology, and Society in China I: Basic Concepts</p> <p>Apr 4th Apr 25th</p> <hr/> <p>The Hong Kong University of Science and Technology</p>	<p>Apr 4th (3 weeks long)</p> <p>Twitter Facebook Google+</p> <p>Go to class</p> <p>View course info Un-enroll</p>

Tracking progress - course home page



The screenshot shows a course home page with a navigation menu on the left and content on the right. The navigation menu includes links for Syllabus, Video Lectures, Quizzes (Assignments), Discussion Forums, Resources Wiki (Editable), Feedback Survey, Peer Graded Essays (Extra Credit), Demographic Survey, Certificates, and Instructor Page. The main content area features an 'Announcements' section with a title 'Week 6 and Office Hours in Philadelphia, PA' and a paragraph of text. To the right, there are sections for 'Upcoming Deadlines Quizzes' and 'Assignments', each with a list of items and their respective dates and times.

Syllabus

Video Lectures

Quizzes (Assignments)

Discussion Forums

Resources Wiki (Editable)

Feedback Survey

Peer Graded Essays (Extra Credit)

Demographic Survey

Certificates

Instructor Page

Announcements

Week 6 and Office Hours in Philadelphia, PA

The Week 6 Materials are up. I hope everyone is doing well and enjoying the class. We have a new (very short) feedback survey that it would be great if you took some time to take. I will share all of the non-personal data on the demographic and feedback surveys with you all once we gather the data. I figure this is an open class - we should be open with our data.

I will be having some face-to-face office hours tomorrow (Saturday) in Philadelphia 1:30 - 2:30 at this Starbucks:

3421 Chestnut St.
Philadelphia, PA
<http://www.starbucks.com/store/18067/>

It would be great if you could make it.

Upcoming Deadlines Quizzes

[Feedback Survey](#)
Tue 9 Apr 2013 11:26 AM PDT -0700

[Week 4 Quiz](#)
Tue 9 Apr 2013 11:59 PM PDT -0700

Assignments

[Extra Credit Assignment 1 \(Evaluation\)](#)
Tue 9 Apr 2013 8:30 PM PDT -0700

New Lectures

[Robert Metcalfe - The Ethernet Story \(17:05\)](#)

[The Domain Name System \(7:37\)](#)

[Transport Layer \(9:20\)](#)

[Van Jacobson - Slow Start](#)

- Walk through

Tracking progress via completed videos

The screenshot shows a web browser displaying a course page for 'Internet History, Technology, and Security' by Charles Severance at the University of Michigan. The page features a sidebar with navigation options and a main content area with a video lecture list. Three callouts are present: 'Checked off when viewed' points to green checkmarks in the '1: Getting Started' section; 'Historical interviews with internet pioneers' points to the video 'Larry Smarr - NCSA (12:35)'; and 'Different media' points to a video icon in the '3: History: The Web Makes it Easy to Use' section.

Checked off when viewed

Historical interviews with internet pioneers

Different media

Video Lectures

Having trouble viewing lectures? Try changing your player in course preferences.

- 1: Getting Started
 - ✓ Welcome Part I (12:30)
 - ✓ Welcome Part II (19:52)
 - Fun: Amsterdam Office Hours
- 1: History: Dawn of Electronic Computing
- 2: History: The First Internet - NSFNet
 - ✓ History Through Supercomputing (26:00)
 - ✓ Larry Smarr - NCSA (12:35)
 - ✓ History Through NSFNet (3:13)
 - ✓ Doug Van Houweling - NSFNet (13:14)
 - ✓ Reflection on NSFNet (3:42)
 - Fun: Barcelona Office Hours
- 3: History: The Web Makes it Easy to Use
 - ✓ Getting to the Web (5:54)
 - ✓ Robert Cailliau - Co-Inventor of the Web (9:42)
 - ✓ The Web Becomes Content (3:19)

Video lectures in a variety of formats

The screenshot shows a video lecture interface. At the top left is the University of Maryland logo and the text 'UNIVERSITY OF MARYLAND ROBERT H. SMITH SCHOOL OF BUSINESS'. The title 'Surviving Disruptive Technologies' is centered at the top. A lifebuoy icon is in the top right. The main content is a flowchart: 'Information Technology' points to a box 'Innovator Products Services Business models', which points to 'The incumbent's dilemma'. From 'The incumbent's dilemma', three arrows point to: 'Morph business model to accommodate competition and new opportunities', 'Abandon existing business model and adopt a new one', and 'Failure: merger, buyout, liquidate'. A red handwritten note 'Kodak Blackboard Borders' is written above the flowchart. A red bracket groups a list of factors: 'Denial', 'History', 'Resistance to change', 'Mind set', 'Brand', 'Sunk costs', 'Profitability', and 'Lack of imagination', with the label 'A Survivor Model' below it. A small video inset in the bottom right shows a man speaking. The video player controls at the bottom include a play button, a progress bar, a speed control dropdown set to '1.5x', the title '6.1 Newspapers (7:35)', a 'Next »' button, and a 'Live video' callout.

UNIVERSITY OF MARYLAND
ROBERT H. SMITH
SCHOOL OF BUSINESS

Surviving Disruptive Technologies

Information Technology → **Innovator**
Products
Services
Business models → **The incumbent's dilemma**

- Morph business model to accommodate competition and new opportunities
- Abandon existing business model and adopt a new one
- Failure: merger, buyout, liquidate

*Kodak
Blackboard
Borders*

Denial
History
Resistance to change
Mind set
Brand
Sunk costs
Profitability
Lack of imagination

A Survivor Model

Presentation with live markup

Speed: 1.5x

6.1 Newspapers (7:35)

05:22 | 07:35

Next »

Live video

Speed control

Peer assessed assignments

Submission Phase	Evaluation Phase	Results Phase
1. Do assignment <input checked="" type="checkbox"/>	2. Evaluate peers <input type="checkbox"/> 3. Self-evaluate <input type="checkbox"/>	4. See results <input checked="" type="checkbox"/>

I didn't get to this in time
due to computer crises

Your effective grade is **7.2**

A 20% penalty has been applied because you did not complete the entire evaluation portion of the assessment.

Your unadjusted grade is 9, which is simply the grade you received from your peers.

See below for details.

While we would like your answers to be well written, given the number of different languages in the course, graders will *not* take points off for structural mistakes like grammar or punctuation. Graders may *comment* on how to improve the writing technique - but the grade will be based on the quality of the ideas in the answers and how well thought out the arguments are that support those ideas. As graders, please make your comments constructive and helpful and focused on improving learning.

If you as a grader feel that partial plagiarism (a) is present you can limit the overall score to 5 points by adjusting the scores of each of the rubrics downward. If you feel that then entire answer is unattributed text from another source give a zero score for all the rubrics and a zero overall score.

[↗ Show more assignment details](#)

Update: For this question, you can answer either of the following questions but not both:

(A) Write an essay about an area of the History of the Internet that you feel needs to be expanded beyond what was covered in the class. Do not just re-state the material from the class. Bring a new perspective or describe something that extends the learning beyond the material presented by Dr. Chuck.

(B) In many ways, the Internet is the result of experts exploring how people, information, and technology connect. Describe one example of at least two of these areas (people, information, or technology) connecting, and how that connection ultimately helped form the Internet. Your example should be taken from the time periods 1930-1980 (i.e. prior to NSFNet and prior to the Web).

The Computer Revolution Revolutionizes Scholars' Connections to the World of Knowledge

More peer assessment

Note: this section can only be filled out during the evaluation phase.

Interest (4 points): Is the answer interesting to read? Did the answer make you think? Did you learn something from the answer?

Score from your peers: **3**

Relevance (2 points): Does the essay answer the question? Is the answer on-topic?

Score from your peers: **2**

Analysis (2 points): Are the ideas logical and communicated clearly? Are the arguments reasonable / plausible? Does the analysis go beyond simply stating the obvious?

Score from your peers: **2**

Evidence (2 points): Does the essay use good examples? Are the arguments well-supported by facts? Does the essay cite its sources?

Score from your peers: **2**

Please provide comments to the author. You can make constructive suggestions as to how to improve the writing in the answer but do not take off points for poor punctuation or grammar in your grading above.

peer 2 → Great answer. very informative.

peer 3 → It was very complex and hard to follow. Your facts were excellent. Just very tedious to read.

peer 4 → The essay was well structured and provided a wide view about Science Citation Index. But it didn't answer the question about people, or information, or technology that helped form the Internet. As the opposite, this methodology could be helped by the Internet. Anyway, it was a interesting essay that provided some extra knowledge to this reviewer. Regards, Fabiano from Rio de Janeiro/Brazil.

New assignment / edit windows

Choose an element or aspect of the TCP/IP architecture and write a simple essay explaining how it works to a non-technical person. Do not reuse an example from the lectures in the class - come up with your own example. So don't use "postcards" to explain IP. Your essay should choose one (or more) technical terms like "CSMA/CD", "DHCP", "InternetNetwork Layer", or anything else from the topics in the class. Explain how the concept you have chosen functions in a way that someone not taking the class could understand what we are talking about. This is about writing for a non-technical audience.

Simple formatting options

B *I* Format

Format

Heading 2

Code

Block Quote

Words: 0 / 1000

Note strict word count

Can write off-line and upload

Upload file :

Please enter your references here. Only use this space for references (i.e. don't continue your essay in this space). There is no specific citation format. While there is no minimum nor maximum required references, most essays will have somewhere between two and five references. If your references are web sites use the URL. If the references are papers include enough information to identify the source using APA <http://owl.english.purdue.edu/owl/resource/560/01/> format. Graders will not take points off for syntax errors in references, but they are welcome to suggest how the syntax of references can be improved.

B *I* Format

Words: 0 / 1000

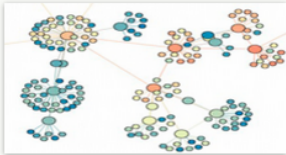
Honor code applies throughout

In accordance with the Honor Code, I certify that my answers here are my own work, and that I have appropriately acknowledged all external sources (if any) that were used in this work.

Automatically marked lab exercises



Social Network Analysis
by Lada Adamic



Home

Video Lectures

Discussion Forums

Homeworks

Short-form assignments

Peer Assessment

Course Logistics

Syllabus

Teaching Staff

FAQ

Demographic Survey

Course Wiki

Join a Meetup

HW 2 network models

The **hard deadline** for this homework is **Sat 4 May 2013 12:00 AM PDT -0700**.

What is the role of the network in information diffusion?

In this assignment you will be exploring several network models and the behavior of a viral agent diffusing in the network. The questions will have links to webpages containing the models, but if you prefer (or if you are having trouble seeing the models in your browser), you can download the models from those pages and run them in your < [NetLogo application](#). The models are also included in the single [NetLogo zip package](#) for this class.

Link accesses NetLogo application with particular model data (next slide)

Question 1

Go to the [NetLogo model on Erdős-Renyi diffusion](#) and read the description on the page of how the model works. Set **NUM-NODES** to 200. Click on **SETUP-A-NEW-NETWORK**. Then click on **SPREAD** to get it going! Observe how the infection attempts to spread through the network. Under what condition do you expect the infection to spread to a significant fraction of the network? Take "significant" to mean $\geq 5\%$ of all the nodes.

- When the average degree is 1/2.
- When the average degree is 1 or higher.
- When the average shortest path is less than 2.
- When the highest degree of any node in the network is 2.

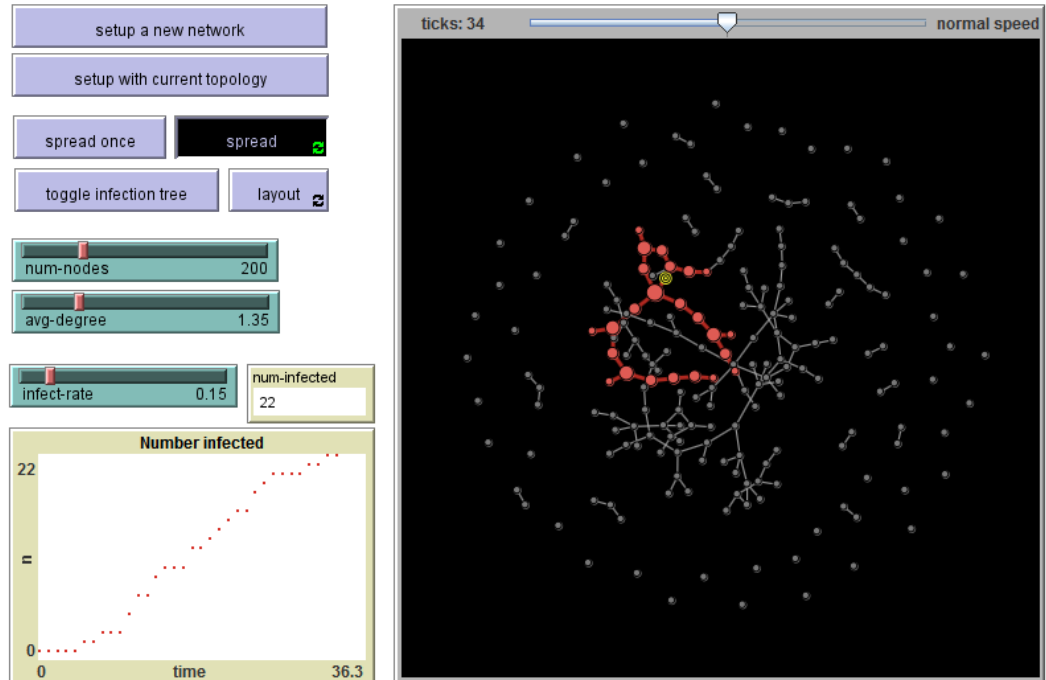
Answers are automatically marked and recorded for determining overall score re achieving qualification. Instant feedback is provided with correct answers if choice is wrong

- Lab feeds problem set-up into the fully programmable [NetLogo tool](#)
- Labs include extra credit programming exercises - see [Programming Manual](#)

Open source application: NetLogo

- Application set up automatically changed for each question.
- Two kinds of student controls (may be others depending on set up).
 - Process control buttons
 - Input parameters
- Model screen where sophisticated visualization controls may be applied (depending on set up)
- Numeric readouts and graphical plots.
- Optional extra-credit exercises teach the programming language

Diffusion on An Erdos-Renyi Topology



CODE

```
globals
[
  num-infected
  tree-mode?           ;; true after killing uninfected nodes / links
  infectious-component ;; the graph component that includes the infected node
]

turtles-own
[
  infected?           ;; true if agent has been infected
  infection-count     ;; the number of turtles as turtle has infected
  explored?           ;; used to find the infectious component
```

Course achievement grades



Introduction to Sustainability

by Jonathan Tomkin, Ph.D.



Announcements

Syllabus

How to Pass the Class

COURSE MODULES

Course Orientation
(Mandatory; Start Here)

Week 1

Week 2

Week 3

Week 4

Week 5 ←

COURSE ACTIVITIES

All Videos

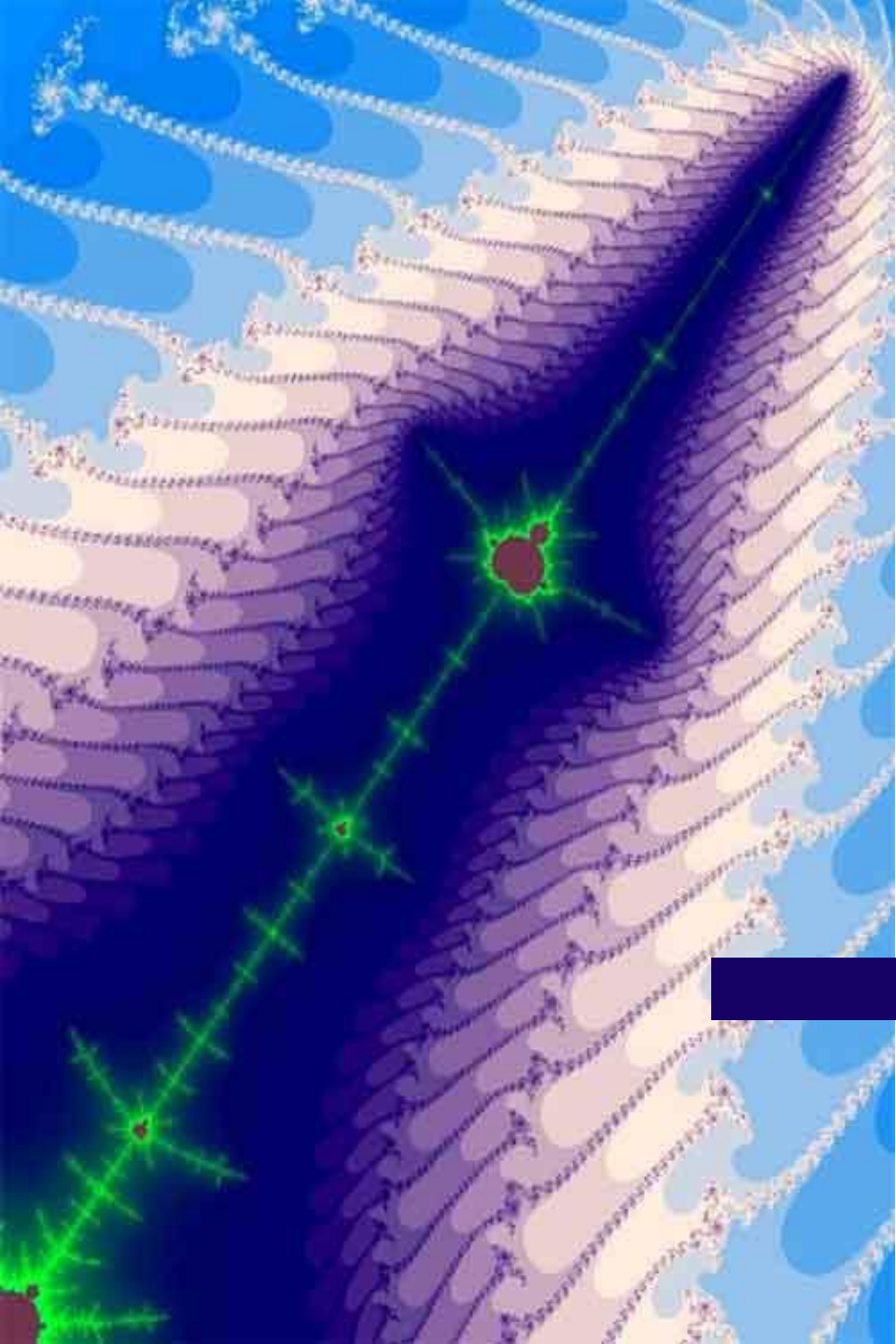
How to Pass the Class

I recognize that this is no ordinary course. You may have different perspectives and different goals for this course than some of your peers or than I could have anticipated. Therefore, I want to empower you to customize this course to meet your needs. To this end, I have designed multiple "badges" you can earn through participation in this course. You need to only earn 1 badge to receive a "Statement of Accomplishment" from Coursera marking successful completion, though I encourage you to work concurrently toward as many badges as possible, as each badge provides unique benefits to you as summarized in the following table and described in detail below.

	What It's Called	How It's Earned	What You Get
	Quiz Achievement Badge	Average score of 70% or higher on quizzes	Statement of Accomplishment
	Quiz Mastery Badge	Top 1% of all student scores on quizzes and at least an 85% on 2 or more peer assessments of quiz questions you write and submit.	Inclusion in the Quiz Mastery Hall of Fame
	Forum Achievement Badge	Average score of 70% or higher on forum evaluation scores, and 5 posts per week	Statement of Accomplishment
	Forum Mastery Badge	Top 1% of all forum evaluation scores	Invitation to exclusive live Q & A session with panel of experts
	Project Achievement Badge	Median score of 70% or higher on peer assessment.	Statement of Accomplishment
	Project Mastery Badge	Top 1% of all student scores on project	Invitation to collaborate with instructor on a revised textbook

Interesting!

- This only scratches surface of what Coursera has to offer



HARNESSING TECHNOLOGY TO MAKE EDUCATION FREE



Home » About the Saylor Foundation

Since 2008, the Foundation's free education initiative (www.saylor.org) has focused on exploring the promise of the Internet to drive the cost of education to zero

Non-profit foundation established by Michael J. Saylor

- One-time dot.com multi billionaire worth \$13.8 BN, still probably worth more than 1 BN
- Foundation established 1999
 - Credentialed professors hired to create course blueprints and to locate, vet, and organize OER materials into a structured and intuitive format.
 - Consulting professors also create original OER content and link to freely posted materials to fill in any gaps.
- Offers full 4-year college program
 - Currently 270 free, self-paced, online courses, with many more on the way.
 - Each course culminates with a final exam, and students receiving a passing grade can download a certificate of completion.
 - Not accredited so cannot offer degrees
 - Transfer credit to schools available via National College Credit Recommendation Service (NCCRS)
 - Excelsior College Partnership offers credit by examination
 - Most courses available for reuse under Creative Commons or other licenses
 - Some courses syndicated from other providers

Saylor.org course listing

- Follow the link to the various disciplines

Course Completeness Legend

- Not yet developed
- ◐ Partially developed
- Completed
- Ⓟ Course has alternate versions
- ⓧ No final exam

- Examples on next slides

Please use the following list of Majors and scroll down to navigate the page

- Art History
- Biology
- Business Administration
- Chemistry
- Communication
- Computer Science
- Economics
- Electives
- English Literature
- History
- Mathematics
- Mechanical Engineering
- Philosophy
- Political Science
- Professional Development
- Psychology
- Real World Math

The Saylor Foundation Status

Want to know which courses have a full textbook and/or a full set of video lectures?

[Check out the Content Matrix here.](#)

Biology 305 - Genetics

- Click page to right and scroll down to see full structure
- Brief [YouTube introductory lecture](#) outlining the course
- [Syllabus](#) provides detail

[Home](#) » [Biology](#) » [BIO305: Genetics](#)

[Back to Biology](#)

✓ [Add this course to your ePortfolio](#)

✓ [Questions? Consult the FAQ's!](#)

✓ [Search Q&A Center](#)

Resource Center

- ▶ [Readings](#)
- ▶ [Assessments](#)
- ▶ [Web Media](#)
- ▶ [Final Exam](#)
- ▶ [Interactive Labs](#)
- ▶ [Syllabus](#)

We still need...

- ▶ [Readings](#)
- ▶ [Lectures](#)
- ▶ [Assessments](#)



This course is currently being improved through our peer review process.

Genetics

Purpose of Course

Genetics is the branch of biology that studies the means by which traits are passed on from one generation to the next and the causes of similarities and differences between related individuals. Prior to the discovery of genes, scientists knew that *something* was passed down from parents to offspring, but they did not know how or what. Gregor Mendel's famous experiments with peas indicated that certain features, such as pea texture and flower color, were passed down from generation to generation. Decades later, scientists discovered that it was DNA (deoxyribonucleic acid—a self-replicating material that carries genetic information) that was passed down and that this DNA came in a specific form called a *chromosome*. Since the discovery of DNA, we have come to appreciate just how important chromosomes are. We have learned that sperm and eggs carry these chromosomes in order to produce our offspring and that genes located on those chromosomes code for the traits that make us unique. In this course, we will take a close look at chromosomes, DNA, and genes. We will learn how hereditary information is transferred, how it can change, how it can lead to human disease and be tested to indicate disease, and much more. At the end of this course, you will know quite a bit about the most basic units of heredity—the very molecules that make us who we are.

Learning Outcomes

[SHOW](#)

Continues below

ME 202: Mechanics II - Dynamics

- Click page to right and scroll down to see full structure
- Syllabus provides detail
- Video lectures from various schools of variable quality

Home » Mechanical Engineering » ME202: Mechanics II - Dynamics

[Back to Mechanical Engineering](#)

✓ [Add this course to your ePortfolio](#)


✓ [Questions? Consult the FAQ's!](#)

✓ [Search Q&A Center](#)

Resource Center

- Readings
- Lectures
- Final Exam
- Syllabus

Legend

 Course Question & Answer

Viewing Saylor.org on an iPad? [Click here](#) for tips on optimizing your browsing experience! Our courseware is best viewed using *Microsoft Internet Explorer, Mozilla Firefox or Google Chrome* browsers (please update to the latest versions.)

Discuss ME202 with other Saylor Students [here!](#)

▸ [Create the first topic](#)

Mechanics II - Dynamics

Purpose of Course

Dynamics is a sub-branch of the general field of study known as Mechanics. It is very closely related to—and often combined with—the study of Statics, which you encountered in [ME102: Mechanics I](#).

In both Statics and Dynamics, we use Newton's 2nd Law: $F = ma$. In Statics, the sum of the applied forces is always zero, thus making the acceleration zero. This was very important to the structures studied in Statics. Catastrophe generally results when structures (like bridges and buildings) accelerate. Very likely you are quite pleased—even if you do not realize it every time—when you cross a bridge that does not accelerate while you are on it, and we have Newton's First Law to thank for it. Newton's First Law states that objects will continue to do what they are doing unless unbalanced forces make them do otherwise. This law includes the law equilibrium condition that the moments will also sum to zero, and that there will thus be no rotational acceleration. In Dynamics, the sum of the forces will not necessarily be zero (if it is zero, then the sum of the moments is not). We will thus study accelerated motion.

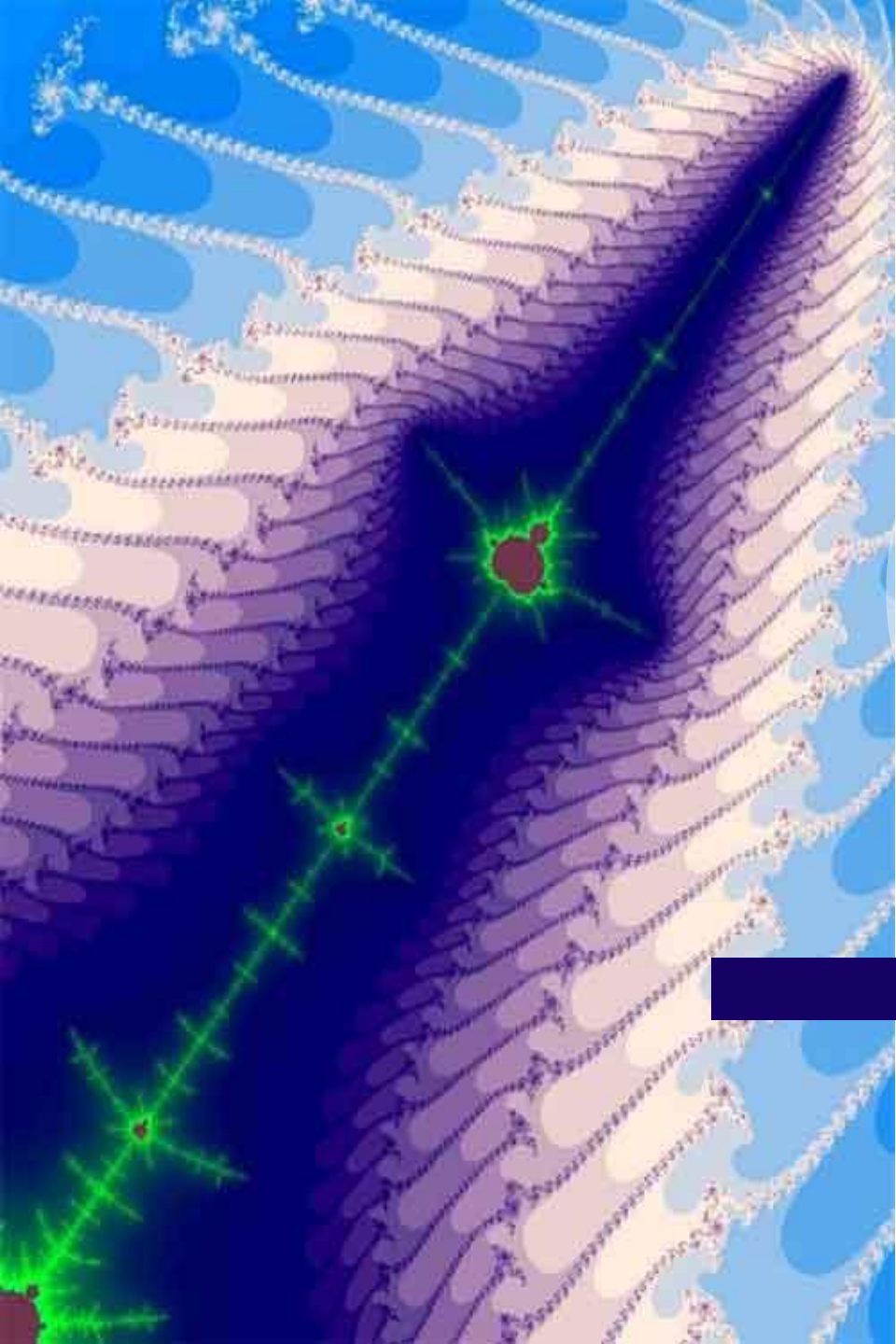
As with [PHYS101: Introduction to Mechanics](#), we will begin this course by studying the accelerated motion of particles (also known as the Kinematics of Particles). We will only look at what an object is doing (the position, velocity, acceleration)—not why it might be doing that.

In Unit 2, we will take a look at the Kinetics of Particles, or the study of the *why* of Kinematics. We will want to know how to change the velocity of a particle in order to learn what causes accelerations.

We will then take a step towards the more realistic by considering the size, shape, and orientation of objects as they accelerate. We term this type of motion "Rigid Body Motion." We begin, in Unit 3, with the Kinematics of Rigid Bodies, looking first at the rotational motion of objects. We will then introduce the possibility that objects can move (and accelerate) translationally *and* rotationally at the same time. In Unit 4, we will look at sample problems that will help you understand the concepts learned in Unit 1, Unit 2, and Unit 3. Next, in Unit 5, we study the Kinematics of such motion.

In Unit 6, we will look at many of the principles we learned in the first few units—this time, in three-dimensions. We will begin with the three-dimensional Kinematics of a Rigid Body and then finish with three-dimensional Kinetics.

We will complete our study of Dynamics with Unit 7, a look at Vibrational Motion, or what happens when objects oscillate about a neutral state. In Unit 4, we will look at sample problems that will help you



Canvas Network MOOCs

—

**Canvas Open Source
LMS
by
Instructure**



Canvas Network Courses on Offer

Canvas Network gives teachers, learners and institutions alike the place and platform to define the world of open online learning in a way that makes sense for everyone. It grows as teachers and learners apply it in individual ways and then share the results with the world.

Built on the same Canvas platform that millions already use to learn every day, Canvas Network will grow to be a gathering place for the open online courses, communities and collections that millions more will be able to use to evolve learning to meet their goals.

- Click picture to open site and scroll through courses
- Not limited to university courses, thus more flexible for things outside normal tertiary academic curricula
- Methodology seems to be provided via Salt Lake City based Instructure.com
- Canvas platform is open source

Canvas is a new, open-source LMS by Instructure Inc. It is released under the AGPLv3 license for use by anyone interested in learning more about or using learning management systems.

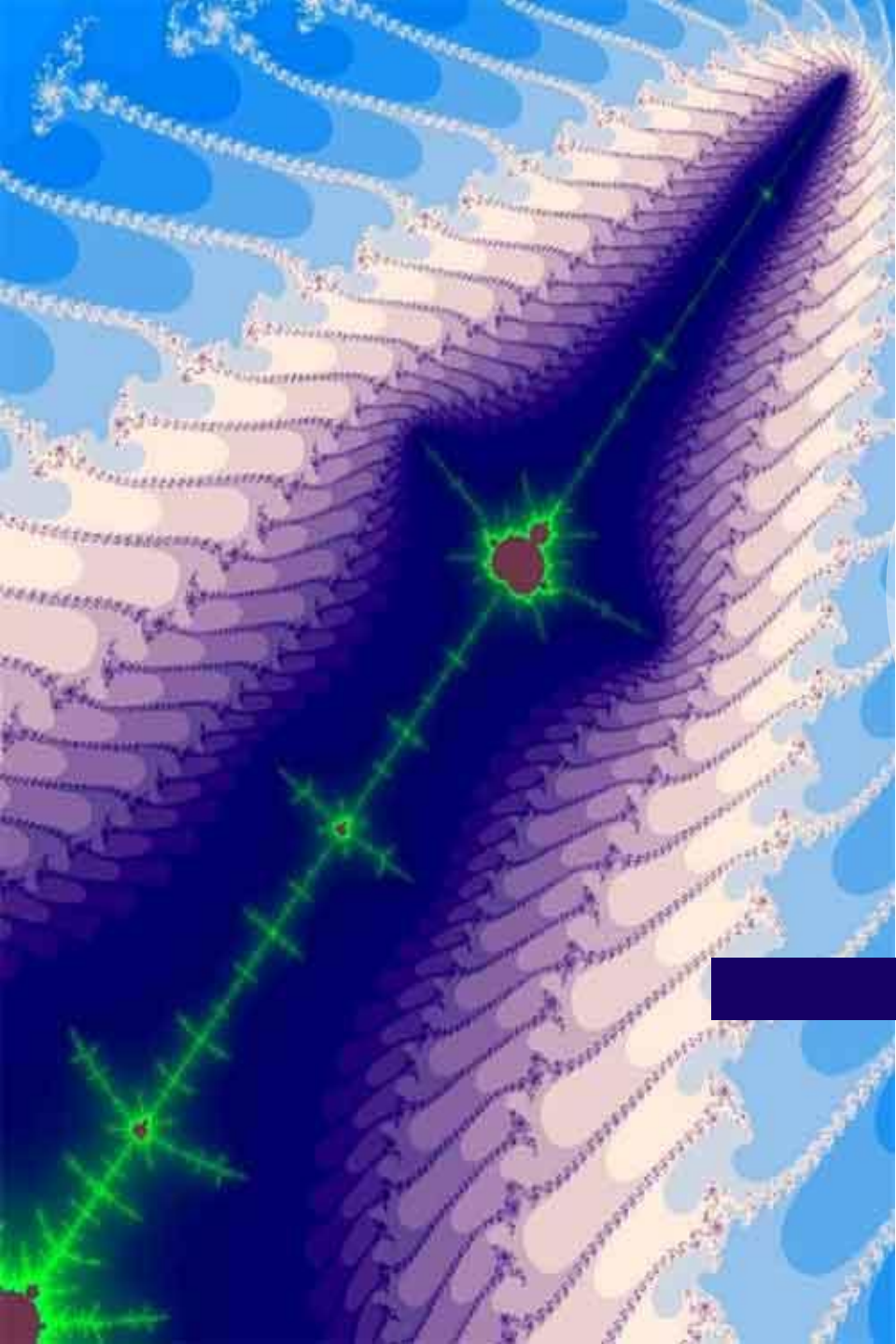
The screenshot displays the Canvas Network website interface. At the top, the Canvas Network logo is visible on the left, and navigation links for 'Log in' and a user profile icon are on the right. A large banner features a map of the United States with the text 'HUNDREDS of SCHOOLS' overlaid. Below the banner, the text reads 'Introducing Canvas Network' and 'Open online learning, as defined by you.' A red callout box states: 'Connecting students, teachers and institutions, through an open, online course network.'

The main content area is a grid of course cards. Each card includes a course title, a brief description, the instructor's name and title, and a 'Learn More' button. A red 'Starts' badge is present on the top right of each card, indicating the start date.

- Precalculus Algebra** (Starts March 2013) by John Lorch, Ph.D., Professor of Mathematical Sciences at Ball State University.
- Academia and the MOOC** (Starts May 2013) by Kenneth Ronkowitz, Professor, Instructional Designer at NJEdge.Net.
- U.S. History: First Peoples to the Civil War and Reconstruction** (Starts May 2013) by Nate Weston, Professor at Seattle Central Community College.
- Creating Quality Online Instruction** (Starts May 2013) by Donna Harp Ziegenfuss, Ed.D., Assistant Head of Scholarship and Education Services, Marriott Library at The University of Utah.
- Life Prep** (Starts May 2013) by Michael Freedman, M.A., Director, MyCoreCourse.
- Project Management for Business Professionals** (Starts May 2013) by Peter von Stackelberg, Lecturer-Management and Innovation at Alfred State SUNY College of Technology.

Instructure is where you start

- Instructure's revenue appears to derive from implementing school-level LMSs
 - Seems to be free to an instructor who wants to use it to set up his/her own course
 - I am following up re use by Kororoit Institute
- Canvas features
- Canvas applications
- Canvas documentation (guides)
- Edu Apps (e.g., Khan Academy)
 - Drupal content management system is one of these apps we need to explore



For questions and
comments please contact
the author

Thanks

