

MGMT 275 Current Topics In Emerging Technologies: Healthcare Technology
Easton Technology Leadership Program
Winter 2015

Class Hours:	Tuesdays 4:10 – 6:10 pm
Location:	Gold Hall, B117
Instructors:	Roy Doumani, JD Jennifer McCaney, PhD

Course Overview

The course will address the disruptive nature of emerging technology applications in healthcare. Topics covered will include digital health, electronic medical records, personalized medicine and diagnostics, wireless sensing and remote monitoring, cloud connectivity, telemedicine, mobile health platforms, social networks, big data and predictive analytics, and bioinformatics. The course will also include representatives from venture capital and the tech start-up community.

The class is designed for MBA students as well as other graduate level students who are interested in healthcare or one of the many technology industries driving the transformation of healthcare. While previous training or experience in healthcare or technology is not required, students should feel comfortable reading about and discussing the technologies presented as they pertain to the healthcare industry.

The objectives of this course are:

- (1) to achieve a comprehensive understanding of the current and future role of technology in healthcare;
- (2) to develop a predictive sense for how different technologies will affect the key stakeholders in healthcare – patients, physicians, providers, payors, and the pharmaceutical/medical product industries; and
- (3) to identify management and business strategy challenges surrounding the implementation and utilization of technology in the healthcare industry.

The course will consist of 10 sessions that are 2 hours in length. Instruction will combine a seminar format with guest speakers leading the sessions and discussion sessions facilitated by the course faculty to encourage student interaction. Preparatory readings are posted on the course website and **required** for each session to prepare students with an overview of the technology to be discussed and provide relevant business context. These readings are also necessary to participate in the class discussions, which are a substantial portion of the course grade. Additional background references are available to those students with an interest in a particular technology area. Instructor slides will be available online following the class, and speaker slides will be available online at the speaker's discretion.

Instructors

Roy Doumani, Professor, UCLA School of Medicine & Executive Director, UCLA Business of Science Center

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Jennifer McCaney, Lecturer, UCLA Anderson School of Management

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Teaching Assistant

Brad Turner, MBA/MD candidate, UCLA Anderson, 2016

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Course Administrator

Samantha Le, Administrative Director, UCLA Business of Science Center

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Networking

Each week, networking opportunities with the guest speaker(s) will be available to groups of 4 to 6 students, either before or after class. Sign-ups will be provided online via the course website. Students are encouraged to sign up for a speaker networking session; however, participation is not mandatory, and students with scheduling conflicts will not be penalized. Dinner or refreshments will be provided.

Course Material

Required readings will be assigned for every session, ranging from technical to business-oriented content and will span a range of sources. The collection of readings is curated for each session to provide students with: (1) a broad market overview of the technology, with a focus on the healthcare market, including market leaders and/or new entrants; (2) insights on organizational challenges and articles from key stakeholders, including physicians, policy-makers, and manufacturers; and (3) forward-looking articles that address innovation and entrepreneurial opportunities.

Required readings will be available in a course reader and may also be available through UCLA library resources. Readings are the responsibility of the student, and each session one to two students will be asked to give a short introduction to the class based on the readings. Please note that the reading list may change or additional readings may be assigned as the quarter progresses.

Recommended readings below are not required but are encouraged as an additional resource for students who have a strong interest in the subject area.

Recommended Reading

E. Topol, *The Creative Destruction of Medicine: How the Digital Revolution Will Create Better Health Care*, 2013

C. Christensen, *The Innovator's Prescription: A Disruptive Solution for Health Care*, 2008

M. Porter, *Redefining Health Care: Creating Value-Based Competition on Results*, 2006

Grading

Course grading will be divided between class participation and attendance and an individual deliverable and a team presentation, which will be the primary deliverables for the quarter. Class participation will be based on the quality of student contributions to the discussions, not quantity. More than one unexcused absence will result in a letter grade drop. Team presentations will occur during finals week, and students will only be required to be present for their assigned time slot. It is anticipated that all team members will receive the same grade for the team presentation, however, the instructors will use their discretion and feedback from peer reviewed evaluations in making a final decision.

Class Participation & Attendance – 30%

Individual Deliverable – 45%

Team Presentation – 25%

Course Deliverables

Students will complete an individual deliverable and a final team presentation at the end of the quarter. Students will have two options for the individual deliverable:

(1) a professional quality opinion paper on a technology topic presented in class; or

(2) a business proposal for a new venture related to an opportunity created within any one of the healthcare technology markets discussed.

During week 5 of the quarter, students will be asked to submit a one-paragraph summary of their individual deliverable topic, including the area of technology focus (not to exceed 250 words), which will be reviewed by the course faculty. This is due by 12 pm on February 3rd to brad.turner.2016@anderson.ucla.edu in the file name format "Student Last Name_Student First Name_Summary." Students will be grouped into core technology teams based on the material submitted for this deliverable. Students will also have the option of submitting team member preferences, which should be noted at the bottom of the page on their outline. Teams will be announced at class during week 6 on February 10th.

The final individual deliverable will be due by 12 pm on Tuesday, March 10th to brad.turner.2016@anderson.ucla.edu in the file name format "Student Last Name_Student First Name_Final Deliverable" or "Student Team Name_Final Presentation." Length: Individual paper not to exceed 5 pages, and team presentation not too exceed 10 slides or 10 minutes. The final

student team presentations will take place in Gold Hall, B117 on Tuesday, March 17th from 4:10 to 7pm. A copy of each team's presentation will be due by 12 pm on Tuesday, March 17th.

Please note that a hard copy of all materials is due in class on the date of the deliverable, however, materials received via email after the 12 pm deadline will be considered late.

Class Schedule

Pre-Session 1 Class Overview

Readings:

J. Bigalke, W. Copeland, and P. Keckley, "I'm OK, Your're OK...but Will We be All Right?"
Deloitte Review, no. 9, 2011

Session 1 – Tuesday, January 6th

Electronic Medical Records & Hospital Management Strategies for Healthcare IT

Guest Speakers:

Michael Pfeffer, MD, Chief Medical Information Officer, UCLA Hospital
Ellen Pollack, RN, Chief Nursing Informatics Officer, UCLA Hospital

Readings:

- G. Keston, "Healthcare Information Management," Faulkner Information Services, February 2014
 - G. Keston, " Electronic Medical Records: Trends," Faulkner Information Services, October 2013
 - D. Blumenthal and M. Tavenner, "The Meaningful Use Regulation for Electronic Health Records," *The New England Journal of Medicine* 363, no. 6 (2010): pp. 501 – 504
 - D. Shaywitz, "Is One Company About to Lock Up the Electronic Medical Records Market?" *The Atlantic*, pub. June 14, 2012
 - Z. Moukheiber, "Epic Systems' Tough Billionaire," *Forbes*, pub. April 18, 2012
 - "Improving Care: Priorities to Improve Electronic Health Record Usability," *American Medical Association*, September 2014
 - M. Beck, "Medicare to Cut Payments to Some Doctors, Hospitals," *Wall Street Journal*, December 18, 2014
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Session 2 – Tuesday, January 13th

Wearable Computing – Smart Glasses in Healthcare

Guest Speakers:

Sarah Rocio, Product Manager, Augmedix

Readings:

- P. Lee et al., “Technology, Media & Telecommunications Predictions 2014,” Deloitte, 2014
Wearables: the eyes have it, pp. 10-12
- “Ten IT-enabled Business Trends for the Decade Ahead,” *McKinsey Global Institute*, May 2013:
Integrated digital/physician Experiences, pp. 23-26
- A. O’Connor, “Google Glass Enters the Operating Room” *The New York Times*, July 21, 2014
- J. Comstock, “Google Glass Startup Partners with Dignity Health, Raises \$4.1M More,” *MobiHealthNews*, pub. June 17, 2014
- A. Sachdev, “Paramedics Try Out Google Glass in Ambulances,” *The Seattle Times*, August 12, 2014

3D Printing & Technology for Healthcare in Developing Countries

Guest Speakers:

Mick Ebeling, Co-Founder, Not Impossible Labs
Elliot Kotek, Co-Founder & Editor-in-Chief, Not Impossible Labs

Readings:

- D. Cohen et al., “3-D Printing Takes Shape,” *McKinsey Quarterly*, January 2014
- G. Anders, “HP’s 3D Print Breakthrough Could Push Rivals Out of Business,” *Forbes*, October 29, 2014
- J. Groopman, “Print Thyself: How 3-D Printing is Revolutionizing Medicine,” *The New Yorker*, November 24, 2014
- A. Chang, “With Ingenuity and a 3-D Printer, Group Changes Lives,” *Los Angeles Times*, April 25, 2014
- S. Sinha and M. Barry, “Healthcare Technologies and Innovation in the Global Health Arena,” *The New England Journal of Medicine* 365, no. 9 (2011): pp. 779-782
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Session 3 – Tuesday, January 20th

Telemedicine Technology Platform

Guest Speakers:

Dave Skibinski, President & CEO, SnapMD

Readings:

A. McWilliams, "Global Markets for Telemedicine Technologies," BCC Research, September 2014:

Chapter 3 Telemedicine Overview, pp. 10-35

J. Kvedar et al., "Connected Health: A Review of Technologies and Strategies to Improve Patient Care with Telemedicine and Telehealth," *Health Affairs* 33, no. 2 (2014): pp. 194-199

S. Chen et al., "A Review of Telemedicine Business Models," *Telemedicine and e-Health* 19, no. 4, pp. 287-297

"SnapMD Launches Connected Care Telemedicine Platform," *PRWEB*, October 20, 2013

Predictive Analytics & Remote Patient Intelligence

Guest Speakers:

Dave Sentrian, Founder & CEO, Sentrian

Readings:

D. Bates, et al., "Big Data in Health Care: Using Analytics to Identify and Manage High-Risk and High-Cost Patients," *Health Affairs* 33, no. 7 (2014): pp. 1123-1131

J. Elton and A. Ural, "Predictive Medicine Depends on Analytics," *Harvard Business Review*, October 23, 2014

M. Gandhi and T. Wang, "Predictive Analytics: The Future of Personalized Health Care," *Rock Health Reports*, epub. October 20, 2014

B. Monegain, "New Startup Springs from Singularity U," *Healthcare IT News*, epub. November 10, 2014

Session 4 – Tuesday, January 27th

Robots for Remote Presence Monitoring

Guest Speakers:

Yulun Wang, Chairman & CEO, InTouch Health

Tim Wright, VP, Corporate and Market Strategy, InTouch Health

Paul Vespa, MD, Professor of Neurosurgery and Neurology and Director of Neurocritical Care, UCLA Hospital

Readings:

L. Schwamm, "Telehealth: Seven Strategies to Successfully Implement Disruptive Technology and Transform Health Care," *Health Affairs* 33, no. 2 (2014): pp. 200-206

T. Wright, "The Financial Benefits of Acute Care Telemedicine," *Healthcare Executive Insight*, December 16, 2013

E. Ackerman, "iRobot and InTouch Health Announce RP-VITA Telemedicine Robot," *IEEE Spectrum*, July 24, 2012

E. Schmidt, "WALL-E, meet EVA: Robo-doc Navigates on Its Own, Frees Doctors to Focus on the Critically Ill," UCLA Newsroom, epub. May 6, 2013

J. Markoff, "Scientists Consider Repurposing Robots for Ebola," *The New York Times*, October 22, 2014

Session 5 – Tuesday, February 3rd

Next Generation Sequencing & Personalized Medicine

Guest Speakers:

Frank Oaks, VP, System Integration, Illumina

Richard Shen, VP, Consumables Product Development, Illumina

Readings:

"Quantitative Advances Since the Human Genome Project (HGP)," *NIH News*, pub. April 12, 2013

"Disruptive Technologies: Advances That Will Transform Life, Business, and the Global Economy," McKinsey Global Institute, May 2013:

Introduction: Understanding the Impact of Technologies, pp. 23-28

Next-generation Genomics, pp. 86 – 94

E. Hayden, "Is the \$1,000 genome for real?" *Nature News & Commentary*, January 15, 2014

L. Biesecker, "Next-generation Sequencing in the Clinic: Are We Ready?" *Nature Genetics* 13 (2012): pp. 818-824

- A. Regalado, "10 Breakthrough Technologies 2013: Prenatal DNA Sequencing," *MIT Technology Review*, April 20, 2013
- J. Davis et al., "The Microeconomics of Personalized Medicine," McKinsey & Company, 2010
- M. Specter, "The Gene Factory," *The New Yorker*, January 6, 2014
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Special Session – Friday, February 6th

Imagining Care Anywhere Tour – Kaiser Permanente, Garfield Innovation Center

Hosts:

Karin Cooke, Manager, Innovation Fund for Technology, Kaiser Permanente
Faye Sahai, VP, Innovation & Advanced Technology, Digital Health Technology & Strategic Initiatives, Kaiser Permanente

Readings:

See Session 6

Session 6 – Tuesday, February 10th

Leveraging Technology & Innovation to Improve Patient Care – Managed Care Perspective

Guest Speaker:

Nolan Chang, MD, Kaiser Permanente
Sajid Sindha, Assistant Medical Group Administrator, Kaiser Permanente

Readings:

- M. Porter and T. Lee, "The Strategy That Will Fix Health Care," *Harvard Business Review*, October 2013
- C. Hawn, "One Step at a Time: Innovating at Kaiser Permanente," California Healthcare Foundation, March 2012
- T. Simonite, "At Fake Hospital, Kaiser Runs a Testing Ground for New Technology," *MIT Technology Review*, September 16, 2013
- D. Cass, "How to Get Health Care Innovations to Take Off," *Harvard Business Review*, September 25, 2013
- E. Singer, "Massive Project to Study the Link between Genetics and Health," *MIT Technology Review*, July 26, 2011
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Session 7 – Tuesday February 17th

The Disruption of Healthcare & Venture Capital Perspective on Digital and Mobile Health

Guest Speaker:

Jack Young, Director, Qualcomm Life Fund, Qualcomm Ventures

Readings:

- H. Greenspun and S. Coughlin, “mHealth in an mWorld: How Mobile Technology is Transforming Healthcare,” Deloitte, 2012
- C. Barton, “Mobile Health (mHealth) Technologies and Global Markets,” BCC Research, March 2014
Chapter 7: Leading Therapies for mHealth, pp. 78-88
Table 9: mHealth Challenges and Opportunities by mHealth Application, p. 97
- M. Gandhi and T. Wang, “Digital Health Funding Year in Review 2014,” *Rock Health Reports*, epub. January 1, 2015
- B. Dolan, “Why the Qualcomm Life 2net Launch Matters,” *mobihealthnews.com*, epub. December 8, 2011
- S. Baum, “Update: In 2015, Interesting Digital Health Collaborations on Tap for Pharma,” *medcitynews.com*, epub. December 17, 2014
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Session 8 – Tuesday February 24th

Social Network Platforms to Achieve Better Health Outcomes

Guest Speakers:

Naimish Patel, VP, Product Marketing, Rally Health

Readings:

- R. Goetzel et al., “Do Workplace Health Promotion (Wellness) Programs Work?” *Journal of Occupational and Environmental Medicine* 56, no. 9 (2014): pp. 927-934
- L. Berry, “What’s the Hard Return on Employee Wellness Programs?” *Harvard Business Review*, December 2010.
- J. Nosta, “Are Insurance Providers Buying Into Digital Health? Audax Health Is Making It Happen,” *Forbes*, epub. October 4, 2013
- N. Patel, “Health Care Needs a Dose of Social Media,” *cnbc.com*, pub. Jun 20, 2013
- J. Comstock, “UnitedHealth Group Buys Majority Stake in Audax Health,” *mobihealthnews.com*, epub. February 19, 2014
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Session 9 – Tuesday March 3th

Analytical Approaches for Optimizing the Healthcare Ecosystem & IBM's Watson

Guest Speaker:

TBD, IBM

Readings:

- P. Groves et al., "The Big Data Revolution in Healthcare: Accelerating Value and Innovation," McKinsey & Company: Center for US Health System Reform, Business Technology Office, January 2013
 - "Data-driven Healthcare Organizations Use Big Data Analytics for Big Gains," IBM Software White Paper, February 2013
 - J. Cohn, "The Robot Will See You Now," *The Atlantic*, March 2013
 - M. Rhodin, "IBM Watson Group: Technology to Transform Business and Society," asmarterplanet.com, epub. January 9, 2014
 - Z. Moukheiber, "IBM and Epic Apply Predictive Analytics to Electronic Health Records," *Forbes*, epub. February 19, 2014
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Session 10 – Tuesday March 10th

Digital Health Incubator and Seed Fund – How do Pitches Get Funded?

Proposed Guest Speaker:

Mitchell Mom, Venture Associate, Rock Health

Readings:

TBD

Final Team Presentations – Tuesday March 17th 4:10 – 7pm