Duke Online Education Initiatives
Supported Projects 2012-2015

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2014-15 Projects

Teaching Statistical Thinking: Part 1 Descriptive Statistics | Dalene Stangl, Kate Allman, and Mine Çetinkaya-Rundel | Statistical Science and the Duke Program in Education
Non-credit MOOC
- A 4-week long MOOC with online modules to train high school teachers to teach probability and statistics using common core educational standards; also offers resources teachers can use to engage students.
- Draws on collaborations with the Duke Program in Education, Duke Master of Arts in Teaching (MAT) Alumni, Bass Connections, the North Carolina School of Science and Math, the SAS Institute, and the American Statistical Association.
- Duke students and alumni contributed to course content creation and course design.
- Potential for professional development credits for teachers.

Tropical Parasitology: Protozoa, Worms, Vectors and Human Disease | John Bartlett | Duke Global Health Institute
Non-credit MOOC
- Duke’s first MOOC developed with an international partner, the Kilimanjaro Christian Medical Centre (KCMC) in Tanzania.
- Producing an 8-week MOOC plus materials for use in regular courses at Duke and KCMC.

Copyright for Educators and Librarians | Kevin Smith | Duke University Libraries
Non-credit MOOC
- Collaboratively developed with the University of North Carolina at Chapel Hill and Emory University and taught in a modular format.
- Potential for professional development credits for teachers and librarians.
- Currently exploring the possibility of creating a MOOC series around this initial course.

Reasoning, Data Analysis and Writing | Walter Sinnott-Armstrong, Ram Neta, Mine Çetinkaya-Rundel, and Denise Comer | Philosophy, Statistical Science, and the Thompson Writing Program
Coursera Specialization
- Multi-faculty collaboration on an interdisciplinary MOOC series that where students draw upon skills gained in logic, statistical science, and composition to complete a capstone project.
Students completing capstone projects will receive feedback from MOOC instruction team; and students with the highest-rated capstone projects will have the option of publishing their projects on a special showcase website.

Perception, Action and the Brain | Leonard White, Jennifer Groh, and Dale Purves | Brain Sciences, Community & Family Medicine, Neurobiology, Psychology & Neuroscience Coursera Specialization
- Multi-faculty collaboration developing a MOOC credentialing series in the brain sciences.
- Developing a capstone project for students to synthesize lessons learned across three MOOCs.

Duke for-credit, hybrid course
- Created and used video lectures and videoconferencing to develop a hybrid campus / online course for Duke Kunshan University.

Advertising and Society | William O’Barr | Cultural Anthropology
Non-credit MOOC
- Funding for course development provided by the Advertising Educational Foundation.
- Showcases Duke Libraries’ Hartman Center and its extensive digital collection on advertising.

Towards a Healthy World: The Challenge of Global Health | David Boyd | Duke Global Health Institute
Non-credit MOOC
- Includes course videos recorded at international locations related to topics covered in the course.
- Plans to have Duke students from on-campus course interact with MOOC students via weekly Google+ Hangouts.

Visual Perception and the Brain | Dale Purves | Neurobiology
Non-credit MOOC
- Created an 8-week MOOC on the anatomy and physiology of the human visual system.
- Part of a series of Duke courses included in Duke’s MOOC Specialization Perception, Action, and the Brain (http://bit.ly/1ny0jAU), an online credentialing series designed especially for graduate students in the brain sciences and those working in virtual reality or gaming.

Foundational Neuroscience for Perception and Action | Leonard White | School of Medicine and Duke Institute for Brain Sciences
Non-credit MOOC
- Repurposed components of the Medical Neuroscience 12-week MOOC into a 8-week MOOC.
- Part of a series of Duke courses included in Duke’s MOOC Specialization Perception, Action, and the Brain (http://bit.ly/1ny0jAU), an online credentialing series designed especially for graduate students in the brain sciences and those working in virtual reality or gaming.
**Dog Emotion and Cognition | Brian Hare | Evolutionary Anthropology**
Non-credit MOOC
- Will provide students the opportunity to contribute data for a dog cognition research project.

**Responding to 9/11 | David Schanzer | Public Policy**
Non-credit MOOC
- Second course in a series; converts a semester-length Duke course into shorter, modular format.

**Bioelectricity: Extracellular Potentials | Roger Barr**
- Second course in a series that redesigns a 9-week MOOC into a more modular format.

**Introduction to Chemistry: Reactions and Ratios | Dorian Canelas | Chemistry**
Non-credit MOOC; Duke for-credit, hybrid course
- Redesigned the *Introduction to Chemistry* 11-week MOOC into a two 8-week MOOCs, allowing for a more modular approach as well as providing students with more learning content (1 of 2).

**Introduction to Chemistry: Structures and Solutions | Dorian Canelas | Chemistry**
Non-credit MOOC; Duke for-credit, hybrid course
- Redesigned the *Introduction to Chemistry* 11-week MOOC into a two 8-week MOOCs, allowing for a more modular approach as well as providing students with more learning content (2 of 2).

**2013-14 Projects**

**Introduction to Chemistry | Dorian Canelas | Chemistry**
Non-credit MOOC; Duke for-credit, hybrid course
- Recorded chemistry experiments in Duke lab to demonstrate concepts (http://bit.ly/1jH63QF).
- Conducting a Gates-funded study to analyze peer-to-peer interactions in her MOOC (with Denise Comer).
- Using online course videos to develop a hybrid version of Duke on-campus course; with funding from the Duke Endowment, will compare hybrid and traditional sections of the course.
- Studying student learning in introductory-level MOOCs (with Mine Çetinkaya-Rundel).

**Data Analysis and Statistical Inference | Mine Çetinkaya-Rundel | Statistical Science**
Non-credit MOOC
- Focused on free, open-access resources including instructor-authored textbook, data sets, and statistical analysis software.
- Part of a series of Duke courses on *Reasoning, Data Analysis and Writing*, one of Coursera’s first ten Specializations (http://bit.ly/1mJg7iC).
- Part of a study on student learning in introductory-level MOOCs (with Dorian Canelas).
- Materials will be used in a fee-based certificate program in Duke Continuing Studies.
History and Future of (Mostly) Higher Education | Cathy Davidson | Franklin Humanities Institute

Non-credit MOOC; Duke for-credit, hybrid course
- Partnered with 30+ universities and institutions around the world offering parallel courses, webinars, group video discussions, and conferences on the MOOC’s topic.
- Taught synchronously with on-campus courses at Duke, UC Santa Barbara, and Stanford, with on-campus and online students interacting through discussion forums, Google+ Hangouts, collaborative research projects, and in-person meetings.
- Experimented with a tool for online, collective annotation of writing.

International Human Rights Law: Prospects and Challenges | Laurence Helfer | Law
Non-credit MOOC
- Law librarian provided detailed law research video and quiz to equip students to complete course assignments.
- Included an interview with the director of Duke Law’s new human rights clinic that highlighted the clinic’s accomplishments.
- With many students being working professionals from other fields, the first run of the course had a higher than usual percentage of students signed up for Signature Track, suggesting a demand for specialized credentialing in international human rights law.

Non-credit MOOC; Duke for-credit, hybrid course
- Included extensive video of marine fauna from instructor’s field research.
- Worked with the Public Library of Science (PLoS) to curate and make available peer-reviewed research articles for students in the course (http://bit.ly/RP0Tw2).
- Conducting a study of whether MOOC students change their attitudes toward environmental conservation after the course.

Statistics 104: Data Analysis and Statistical Inference | Mine Çetinkaya-Rundel | Statistical Science
Synchronous video, for-credit online course
- Used WebEx, Duke’s online conferencing service, for live online classroom sessions.
- Flipped the online classroom, with students using class time to collectively work through assignments via video chat.

Behavioral Finance: A Taxonomy of Money Mistakes | Emma Rasiel | Economics
Duke for-credit, hybrid course
- Seminar-style hybrid course where Duke undergraduates used the 2U platform for pre-class work and synchronous video discussions.
- Assessment project compared student reactions to synchronous video discussions with in-person course discussions (analysis underway).
- Materials will be re-used with Duke campus tools for Spring 2015 course.
9/11 and Its Aftermath -- Part I | David Schanzer | Public Policy
Non-credit MOOC

- Incorporated video discussions with content experts including Duke Muslim Chaplain and Adjunct Professor of Islamic Studies Abdullah Antepli, CNN Journalist Peter Bergen, and foreign policy consultant and author Jessica Stern; recordings available for future use at Duke.
- Course videos used to supplement readings in Duke campus course.

The Brain and Space | Jennifer Groh | Psychology and Neuroscience
Non-credit MOOC

- Course uses an open online version of Jennifer Groh’s forthcoming book Making Space: How the Brain Knows Where Things Are.
- A PhD candidate in Neuroscience from the Bass Undergraduate Instructional Program served as an online TA for the course.
- Part of a series of Duke courses included in Duke’s MOOC Specialization Perception, Action, and the Brain (http://bit.ly/1ny0jAU), an online credentialing series designed especially for graduate students in the brain sciences and those working in virtual reality or gaming.

Less Commonly Taught Languages Collaboration | Duke University (Trinity College of Arts & Sciences) and the University of Virginia
Synchronous video, for-credit online course

- Used video conferencing and online materials to collaboratively teach students at both Duke and UVa the less commonly taught languages of Haitian Creole and Tibetan. Additional universities may join this online collaboration.

Public Policy, Constitutional Values and the Supreme Court | Tom Metzloff | Law
Duke for-credit, hybrid course

- Seminar-style hybrid course where Duke undergraduates used the 2U platform for pre-class work and met weekly in-person for discussion sessions.

21st Century American Foreign Policy | Bruce Jentleson | Public Policy
Non-credit MOOC

- One of the first courses featured in in Coursera’s Learning Hubs initiative, where organizations around the world provide Internet access and in-person instruction support to MOOC students (http://bit.ly/1bH8rEt).

2012-13 Projects

Think Again: How to Reason and Argue | Walter Sinnott-Armstrong and Ram Neta (UNC) | Philosophy
Non-credit MOOC; Duke for-credit, hybrid course

- The first run of this course had the highest enrollment (226,000 total enrollments) of any Duke MOOC session to date; one of the top 10 overall highest enrollments out of the 600+ courses offered on Coursera.
- Experimented with incorporating student-produced videos as final course assignment.
- Translated into Chinese.
- Online materials used to develop a hybrid version of on-campus course.
- Part of a series of Duke courses on *Reasoning, Data Analysis and Writing*, one of Coursera’s first ten Specializations (http://bit.ly/1mJg7iC).

*English Composition I: Achieving Expertise* | Denise Comer | Thompson Writing Program

**Non-credit MOOC**
- Received two grants from the Gates Foundation, one to determine whether a MOOC could effectively help students learn to write and one to analyze peer-to-peer interactions in MOOCs (in collaboration with Dorian Canelas).
- Comer went on to develop a Duke, for-credit, online summer seminar on social media writing that Duke students took while doing internships in locations away from campus (*WRITING 270: Composing the Internship Experience: Digital Rhetoric and Social Media Discourse*).
- Duke Continuing Studies plans to use some of Comer’s MOOC videos.
- Part of a series of Duke courses on *Reasoning, Data Analysis and Writing*, one of Coursera’s ten first Specializations (http://bit.ly/1mJg7iC).

*A Beginner’s Guide to Irrational Behavior* | Dan Ariely | Business and Economics

**Non-credit MOOC**
- Experimented with a crowd-sourced essay assignment where students collaborated online to select a topic and then outline, write, and edit a paper that drew upon course concepts.
- With over 217,000 total enrollments, the first offering of this course was Duke’s second largest MOOC session and one of Coursera’s largest courses.
- Translated into Portuguese and Chinese.
- Course videos may be used in a future hybrid version of Ariely’s Duke MBA course.

*Introduction to Genetics and Evolution* | Mohamed Noor | Biology

**Non-credit MOOC; Duke for-credit, hybrid course**
- One of the MOOC students developed an iOS app designed to help students master concepts in the course. Professor Noor and this student co-authored a paper on the design and use of this app (http://bit.ly/1lH7OA5). App will be revised to run on both iOS and Android.
- Translated into Chinese.
- One of five MOOCs on Coursera recommended for credit equivalency by the American Council on Education (http://bit.ly/1l4oPWg).

*Medical Neuroscience* | Leonard White | School of Medicine and Duke Institute for Brain Sciences

**Non-credit MOOC; Duke for-credit, hybrid course**
- Experimented with offering a very rigorous, 12-week health sciences course; over two offerings of the course, 1,112 students completed all the work for the Statement of Accomplishment.
- Made the online materials available as supplementary materials for students at both Duke University and the Duke-National University of Singapore (Duke-NUS) Graduate Medical School. Course materials will also be reused at medical schools in Viet Nam and Malawi.
- Used data from his MOOC to study the relationship between student participation in the MOOC and prior training in the course subject area.

*Introductory Human Physiology* | Emma Jakoi and Jennifer Carbrey | Cell Biology  
Non-credit MOOC  
- Instructors are studying the relationship between student demographics and student performance in their MOOC.
- Translated into Portuguese and Chinese.
- In discussion with the School of Medicine to integrate course videos into learning modules for the new Master of Medicine program slated to begin in 2015.

*Image and Video Processing: From Mars to Hollywood with a Stop at the Hospital* | Guillermo Sapiro | Electrical and Computer Engineering  
Non-credit MOOC; Duke for-credit, hybrid course  
- Partnered with MathWorks to offer free use of their technical computing software (MATLAB) for course assignments; MathWorks also provided a TA to help students learn how to use MATLAB.
- Used online course materials to develop a hybrid version of his on-campus Duke course.

*Bioelectricity: A Quantitative Approach* | Roger Barr | Biomedical Engineering  
Non-credit MOOC; Duke for-credit, hybrid course  
- First Duke MOOC offered online; subsequently offered a second time and then was redesigned into a two-MOOC sequence.
- One of five MOOCs on Coursera recommended for credit equivalency by the American Council on Education (http://bit.ly/1l4oPWg).

*Introduction to Astronomy* | Ronen Plesser | Physics  
Non-credit MOOC; Duke for-credit, hybrid course  
- Created high quality videos of physics lab demos that can be used by other instructors.
- Used feedback from students and content experts taking the course to revise course content and assignments.

*Healthcare Innovation and Entrepreneurship* | Bob Barnes and Marilyn Lombardi | Biomedical Engineering and Nursing (respectively)  
Non-credit MOOC; Duke for-credit, hybrid course  
- Students worked to identify real-world problems in healthcare systems and conduct stakeholder and market analyses to identify possible solutions; they then peer-assessed each other’s analyses.
- Course videos are being used in the Duke on-campus version of this course, taken by graduate students in the School of Nursing, Pratt, and Fuqua.
Used video chat sessions to connect students with renowned athletics, sports writers and sports analysts (for example: http://bit.ly/1iiFZdi).