

**HPAM – GP 4820**

**Digital Revolution of Healthcare**

**Fall 2024 Updated 8/30/24**

## Instructor Information

* Professor Jeff Englander
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* Office Hours: by appointment

## Course Information

* Class Meeting Times: Wednesdays, 6:45 PM - 8:25 PM
* Class Location: 238 Thompson St (GCASL) Room 265

### Course Prerequisites

There are no prerequisites for this course.

**CREDITS**

1.5

#### Course Description:

The application of digital tools in healthcare has grown exponentially over the last several years. They are now firmly entrenched in the healthcare delivery model. However, after experiencing this explosive growth, the application and potential of healthtech tools remain uncertain and potentially unfulfilled. While originally embraced with much hype, much more thought has to be given to appropriate reimbursement, how to strategically integrate these tools into workflows, and how they could be used to effectively and efficiently address the unique needs of fragile or underserved populations. What are the impacts of these changes on the methods of care delivery and the quality of care?

This course will take a hands-on approach to explore digital healthcare technologies and their impact on key stakeholder groups within the industry. Beginning from the patient perspective, we will examine the challenges and opportunities these evolving

technologies create from a consumer, financial, regulatory, and legal standpoint. We will provide a practical approach to researching and understanding the needs of prospective clients in the healthcare industry to develop, market, and deploy/sell innovative digital healthcare solutions.

#### Course Objectives:

The three primary objectives of the course are to

1. Provide you with a working knowledge of the broad variety of factors and constituencies that need to be addressed as the healthcare ecosystem becomes increasingly value-based and digitized.
2. Allow you to evaluate how the digital transformation of the industry will impact your business unit or organization so that you are in a position to support, propose, prioritize and implement/help implement such solutions.
3. Help you understand which stakeholders within your organization are involved in adapting an organization to this digital revolution to ensure they are all identified, assess their degree of support or resistance to change, and what role they may or may not play in this transition (ex: what people/departments support your goals, which ones object to them and how you intend to achieve your goals in light of this knowledge).

Thus, students who successfully complete this course will be able to:

* + Understand the nuances and unique drivers of digital transformation and how to drive the adoption of digital solutions in the U.S. healthcare industry as part of a career in health administration, public policy, entrepreneurship, or venture capital.
  + Use their strong foundational knowledge of the industry’s shift from fee-for-service to value-based reimbursement to align products and services for patients/clients and to benefit from new reimbursement structures.
  + Analyze the trends in healthcare reimbursement, their impact on an organization's mission, vision and financial position as well as the role of innovative new products and business models to help them succeed in such a fluid environment.
  + Evaluate and interpret the effect of the digital revolution on players in the healthcare ecosystem and formulate/help implement proposals that position their organizations for success in that environment.
  + Explain the complexity of healthcare data privacy and security regulations and explore how these requirements influence the design, integration, and deployment of new products and services in care delivery.
  + Demonstrate a value-added business case and confidently present projects and business proposals regarding the digital revolution in healthcare to colleagues/senior leaders.

## Grading:

### 25% Class participation

Class participation will be graded on both attendance and participation. Discussions will typically be about that week’s reading and its relevance to current topics. In addition, short written assignments demonstrating completion of that week’s reading and basic comprehension may be assigned.

### 5% 3-2-1 Exercises

At the end of each class, you will submit short answers on Brightspace for each of the following questions:

* What are three things you are taking away from class today?
* What are two things you found interesting?
* What is one thing/concept you are still struggling with or what is one question that you still have?

The 3-2-1 exercises are **graded on a submitted/not submitted basis** and are due after each class by Friday at noon.

### 30% Summary of Cases for Class Discussion- (group projects)

Students will be assigned to work in groups and will provide **short written summaries of 2** of the cases to be discussed in class which will be due by Tuesday evening before class. In addition, each group **will present 1 of the 2 cases they summarize** the evening that case is to be discussed in class (10 minutes max). Both the written and verbal summaries should give a broad summary of the case and attempt to connect to the key issues relating to the class discussion topic that week. Each case should be outlined using the following format:

Executive Summary (30%)

* A short one-paragraph overview/summary of the case
* What are the key issues that people in the case are trying to address?

Background (30%)

* Why is the organization facing these issues?
* What other issues stem from the problem you identify? Identify root cause(s).

Framing of the key issues to be addressed in the case (40%)

* What issues present the greatest challenge/opportunity to the organization
* What do you see as the organization's core competency (ies)/strengths; what is their greatest weakness?
* Internal or external factors that could impact challenges and opportunities (ex: regulations, potential mergers or acquisitions, etc.).

Please use a simple and direct style, putting the key issues in the first paragraph.

Make sure to use material from the case and stay within the period outlined and the context of what you are presented in the case (ex: if the case takes place in 2018-2020 don’t use information that you may have learned from an earlier or later timeframe). In general, I would recommend relying mostly on the case itself for information you need.

Format

Page and format requirements: 2 pages, single spaced including any graphics or tables. Use Times New Roman font with 1-inch margins (looks count) and a 12-point font size. Mechanics

Format, grammar, punctuation, spelling, and citation accuracy all count. Grading:

There is no single right answer, but there are stronger and weaker memos.

* 30 pts for executive summary
* 30 pts for background
* 40 pts for framing key issues
  + 35 points for ideas and format
  + 5 points for critical thinking skills

### 40% Digital Health Product/Innovation Group Project

**Case Study:**

Advancing the Adoption of Digital Technologies-Practical Issues and Challenges (10-12 pgs. max)

Written case analysis due **before session 7**

As we have seen with the rise of digital technologies such as ChatGPT, Hospital-at-Home, and telebehavioral health, digital health holds great potential to make care more accessible, more effective, and higher quality. However, given the potential for bias in the development of AI models, the disparities in broadband access, challenges around culturally appropriate care as well as privacy and security of personal health information, digital health has many challenges to potential implementation.

As such, your class will be divided into groups to research current or future products/technologies in digital healthcare (ex: Artificial Intelligence (AI), Remote Patient Monitoring (RPM); Virtual Care; Behavioral Health; Augmented Reality/Virtual Reality, etc.) that you think has promise in the future.

You should use this chapter as a guide in preparing your analysis.

Essentials of health policy and law, Teitelbaum, J. and Wilensky, S. 4th Ed. 2020 [Ch. 14 - The Art of Structuring Hlth Policy Analysis](https://ebookcentral.proquest.com/lib/nyulibrary-ebooks/reader.action?docID=5709939&ppg=918)

Your paper should include all of the following:

1. What problem is this product or technology solving
   1. How will this technology improve clinical outcomes; improve workflows; make care more consumer-centric or efficient?
2. What do you estimate the size of the market for this particular product/technology? [You may use 3rd party estimates like Statista, Gartner, etc.].
   1. How would broad-based use of this product/technology impact the industry and industry participants
      1. Hospitals, Medical Device or Pharmaceutical Co’s
      2. Health insurance companies or government payers (Medicare, Medicaid)
3. How do you anticipate it would come to market and how would you get paid for it
   1. Direct to consumer
   2. Via a third party (Insurer, Employer, Distributor)
   3. Other
4. What regulatory or technical issues will this product/technology face
   1. Will HIPAA, patient privacy or data security issues impact the development and implementation of the technology
   2. Are there infrastructure or technological issues that might have to be overcome for deployment of the technology?
5. Will this product have an impact on health equity or bias
   1. How will it impact access to care
   2. How will you insure it is unbiased or do esn’t worsen existing biases
6. Based on the above analysis, looking forward 3-5 years, do you think this technology will have a meaningful impact on the healthcare delivery system?
   1. Why or why not?

Since by definition you will be dealing with a new and innovative product/technology and uncertain markets, you will not be graded on the precision of your estimates or whether you can prove with certainty that your idea will work, but rather on the strength or your argument, your ability to display critical thinking around the problem being solved, how the product will be reimbursed and a realistic consideration of the pathway to market.

That said, your estimates or market size and growth rates should be connected in some way to reality (ex: you cannot say you expect to get 100% market share in year 1 or even year 5 without laying a somewhat reasonable path of how you expect to do that).

**Guidelines**

1. **Up to 12 pages single-spaced pages, plus APA-style references**
2. **One-inch margins**
3. **Arial or Times New Roman 12-point font**

Grading Rubric

* + 40% Writing ability
  + 40% Content (organization, strength of argument, thoroughness)
  + 20% Individual Contribution

#### Supplemental Course Materials:

It is assumed that you are familiar with the topics covered each week. If you need more background or are less comfortable than you wish, the materials below are recommended to help you. Please feel free to reach out for any other additional materials as needed.

The U.S. Healthcare Ecosystem: Payers, Providers, Producers, Burns, 2021

* Population Health, Ch. 4
* The 800-Pound Gorilla: Rising Healthcare Costs, Ch. 6
* Provider Sectors in the Ecosystem
  + Healthcare Providers, Ch. 8
  + Primary Care: Physicians, Nurses, and Pharmacists, Ch. 10
  + Hospitals, Ch. 11
  + Hospital Diversification, Restructuring, and Integration, Ch. 12
  + Organized Ambulatory Care, Ch. 13 (Chs. 12 & 13 only)
* Payer Sectors in the Ecosystem
  + Employer-Based Health Insurance, Ch. 15
  + Contracting for Prescription Drug Benefits: Role of Employers, Insurers, and Pharmacy Benefit Managers, Ch. 16
* Technology Sectors in the Ecosystem
  + The Healthcare Technology Sectors, Ch. 20
  + The Pharmaceutical Sector, Ch. 21
  + The MedTech Sector, Ch. 23

Digital Fluency: Understanding the Basics of Artificial Intelligence, Blockchain Technology, Quantum Computing, and Their Applications for Digital Transformation, Lang, V. 2021d., Lang, 2021

* Ch.1 Digitalization and Digital Transformation
* Ch.4 Artificial Intelligence

The Handbook of Integrated Care, 2nd ed., Volker, Et. Al., 2021

* Ch. 28 Digital Health Systems in Integrated Care ( 18 pgs.)

Healthcare Disrupted: Next Generation Business Models & Strategies, Elton & Riordan, 2016

# Course Outline:

**The CoursePack for the cases for the course is located here: please note that the cases for week 3 and week 6 must be purchased separately (note it comes up as CUNY since they currently have my CUNY email, it is the correct CoursePack).**

<https://www.thecasecentre.org/course/viewCourseAsConsumer?id=6205>

# Week 1

* The Healthcare Delivery Model
* Healthcare is not your typical industry (mediated interactions, unshoppable)
* All Healthcare is Local
* Differentiating business drivers

## Assignment:

* Case Study: Lehigh Valley Health Network: Using a Population Health Strategy to Transform Care
  + A Retrospective Cohort Study to Assess the Impact of an Inpatient Infectious Disease Telemedicine Consultation Service on Hospital Patient Outcomes
  + Association of Health Information Technology and Teleintensivist Coverage With Decreased Mortality and Ventilator Use in Critically Ill Patients
* Guest Lecturer: Joe Tracy, former Vice President, Connected Care and Innovation, Lehigh Valley Health Network

Readings

* + The U.S. Healthcare Ecosystem: Payers, Providers, Producers, Burns, 2021, Ch. 1 - up to “Overview of the Volume” (~4 pgs.).
  + Ch.. 2 A Guide Through The Wilderness (20 pgs.)
  + Consumer-Centric Design Strategies For Better Patient Experience and Care, mFine
  + [Innovating Healthcare in the Era of Patient Engagement: Challenges,](https://www.researchgate.net/publication/274194426_Innovating_Healthcare_in_the_Era_of_Patient_Engagement_Challenges_Opportunities_New_Trends) [Opportunities & New Trends](https://www.researchgate.net/publication/274194426_Innovating_Healthcare_in_the_Era_of_Patient_Engagement_Challenges_Opportunities_New_Trends) (12 pgs.)

# Week 2

Understanding Digital Transformation Through Your Personal Healthcare Journey

* Defining and implementing the “digital front door” for patients
  + Patients vs. consumers (receiving care vs. making choices)
  + Reorienting the patient experience

## Assignment:

* Case Study: Babylon Healthcare Overview HPAM-4820
* Guest Lecturer: Charles Fan, Accenture Executive In Residence: Digital Health & Behavioral Health, former Chief Commercial Officer, Babylon

Readings:

* + [Why Innovation in Healthcare is So Hard](https://web-p-ebscohost-com.proxy.library.nyu.edu/ehost/pdfviewer/pdfviewer?vid=0&sid=5ab56905-5ddf-468c-b0f8-0d3aaff1ee48%40redis), HBR 2006 (10 pgs.)
  + [2023 Care Access Benchmark Report for Healthcare Organizations](https://info.kyruushealth.com/hubfs/Kyruus%20%20Benchmark%20Report%202023%20for%20Healthcare%20Organizations.pdf), Kyrus (21 pgs.)
  + [Primary Care Practice Transformation and the Rise of Consumerism](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5377888/pdf/11606_2016_Article_3946.pdf), Shrank,

W. MD MSHS, Jrnl of General Internal Medicine, 02/27/17 (5 pgs.)

* + [Experiences of person-centered care - patients’ perceptions: qualitative](https://bmcnurs.biomedcentral.com/articles/10.1186/1472-6955-13-28)

[study,](https://bmcnurs.biomedcentral.com/articles/10.1186/1472-6955-13-28) BMC Nursing, 08/14 (9 pgs.)

* + [Why Is Patient-Centered Culturally Competent Care Important?, Patient-](https://link.springer.com/chapter/10.1007/978-3-030-26418-5_1) [Centered Clinical Care for African Americans](https://link.springer.com/chapter/10.1007/978-3-030-26418-5_1), Hall, G. 2019 p.1-10 (10 pgs.)

# Week 3

* The Transition to Value-Based Care
  + Fee-for-service transitions to value-based
    - Incentives, costs, and risk-sharing
    - Implementation challenges

## Assignment:

* Case Study: Navy Medicine: Moving to Value-Based Care
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Readings:

* + [Measuring Value in Health Care: A Comparative Analysis of Value-based](https://pdf.sciencedirectassets.com/272059/1-s2.0-S0149291820X00026/1-s2.0-S014929181930582X/main.pdf?X-Amz-Security-Token=IQoJb3JpZ2luX2VjEMX%2F%2F%2F%2F%2F%2F%2F%2F%2F%2FwEaCXVzLWVhc3QtMSJHMEUCIDi5%2FCRoNKq2Ni5Lc5uAHo8Mw3o9vnL0kVI7%2Fm3%2FUBaLAiEA4v5yPZPXv%2BREaRCcr1nwcpFP0cxlU0o4de6gI7LWZbEquwUIrv%2F%2F%2F%2F%2F%2F%2F%2F%2F%2FARAFGgwwNTkwMDM1NDY4NjUiDMo590nI4XzonYaQDyqPBf6e7GHSFHlphqnXy0jZ6evvBdL1dZSn8eugtVvxka9cr%2FbcQCvq1UyADibzPIEszEg26ytF8OClGAaqSN5UZ3TkdSF9GxSN%2BIjVpKTPVTmOx4FfPqknbLV7QysFLrw9Eu%2BIOlNYtCIRenfG8icx%2FjTSg3asoqknsgdN4RR7o4wjOp15xcKlVolWrHwhiHLzVnSalRUQHbF3n2if0yp%2B4%2B7YgIbzz6qnoJWYTXKheSYDUH6ZV0OIbVr7JNKrcqCOZOwamaKbiSGvl%2FjNITomdW9q4SpbS6TzAiBx5wpMKEQGd3mazwy%2BDa4K02BlL8jaf5IIUx42V3QuwzruMCBKkJ%2FbV1y7z2azItBoLWK05tDpxQmNfLXkEm4Iuk7%2B%2FOUMngJ6Hffb0VlN97ayrnZuqHtYEoQEXmGI5mbCXv5rqK9Ch%2F4yQxTLuRh%2F1s%2FCgcFoTxDnZQ75d83LzbLOr7uIb8IzWQwMaWGkpvc5oLIsxxdHE4nWolbjpVILN91nR8VMcv%2BGMUI5boHw1AbQS1iOdVvq4UHsdLdthZXn%2Bas%2Bu1naNydws8z3co4qitzyFFbnA6%2FTIdZOZlXYi9FI6lgBFqr5ENCHpnJYA%2BxLH92eKvOqhvrEaiJOZHjqcivtOvrAHr0xTGIl93wWcmiKXKZkFPt4xSyfpemvZ8TzhZGtbzDRbHx10KyKI9e%2F4AaAhfyEMRaKKe1uMGTnuo62nKaKok3RQS1Ewo5L7X%2BhRZ083NbGvYVLLSy%2F0g4BFrUjmZTxryafxr3hhl1JhHkRG7WD4Dd3ct3fF0vBtlimNMJ8VmChUQbtScWBgLWVb36hEJQjisxe6iJMpzDKRow%2F63q631ws2%2BL4PMID1qmmPD5fi4Ywraa6tQY6sQF9AHHppHhUSYqpcxyJTDkEUVX99tVwpFTL3i%2FMzTb6mZqqEFdlvlbcmLhyvQC98nw6UZqttx3oOOJVNKNuzvVN3QRr0ZJ%2BSFRtvvTURBUTRzHoNKktPEBP0cRwvIrLjYiu%2F%2F9zC4B5geCSNUamjMkcm1m4X9CBD3Jq9u4JddF14K7g6oM%2B34MGNknL09XAqqGw5eHR25l5DgrPeY1%2BtpyfXTS2zMx5s1iqfB5i6K02EXI%3D&X-Amz-Algorithm=AWS4-HMAC-SHA256&X-Amz-Date=20240803T213233Z&X-Amz-SignedHeaders=host&X-Amz-Expires=300&X-Amz-Credential=ASIAQ3PHCVTYWAMDKMEF%2F20240803%2Fus-east-1%2Fs3%2Faws4_request&X-Amz-Signature=6f8adad3a98c73fa50811edc13d14ee40fb9810df7b99dc5319cae47c02ee890&hash=d04ac2794fb44173490b84536632be534e43b22c572053aea8039f8e53347ca8&host=68042c943591013ac2b2430a89b270f6af2c76d8dfd086a07176afe7c76c2c61&pii=S014929181930582X&tid=spdf-f96098e7-7a54-4f72-8793-801e162f202c&sid=8b833016225f4643109b8fb-bd52a47fc51cgxrqa&ty) [Frameworks, Clinical Therapeutics 11/01/20](https://pdf.sciencedirectassets.com/272059/1-s2.0-S0149291820X00026/1-s2.0-S014929181930582X/main.pdf?X-Amz-Security-Token=IQoJb3JpZ2luX2VjEMX%2F%2F%2F%2F%2F%2F%2F%2F%2F%2FwEaCXVzLWVhc3QtMSJHMEUCIDi5%2FCRoNKq2Ni5Lc5uAHo8Mw3o9vnL0kVI7%2Fm3%2FUBaLAiEA4v5yPZPXv%2BREaRCcr1nwcpFP0cxlU0o4de6gI7LWZbEquwUIrv%2F%2F%2F%2F%2F%2F%2F%2F%2F%2FARAFGgwwNTkwMDM1NDY4NjUiDMo590nI4XzonYaQDyqPBf6e7GHSFHlphqnXy0jZ6evvBdL1dZSn8eugtVvxka9cr%2FbcQCvq1UyADibzPIEszEg26ytF8OClGAaqSN5UZ3TkdSF9GxSN%2BIjVpKTPVTmOx4FfPqknbLV7QysFLrw9Eu%2BIOlNYtCIRenfG8icx%2FjTSg3asoqknsgdN4RR7o4wjOp15xcKlVolWrHwhiHLzVnSalRUQHbF3n2if0yp%2B4%2B7YgIbzz6qnoJWYTXKheSYDUH6ZV0OIbVr7JNKrcqCOZOwamaKbiSGvl%2FjNITomdW9q4SpbS6TzAiBx5wpMKEQGd3mazwy%2BDa4K02BlL8jaf5IIUx42V3QuwzruMCBKkJ%2FbV1y7z2azItBoLWK05tDpxQmNfLXkEm4Iuk7%2B%2FOUMngJ6Hffb0VlN97ayrnZuqHtYEoQEXmGI5mbCXv5rqK9Ch%2F4yQxTLuRh%2F1s%2FCgcFoTxDnZQ75d83LzbLOr7uIb8IzWQwMaWGkpvc5oLIsxxdHE4nWolbjpVILN91nR8VMcv%2BGMUI5boHw1AbQS1iOdVvq4UHsdLdthZXn%2Bas%2Bu1naNydws8z3co4qitzyFFbnA6%2FTIdZOZlXYi9FI6lgBFqr5ENCHpnJYA%2BxLH92eKvOqhvrEaiJOZHjqcivtOvrAHr0xTGIl93wWcmiKXKZkFPt4xSyfpemvZ8TzhZGtbzDRbHx10KyKI9e%2F4AaAhfyEMRaKKe1uMGTnuo62nKaKok3RQS1Ewo5L7X%2BhRZ083NbGvYVLLSy%2F0g4BFrUjmZTxryafxr3hhl1JhHkRG7WD4Dd3ct3fF0vBtlimNMJ8VmChUQbtScWBgLWVb36hEJQjisxe6iJMpzDKRow%2F63q631ws2%2BL4PMID1qmmPD5fi4Ywraa6tQY6sQF9AHHppHhUSYqpcxyJTDkEUVX99tVwpFTL3i%2FMzTb6mZqqEFdlvlbcmLhyvQC98nw6UZqttx3oOOJVNKNuzvVN3QRr0ZJ%2BSFRtvvTURBUTRzHoNKktPEBP0cRwvIrLjYiu%2F%2F9zC4B5geCSNUamjMkcm1m4X9CBD3Jq9u4JddF14K7g6oM%2B34MGNknL09XAqqGw5eHR25l5DgrPeY1%2BtpyfXTS2zMx5s1iqfB5i6K02EXI%3D&X-Amz-Algorithm=AWS4-HMAC-SHA256&X-Amz-Date=20240803T213233Z&X-Amz-SignedHeaders=host&X-Amz-Expires=300&X-Amz-Credential=ASIAQ3PHCVTYWAMDKMEF%2F20240803%2Fus-east-1%2Fs3%2Faws4_request&X-Amz-Signature=6f8adad3a98c73fa50811edc13d14ee40fb9810df7b99dc5319cae47c02ee890&hash=d04ac2794fb44173490b84536632be534e43b22c572053aea8039f8e53347ca8&host=68042c943591013ac2b2430a89b270f6af2c76d8dfd086a07176afe7c76c2c61&pii=S014929181930582X&tid=spdf-f96098e7-7a54-4f72-8793-801e162f202c&sid=8b833016225f4643109b8fb-bd52a47fc51cgxrqa&ty) (10 pgs.)
  + [Defining & Delivering Value: HFMA Educational Foundation, p.9-15](https://www.hfma.org/wp-content/uploads/2022/10/Defining-and-Delivering-value.pdf) (6 pgs.)
  + [Spread of ACOs And Value-Based Payment Models In 2019: Gauging the](https://www.healthaffairs.org/content/forefront/spread-acos-and-value-based-payment-models-2019-gauging-impact-pathways-success) [Impact of Pathways to Success](https://www.healthaffairs.org/content/forefront/spread-acos-and-value-based-payment-models-2019-gauging-impact-pathways-success), Health Affairs Blog, 10/21/19 (9 pgs.)

# Week 4

* The Financing & Reimbursement of Healthcare
  + Sources of payment & the impact of payer mix
  + Relative reimbursement by payer
  + Understanding the revenue cycle

## Assignment:

* Case Study: Can Fintech Fix Healthcare Payment Processing?
* Guest Lecturer: Bruce Shepard, Chief Revenue Officer, Payr Health (invited)

Readings:

* + The U.S. Healthcare Ecosystem: Payers, Providers, Producers, Burns, 2021
* Ch. 17 Payers, Providers, Products, (25 pgs.)
* Ch. 18 Medicare (19 pgs.)
* Ch. 19 Medicaid & the Patient Protection and Affordable Care Act (18 pgs.)
  + [How does a hospital make money?, Physicians News Digest 2006](https://physiciansnews.com/2006/11/16/how-does-a-hospital-make-money/#%3A~%3Atext%3DPatients%20who%20undergo%20tests%20and%2Ctechnical%20portion%20of%20the%20fee) (3 pgs.)
  + [What Is Healthcare Revenue Cycle Management?](https://revcycleintelligence.com/features/what-is-healthcare-revenue-cycle-management), RevCycleIntelligence, 06/14/16

# Week 5

The Healthcare Technology Ecosystem, Patient/Consumer Data Privacy Rights & Obligations

* Discuss how HIT and health data can improve population health IPAAs data identifiers
* The role of HIT in VBC
* The future of HIT and how it enables a modern health care consumer experience
* Data privacy & security issues

## Assignment:

* Case Study: TBD
* Guest Lecturer: Marc d. Paradis, Vice President, Data Strategy Northwell Holdings

Readings:

* + The U.S. Healthcare Ecosystem: Payers, Providers, Producers, Burns, 2021,
* Ch. 24 Healthcare Information Technology (31 pages)
  + [Mathematical Modelling in Biomedicine: A Primer for the Curious and the](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7826848/pdf/ijms-22-00547.pdf) [Skeptic](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7826848/pdf/ijms-22-00547.pdf), Int’l Jrnl of Molecular Sciences 01/07/21 (17 pgs.)
  + Privacy as a competitive differentiator, IAPP, 2021 (27 pgs.)
* Pages 1-20 (up to Drafting Legal Memos)
* Pages 26-43 (up to Recommendations)

# Week 6

The Role of Cybersecurity in the Digital Age

* + Basic Concepts and Models of Cybersecurity
  + Healthcare’s Unique Security Considerations
    - Cybersecurity issues inherent in mHealth, RPM & virtual care
    - The nature of persistent threats and complex incidents in healthcare
    - Cybersecurity issues in cloud computing & AI

## Assignment:

* Case Study: Ransomware Attack at Springhill Medical Center
* **Digital Health Product/Innovation Group Project Due before class week 7**

Readings:

* + [Make Cybersecurity a Strategic Asset](https://www.proquest.com/docview/2450655586/fulltextPDF/AA5EED1D3B2241F0PQ/1?accountid=12768&sourcetype=Scholarly%20Journals), MIT Sloan Mgmt. Review, Fall 2020 (7 pgs.)
  + [Cybersecurity-Related Regulatory Considerations for Medical Devices,](https://watermark.silverchair.com/0899-8205-53_4_312.pdf?token=AQECAHi208BE49Ooan9kkhW_Ercy7Dm3ZL_9Cf3qfKAc485ysgAAA1QwggNQBgkqhkiG9w0BBwagggNBMIIDPQIBADCCAzYGCSqGSIb3DQEHATAeBglghkgBZQMEAS4wEQQMLZ40fOGKGFiuS0ZgAgEQgIIDB91fgstqveJfljbtbo2dCcTrr5usmbbmwMiWphmMTw5D8vTGuhzFweMraynyu85X_EkinNWGlnzny4zcC3vlrnmT2nbfKRXEmv4ss5zYMcJ7E-zZeTo3lDbQpP9xztPwJ5i40IcCsdQs93q5PDznWxet0Wlf09k36m3L0jp3Up6XLyRIplgJwvOowBilEGWGt3Qpc3AYZc34cOzMSFUo51ztCEyKiLvIcs22B9ABDq6gFWOwpf9OTagDBdAdg0ygcXzxGZj9ldaKkpiW2i99um9lVAToEsm8p5egwYFqgu7qkJjmBe1CNUaa2V0Quq5_bYhoMIFZfOOkkNAddy50IA_zytvtxXdWeNygGKeB2a9wCCp70JORyVfdSMNJegNs2lZNxI03BEs2SDH8h6z3WormwCdk82biEw-6EZF4yXtJiW-OIaEF3e6YvZ4hwnwwwQqEzVAARty7NZ5-xDxg5xbZfnMFgqD8neWy2ELkeT0ag4qxjJRprobwYh0fSbK23vXdwhKwBm7uHvKBr_yj7M2JJkVKGcgbqx5iiSfeFelp7E9YAjm5FGY4bbQiSe0aVqVQ5EAQzQlaznQEJ_aMns_zfnMRaPUNpYyZBACsOz32HFV6U4T8agRXreMrKnqi7DIXKOdLvamQsf1w61cxRI-oUHHo0mpeRm6vmxo84qZbFKNtX5KZ2XyZehHqkKpvYKufbefqHEf5N7ozJT97a53YkpCJbvafsLRBrYPL0yn2Do4vB24j-aOtDDsyCYnp_ji-OCXazmhAu_PEgrL1JIGnQk_guB3I1YyoREUATyFqdBqZarMMoUUCxB1RKmW_Q-GpscN1qce2wrDQP3dHOIhrenkf5AJy4bFB7CBWusFHRZL8AoXp9bZnW5qkYn0jLW32RBW6lg-Vg90Jfio-2-Lzinn8VLpMNwZctZ3EEbJGB2ZNsNE8eqLYnX6a7nN912iBkdQbEkO9t4XlSlZqLehu0T3Gw6NvRHPZtPe6quI3aOyUkCyLXlt-LcR48hSB3Vk8t8AiDZg) [Biomedical Instrumentation & Technology](https://watermark.silverchair.com/0899-8205-53_4_312.pdf?token=AQECAHi208BE49Ooan9kkhW_Ercy7Dm3ZL_9Cf3qfKAc485ysgAAA1QwggNQBgkqhkiG9w0BBwagggNBMIIDPQIBADCCAzYGCSqGSIb3DQEHATAeBglghkgBZQMEAS4wEQQMLZ40fOGKGFiuS0ZgAgEQgIIDB91fgstqveJfljbtbo2dCcTrr5usmbbmwMiWphmMTw5D8vTGuhzFweMraynyu85X_EkinNWGlnzny4zcC3vlrnmT2nbfKRXEmv4ss5zYMcJ7E-zZeTo3lDbQpP9xztPwJ5i40IcCsdQs93q5PDznWxet0Wlf09k36m3L0jp3Up6XLyRIplgJwvOowBilEGWGt3Qpc3AYZc34cOzMSFUo51ztCEyKiLvIcs22B9ABDq6gFWOwpf9OTagDBdAdg0ygcXzxGZj9ldaKkpiW2i99um9lVAToEsm8p5egwYFqgu7qkJjmBe1CNUaa2V0Quq5_bYhoMIFZfOOkkNAddy50IA_zytvtxXdWeNygGKeB2a9wCCp70JORyVfdSMNJegNs2lZNxI03BEs2SDH8h6z3WormwCdk82biEw-6EZF4yXtJiW-OIaEF3e6YvZ4hwnwwwQqEzVAARty7NZ5-xDxg5xbZfnMFgqD8neWy2ELkeT0ag4qxjJRprobwYh0fSbK23vXdwhKwBm7uHvKBr_yj7M2JJkVKGcgbqx5iiSfeFelp7E9YAjm5FGY4bbQiSe0aVqVQ5EAQzQlaznQEJ_aMns_zfnMRaPUNpYyZBACsOz32HFV6U4T8agRXreMrKnqi7DIXKOdLvamQsf1w61cxRI-oUHHo0mpeRm6vmxo84qZbFKNtX5KZ2XyZehHqkKpvYKufbefqHEf5N7ozJT97a53YkpCJbvafsLRBrYPL0yn2Do4vB24j-aOtDDsyCYnp_ji-OCXazmhAu_PEgrL1JIGnQk_guB3I1YyoREUATyFqdBqZarMMoUUCxB1RKmW_Q-GpscN1qce2wrDQP3dHOIhrenkf5AJy4bFB7CBWusFHRZL8AoXp9bZnW5qkYn0jLW32RBW6lg-Vg90Jfio-2-Lzinn8VLpMNwZctZ3EEbJGB2ZNsNE8eqLYnX6a7nN912iBkdQbEkO9t4XlSlZqLehu0T3Gw6NvRHPZtPe6quI3aOyUkCyLXlt-LcR48hSB3Vk8t8AiDZg); Jul/Aug 2019 (3 pgs.)
  + [Security Issues App Developers Need To Deal With While Developing A](https://www.w2ssolutions.com/blog/security-issues-to-consider-while-developing-mobile-app/) [Mobile App](https://www.w2ssolutions.com/blog/security-issues-to-consider-while-developing-mobile-app/), W2S Solutions Blog, 01/24/20 (8 pgs.)
  + Cybersecurity of Hospitals: discussing the challenges and working towards mitigating the risks, BMC Medical Informatics and Decision Making, 07/03/20 (11 pgs.)

# Week 7

* Digital healthcare
  + Understanding digital health’s regulatory maze
  + Major applications: wellness, monitoring & therapeutics
  + AI Standard Setting and Regulation
    - AI, ethics, explainability, and transparency

## Assignment:

* Case: Is ‘Big Tech’ Disrupting the Healthcare Ecosystem

Readings:

* + [A Review of Biomedical Devices: Classification, Regulatory Guidelines,](https://rdcu.be/dPRLP)
  + [Human Factors, Software as a Medical Device, and Cybersecurity](https://rdcu.be/dPRLP), Biomedical Materials and Devices, Aug 2023 (26 pgs.)
  + [Congress Must Update FDA Regulations for Medical AI](https://jamanetwork.com/journals/jama-health-forum/fullarticle/2821274), JAMA Forum July 2024 (3 pgs.)
  + [Your guide to how policymakers are regulating AI in healthcare](https://secondopinion.media/p/guide-policymakers-regulating-ai-healthcare), Second Opinion July 2024 (8 pgs.)
  + [Microsoft Responsible AI Transparency Report](https://query.prod.cms.rt.microsoft.com/cms/api/am/binary/RW1l5BO), p. 1-15 (16 pgs.)
  + [FDA’s Streamlined Health App Approval: Better for Patients or Companies?](https://psychiatryonline.org/doi/full/10.1176/appi.pn.2019.1a3)

[Psychiatric News](https://psychiatryonline.org/doi/full/10.1176/appi.pn.2019.1a3), 01/29/19 (3 pgs.)

* + [Confronting the AI Governance Challenge](https://www.mwe.com/pdf/confronting-the-ai-governance-challenge/), McDermott Will & Emery, 08/12/21 (3 pgs.)

## Academic Integrity

Academic integrity is a vital component of Wagner and NYU. All students enrolled in this class are required to read and abide by [Wagner’s Academic Code](https://wagner.nyu.edu/portal/students/policies/code). All Wagner students have already read and signed the [Wagner Academic Oath](https://wagner.nyu.edu/portal/students/policies/academic-oath). Plagiarism of any form will not be tolerated and students in this class are expected to report violations to me. If any student in this class is unsure about what is expected of you and how to abide by the academic code, you should consult with me.

**Artificial Intelligence and Generative AI**

**In this class, I expect you to use AI tools to help you generate your work, because I want you to understand their strengths and weaknesses**.

You may use any tool, within these limits:

1. You develop your problem statement on your own — no AI.
2. You understand that you are responsible for understanding everything you submit. You need to identify and fix any weaknesses or errors in AI output.
3. **You must thoroughly describe your use of AI in your documentation, the same way you document the rest of your analysis and cite any sources. You are fully responsible for the quality and content of the assignments you submit. AI cannot craft a data story of the complexity and originality required for this class, so it cannot and should not replace your own critical thinking required to produce work in this course.**

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## Henry and Lucy Moses Center for Students with Disabilities at NYU

Academic accommodations are available for students with disabilities. Please visit the [Moses](https://www.nyu.edu/students/communities-and-groups/students-with-disabilities.html) [Center for Students with Disabilities (CSD) website](https://www.nyu.edu/students/communities-and-groups/students-with-disabilities.html) and click on the Reasonable Accommodations and How to Register tab or call or email CSD at (212-998-4980 or [mosescsd@nyu.edu](mailto:mosescsd@nyu.edu)) for information. Students who are requesting academic accommodations are strongly advised to reach out to the Moses Center as early as possible in the semester for assistance.

## NYU’s Calendar Policy on Religious Holidays

[NYU’s Calendar Policy on Religious Holidays](https://www.nyu.edu/about/policies-guidelines-compliance/policies-and-guidelines/university-calendar-policy-on-religious-holidays.html) states that members of any religious group may, without penalty, absent themselves from classes when required in compliance with their religious obligations. Please notify me in advance of religious holidays that might coincide with exams to schedule mutually acceptable alternatives.