



HCMG853: Management & Strategy in Medical Devices & Technology

Fall 2021, 1.0 CU, Wednesdays 3:30-6:30 pm

Faculty

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Lecturer

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Teaching Assistants

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COURSE OVERVIEW

Successful medical devices involve creative and innovative thinking, clinical expertise, and engineering know-how that endures intense regulatory and reimbursement scrutiny. This course provides a foundation for understanding the nuances of the medical device industry. It covers topics ranging from device design and discovery, regulatory issues, entrepreneurship, marketing, reimbursement, management, and strategy. The course is intended primarily for MBA students, but it will be open to medical and engineering students as well as to hospital house staff. Due to space constraints, we do not permit auditing the class—students must enroll and fully participate.

COURSE REQUIREMENTS

Class **attendance** is mandatory. Students are allowed one unpenalized absence during the semester. Job interviews are not an excused absence. 10%

Contribution to class discussion is critical. The class is a discussion among student with a variety of relevant backgrounds, led by the instructors and guests with expertise in the device sector. Students are expected to come prepared and participate. 10%

A response to each class period's **Canvas poll** is due by 3pm the day of the class. There is no poll for the 1st class or the final student presentation classes. Students are allowed to skip one poll during the semester. 10%

Short presentation (approx. 15 min) on a device topic. This could be a report/analyse on work experiences, new technologies, strategic issues or important policies. The presentation will be made on the last two weeks of class. This can be an individual or group assignment, but groups must be different than midterm and final groups. 20%

Midterm Case Write-up. This is a group assignment. Due Friday, Oct 16, 6pm. 25%

Final Case Write-up. Also a group assignment. Due on Friday, Dec 11, 6pm. 25%

COURSE ETIQUETTE

Many outside speakers work for publicly traded companies or government agencies. To allow them to speak freely in the classroom setting, please do not post any comments on social media, record, or in any way share course content with anyone outside of this class. Any violation of this policy will result in serious repercussions.

READINGS

This class will afford students the unique opportunity to have in-depth discussions in class and to interact directly with industry leaders. In order to optimize the use of discussion time, for many classes there will be readings from the assigned textbook. It is expected that all readings will be done prior to the pertinent class and that students will arrive able to discuss the topic in an informed manner. Additional readings will often be added to in advance of particular classes. Except for the textbook readings and case studies, all readings will be posted on Canvas.

Required Text

Zenios, S., Makower, J., and Yock, P. (2015) *Biodesign*, 2nd edition, Cambridge Univ. Press.

CLASS SCHEDULE

Week 1 – September 1

- Welcome and Introduction to Medical Devices – Alon Bergman, PhD (Wharton)
- Entrepreneurship and Devices - Jeffrey Solomon, MD, MBA (Wharton and Infiniti Medical)

Readings: *Biodesign*, Chapters 1, 2

Week 2 – September 8

- FDA – Pre-/Post- Market Regulation – Dina Justice (Senior Director of Regulatory Affairs, Terumo) www.linkedin.com/in/dina-justice-1a45982

Readings: *Biodesign* 4.2, 5.4

Week 3 – September 15

- Coding and Reimbursement - Matt Hawkins , MD (Director, Pediatric Vascular Interventional Radiology, Children's Healthcare of Atlanta) www.linkedin.com/in/matt-hawkins-md-93b6b737
- Hospital Purchasing - Scott Trerotola, MD (Associate Chair and Chief, Interventional Radiology, Penn Medicine) www.med.upenn.edu/apps/faculty/index.php/g5165284/p15252

Readings: *Biodesign* 4.3, 5.6, 5.7, 5.8 (useful for midterm);

Week 4 – September 22

- *Heartport, Inc.* Case Study – Alon
- The Cardiac Catheterization Lab: a Hub for Innovation - Robert H. Li, MD (Co-Director, Transcatheter Aortic Valve Replacement Program, Penn Medicine) www.linkedin.com/in/li-robert-71a33242/

Readings: *Heartport, Inc.* case; *Biodesign* 5.2, 5.3, 5.5

Week 5 – September 29

- Future of Medicine in the Digital Age - Susan Dentzer (Senior Policy Fellow, Robert J. Margolis Center for Health Policy, Duke University) www.linkedin.com/in/susandentzer/
- Emerging Technology Data Use and Machine Learning – Chris Petelle (Associate Vice President and Assistant General Counsel, Humana) <https://www.linkedin.com/in/chris-petelle-a8a1991a/>

Readings: *Biodesign* 3.1, 3.2, 4.5, 4.6;

Week 6 – October 6

- Venture Capital and the Device Sector – Ali Behbahani, MD, MBA (Partner, NEA) <https://www.linkedin.com/in/ali-behbahani-3bb3591>
- Public Markets Perspective – Chris Pasquale (Senior Medical Technology Analyst, Guggenheim Partners) <https://www.guggenheimpartners.com/firm/news/guggenheim-securities-hires-chris-pasquale-to-add>

Readings: *Biodesign* 4.1, 4.4, 5.1, 5.9, 6.3;

Week 7 – October 13 (Class not required for MBA students)

- Digital Health, Venture Capital Perspective –Gurdane Bhutani (Co-founder and Managing Partner, MBX Capital) <https://www.linkedin.com/in/gurdanebhutani/>
- Consumer Wearables and Analytics – Sean Bruich (VP, Nike Membership and Consumer Data Science, Analytics, & Insights, Nike) www.linkedin.com/in/seanbruich

Readings: See *Canvas*

MIDTERM EXAMS DUE! 6PM, October 15

Week 8 – October 20 (Class not required for MBA students)

- Leveraging Intellectual Property for Strategic Advantage - Karun Naga (Partner, The Foundry) <https://www.linkedin.com/in/karunnaga/>
- Incubate to IPO: The Transition from Survive to Thrive in Medtech - Lucas Buchanan, MBA (CFO, Silk Road Medical) www.linkedin.com/in/lucas-buchanan-34b1995/

Readings: See *Canvas*

Week 9 – October 27

- Clinical Perspective on Spine/Neuro Devices - Anand Veeravagu, MD (Assistant Professor of Neurosurgery, Stanford University School of Medicine) <https://www.linkedin.com/in/anand-veeravagu-8930736/>
- "The Price We Pay" - Marty Makary, MD (Chief, Islet Transplant Surgery, Professor of Surgery, Johns Hopkins University) https://en.wikipedia.org/wiki/Marty_Makary

Readings: Please listen to the following podcast: <https://freakonomics.com/podcast/healthcare-costs/>

Week 10 – November 3

- Zimmer: The Gender-specific Knee Case Study – Alon
- Clinical Perspective on Orthopedic Devices - Doug Dirschl, MD (Professor and Chairman, University of Chicago School of Medicine) <https://www.linkedin.com/in/douglas-dirschl-036b4a14a/>

Readings: *Zimmer: The Gender-specific Knee case*

Week 11 – November 10

- Industrial Consolidators and Ortho - Matt Trerotola (Chief Executive Officer, Colfax Corporation) <https://www.linkedin.com/in/matt-trerotola-a64930187/>
- The Future of Medical Care –Atul Gupta, MD (Chief Medical Officer, Philips Image Guided Therapy) <https://www.linkedin.com/in/atulguptamd/>

Readings: See *Canvas*

Week 12 – November 17

- The Future of Device Regulation – Jeff Shuren, MD (Director CDRH, FDA) and Jack Lasersohn (General Partner, Vertical Group)
<https://www.fda.gov/about-fda/fda-organization/jeffrey-shuren>
<http://www.vertical-group.com/meet-the-partners.html>

Readings: See *Canvas*

Thanksgiving – no class

Week 13 – December 1 Student Presentations!

Week 14 – December 8 Student Presentations!

FINAL EXAMS DUE! 6PM, December 10