Medical Device Design – 2.75, 2.750, 6.4861, 6.4860, HST.552 (joint) – Spring 2025 Syllabus

Units	3 – 3 – 6
Prerequisites	One of the following 2.007, 2.008, 6.2040, 6.2050, 6.2060, 22.071 or instructor permission.
Updated	2 February 2025

Course Description

Provides an intense project-based learning experience around the design of medical devices with foci ranging from mechanical to electromechanical to electronics. Projects motivated by real-world clinical challenges provided by sponsors and clinicians who also help mentor teams. Covers the design process, project management, and fundamentals of mechanical and electrical circuit and sensor design. Students work in small teams to execute a substantial term project, with emphasis placed upon developing creative designs — via a deterministic design process — that are developed and optimized using analytical techniques. Includes mandatory lab. Instruction and practice in written and oral communication provided. Students taking graduate version complete additional assignments.

Up to date details and answers to questions that you might not thought of are available on the Information for Students page.

Website	meddevdesign.mit.edu
Lecture	Monday & Wednesday 13:00 – 14:30 EST The classroom is also booked 12:30 – 13:00 & 14:30 – 15:00 for teams to meet
Location	Room 3-270

Schedule and details may change over the course of the semester for operational reasons.
Canvas will always provide the most current information.

Listeners	Listeners cannot be assigned to project teams, but they are welcomed in lectures, with instructor permission.

Teaching Staff

MechE Instructor	MechE Instructor	MechE Instructor	EE Instructor	Comm. Instructor
Prof. Alex Slocum Room: 3-445 slocum@mit.edu	Dr. Nevan Hanumara Room: 3-470 Phone: 617-258-8541 hanumara@mit.edu	Prof. Gio Traverso Room: 3-340 Phone: 617-253-5726 cgt20@mit.edu	Anthony Pennes Room: 38-575/38-501 Phone: 845-219-6691 ampennes@mit.edu	Dave Custer Room: 24-611B custer@mit.edu
Comm. Instructor	**Course MD**	**Teaching Assistant**	**Teaching Assistant**	**Course Administrator**
Dr. Elena Kalodner-Martin Room: E18-240A kalodner@mit.edu	Dr. Jay Connor Mt. Auburn Hospital jcmdhandsurg@comcast.net	Irma Ceco Graduate Student Mechanical Engineering iceco@mit.edu	Young Lee Graduate Student EECS youngyjl@mit.edu	Kaila House Room: 3-461 kmhouse@mit.edu

Digital Assets

Canvas	web.mit.edu/canvas will be used for syllabus, lab materials, quizzes, surveys and class announcements
Staff e-mail	2.75-staff@mit.edu - Contacts the course teaching staff
Slack	We will create an MIT Slack channel for each team and invite members to facilitate rapid communication
Team e-mails	Teams are additionally recommended to create their own Moira e-mail lists, with/without their mentors
Wiki	The Wiki serves as long term course documentation, weekly updates and archival materials post here.
AI	Students are welcome to explore using AI responsibly. See Artificial Intelligence (AI) Policy.

Expectations

This is an advanced design course for students who want to prepare for a technology-focused career. We aim specifically to prepare you for a job interview and/or doctoral qualifying exams. Each student is expected to demonstrate application of the pre-requisites (in mechanical or electrical engineering or mature application of MIT-level freshman physics and math) to *appropriate analysis* to engineer concepts then ultimately build, test and compare the results to those predicted, to evaluate what worked/ did not work. This closing of the *design engineering loop* is critical to developing your intuition and achieving course learning objectives. Work in this course has helped many students find excellent industry jobs, successfully apply to graduate schools, become clinicians and even launch ventures and our goal is your success, in this course, professionally and life!

Lectures

The semester is split into two halves: In the first, we cover fundamental, applied topics in mechanical and electrical engineering and the engineering design process. And in the second, we transition to focus on healthcare industry-specific topics and feature invited guest speakers and case studies. Consult the Schedule for details.

Laptops

Laptops are strongly discouraged from being open during lectures: Bring your notebook or tablet, but turn off internet connection so your brain does not get sucked into the social media vortex. Feel free to let mind wander in your *design notebook* (yes, paper and pen or pencil!) if the lecture is not engaging … you will find your neurons will pick up a lot from the lecture and use the info on whatever else you may be thinking about … trust us, run the experiment!

Quizzes (but no P-Sets)

There will be frequent in-class quizzes / mini-assignments at the beginning / during lectures, but no formal P-Sets. Some are based on pre-readings or previous lectures and others will be conducted as real-time exercises. These complement the lectures, as well as provide important feedback to students and instructors alike. There are no makeup quizzes; however, we will drop the two lowest quizzes. See Absences & Support.

Labs

During the first half of the semester there will be three lab assignments:

1. Design, build, and test a kinematic coupling (KC) which demonstrates the principles of exact constraint design, important for any mechanical device. This will be provided as a take-home kit. This lab is an embodiment of what is meant by "deterministic design."
2. Design, build, and test a simple, non-invasive electrocardiogram (ECG) which uses electrodes and circuitry to view and report heart rate. This will be conducted in the EECS Lab with safety training required and scheduled help sessions.
3. Syringe pump lab, comprising an individual at-home preparation assignment, followed by in-class team build sessions.

The labs' objective is to familiarize students with concepts from both mechanical and electrical domains, foster the hands-on skills needed for R&D and work in a cross disciplinary team. All three labs can become part of your personal portfolio!

Team Term Project

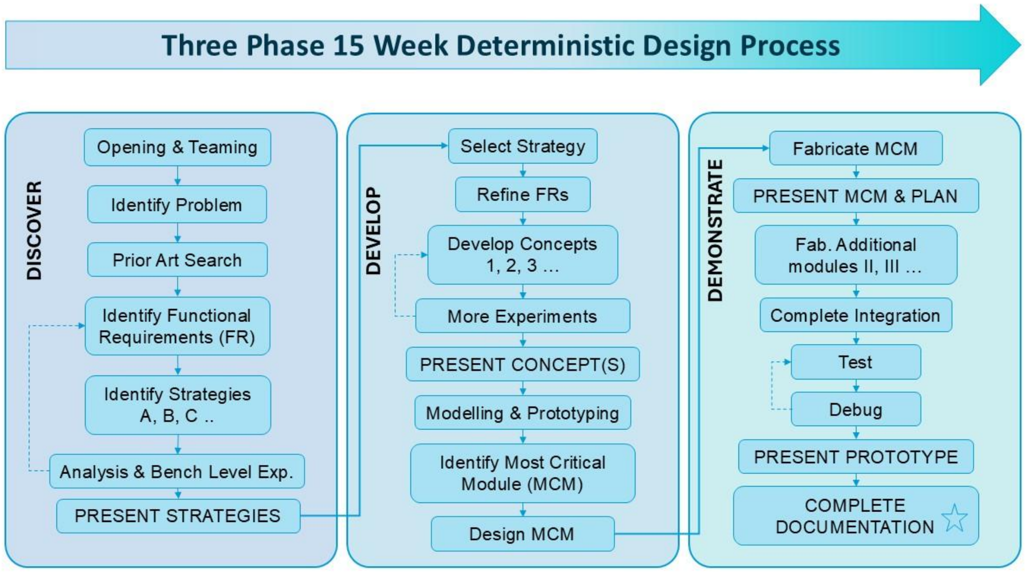
Students will work in small 3 – 6 person teams (depending upon the project) to execute a substantial, health-focused project, which spans the entire term. Project options will be presented by clinicians and companies at the beginning of term. You will be asked to *individually* rank your top project preferences, considering where your interests and skills can contribute the most. Teams will be formed by the staff based on preference and student background. Given the variety of projects and breath of students' interests and expertise, there have been no past difficulties in satisfying everyone.

Please understand that, given the project-clinician/proposer relationship, small teams and aggressive schedule, signing up for a project constitutes an implicit agreement to complete the class.

Likewise, project proposers commit to engaging with you on a regular basis and being a part of your team!

Together, we will follow a deterministic design process, which fosters creativity, is guided by analysis and experimentation, fosters peer-review and eschews hope-based design to rapidly and efficiently develop a proof-of-concept prototype solution. The process is roughly broken up into thirds:

1. <u>Discover</u> – Problem presentation by client, team formation, detailed problem understanding and appropriate analysis, investigation of prior art, definition of functional requirements and exploration of possible solution *strategies* and preliminary *concepts*
2. <u>Develop</u> – With a specific *strategy* selected, *concepts* are further explored until a *final concept* is identified to be developed, analyzed and tested. The design is divided into modules and initial attention focused on the *most critical module*.
3. <u>Demonstrate</u> – The entire system is fabricated, integrated and tested. Proper documentation is an important, oft shortchanged, step that begins the *design history file that documents the design's development*, essential for any quality product (ISO 9000) and especially for medical products (FDA and ISO 13485).



Three-phase, 15-week deterministic design process

Negative data, which occurs often in the world of R&D, is an acceptable outcome, provided the team has followed the deterministic design process, reflects on unexpected results and describes what could be improved if the project were continued.

Weekly Mentor Meetings

Each team will be assigned three course staff as mentors who will meet with the team weekly. During mentor meetings we will review progress, brainstorm/solve project design problems, identify further needed resources, set tasks and milestones for the coming week and track individual and team progress. We aim to help you maintain a fair pace, commensurate with the course's 12 credits, and spread the workload evenly across the semester and among team members.

In order to maximize productivity and minimize frustration, it is critical (and good professional practice) for each team to meet before the mentor meeting, conduct a *peer review* of their ideas and prepare an agenda that addresses three key questions:

1. What did you do last week?
2. What will you do this coming week?
3. What resources do you need?

Bottom line, the better prepared a team is, the more the mentors can help you achieve a successful and satisfying conclusion!

Each team member is required to maintain individual notes and teams must also take weekly notes, see *Documentation*.

Constructive Feedback: Engineering safe, reliable products requires honesty. Therefore, we will help you learn to give and receive constructive feedback, including hard criticism, without being offensive / offended. One over sad equals happy! 1/:(= :)

Mid-Point Check

A mid-point check will be conducted by the course staff to assess each team's trajectory. By this point, each team should have a credible plan, i.e. a concept selected, an overall system diagram, showing modules, and a metric for testing and evaluation. This will be scored from 0 (no plan) – 5 (full plan). The purpose of the check is to identify teams that are on track and those that need to accelerate to succeed.

Individual Project Contribution

This is an engineering class with high standards, where each student is expected to contribute technically to the project and be able to describe and document their specific contributions to the project and technical sections of the collective paper.

There is no individual "credit" for being a manager and organizer; those functions are expected to be shared by all equitably.

Your notebook will serve as the ongoing documentation of your "specific contributions" throughout the semester. Just as in a real-world job performance review (or PhD defense), individuals will be evaluated on their contribution to the overall project by submitting design notebooks (or a subset thereof) both at mid-point and upon course completion for review. PDFs are acceptable.

Grading

Grading is based on MIT's definitions, where:

A	Exceptionally good performance, demonstrating a superior understanding of the subject matter, a foundation of extensive knowledge, and a skillful use of concepts and/or materials.
B	Good performance, demonstrating capacity to use the appropriate concepts, a good understanding of the subject matter, and an ability to handle the problems and materials encountered in the subject.
C	Adequate performance, demonstrating an adequate understanding of the subject matter, an ability to handle relatively simple problems, and adequate preparation for moving on to more advanced work in the field.

http://catalog.mit.edu/mit/procedures/academic-performance-grades/#gradestext

Term Project – Team Grade Execution of the design process Meeting scheduled milestones Efficient use of time and $ Quality of design & execution (details & execution)	25%
Mid-Point Check	5%
Quizzes	15%
Individual KC, EKG and Syringe Pump labs	15%
Individual Project Contribution Weekly contributions (monitored via mentor meetings) Participation in class presentation Q&A End of term Individual Contribution assessment	20%
Formal Communications Team Presentations and individual contributions to them Final Paper & Deliverables	20%
Total:	**100%**

Remember, a grade is not nearly as important as learning a structured design process, developing a prototype, and documenting your contribution in bringing to life.

Post-semester should there be any grade concerns, students must provide their full design notebook for review, be prepared to discuss any of the materials covered in the class and accept that their grade may go up or down.

Teamwork & Peer Evaluations

Teamwork is central to functioning of this class and any modern engineering endeavor and it is expected that students will work together in a *safe, professional, and collegial manner* as defined in MIT's policies and procedures, especially 9.0 Relations and Responsibilities Within the MIT Community.

During the first weeks of teamwork, please identify any perceived problems with your team's dynamics promptly and bring them to the attention of your team members and/or the course staff, who will help resolve issues. This is important in the professional world where there are no "safe spaces," and issues must be addressed politely and proactively. We can help make 1/:(= :)

Just before mid-semester, an anonymous peer review will be conducted using the CATME tool, developed at Purdue. The results will be reviewed by the course staff, who will intervene as needed to help improve team performance. At the end of the course, team members will again review each other via CATME and the combined ratings can be used to adjust individual grades up by up to a full letter. To be clear, the focus is on professional performance, not popularity.

Prototyping & Budget

Each team will have a budget of about $2,000 (exclusive of MIT overhead) to develop, prototype, and test their solution. Legitimate expenses include materials (components), services (such as machining), and local travel to collaborators, etc., but not food.

Purchases require pre-approval by your mentor or other course teaching staff, whose goal is to guide teams in an *efficient* use of their budgets. Always prototype with a plan and avoid off-the-cuff, i.e. buying stuff randomly. Consider the tradeoffs between the flexibility of fabricating in-house, your time, and using outside professional services. Compare pricing and look at lead times, even domestic suppliers can have surprising lead times, so planning is essential. The cheapest vendor is not always the best. We have many contacts who are accommodating to the needs of prototype projects, and we are happy to have new suggestions. We maintain McMaster, Digi Key and Amazon accounts that must be used to place orders from these vendors.

The course Administrator will oversee team's accounts and purchasing. Each team must appoint a single person to coordinate with the Administrator and track your budget. No paperwork, no grade!

If you buy something locally you need to download two MIT tax free forms (ST-2, ST-5), since you can't be reimbursed for sales tax. All receipts must be turned in promptly to comply with MIT audit requirements.

Fabrication Facilities

Since each project is different, course staff will work individually with teams to identify and obtain the necessary resources.

If there are any questions / doubts regarding fabrication or safety, ask the course staff immediately.

Medical Device Lab (3-072)

> Light fabrication and assembly space. Once the projects are underway, this will be accessible to teams 10 AM – 6 PM via card access. Additional hours can be arranged with the course staff. Teams will be provided with bench space and bins. As in industry, teams are responsible for tidying their workspace and returning tools and equipment where they belong daily.
>
> *Safety training is required before you may use the space.*
> Lab Manager – Nevan Hanumara – hanumara@mit.edu

EECS Lab (38-501)

> For electronics-focused projects, bench space, instruments, tools, proto boards and lockers available.
> Typical open hours M-F 9 AM -11:45 PM and Sunday 1 PM - 11:45 PM.
>
> *Safety training is required before you may use the space.*
> Lab Manger – Anthony Pennes ampennes@mit.edu

Other Spaces

Teams are welcome to use any other safe lab / fabrication facilities that they have access to and permission to use. Teams are responsible for keeping all workspaces clear and returning equipment to the proper storage to avoid access revocation.

Mobius - Locate and access some of the campus' 45 major maker spaces.

Hobby Shop (N51) – Shop provides woodworking and metalworking tools and a wealth of expertise and advice.
Contact Hayami Arakawa, hayami@mit.edu. Membership required, which 2.75 may cover for the spring semester.

Metropolis (6C-006B) – General fabrication, 3D printers, laser cutter, electronics bench, wood working, sewing machines, table saw, chop saw, small CNC bed router, router table, micro-mill CNC (PC board milling). Makerspace use requires orientation & tool-specific training/check-off. Calendar/hours

The Deep (37-072) – (Metal milling/lathe, SLA 3D printers, water jet, mold making. Requires orientation & tool-specific training/check-off. Calendar/hours

Edgerton Center Student Shop (6C-006) – Open to all MIT students, safety and machine operation training required.

MakerWorks – LMP (35-122) – Open to any student in a MechE class with required safety training. (see Emma Rutherford emmakr@mit.edu)

QuickRoom – For spur of the moment meeting locations.

Huang-Hobbs BioMaker Space (26-035) – E-mail space for access information.

Projects requiring cell / tissue / BL2 work should coordinate with the instructors to access approved spaces.

Note: BeaverWorks MUST not be used for course 2.75 projects due to IP issues: If you work in BeaverWorks, MIT LL owns your stuff!

Documentation

Documentation is required in the medical device industry, specifically a *design history file* and *design controls*, for regulatory approval. Read more about this courtesy of the FDA. It is also essential for establishing inventorship, building an IP portfolio and launching a successful company.

Notebooks - Each student is expected to maintain a paper or digital design notebook with sketches, calculations, and pictures that document their individual contributions, late night ideas and general project notes. These are often reviewed during mentor meetings and factors into grading, so always bring your notebook to your weekly mentor meeting!

Wiki - The Wiki serves as a long-term project archive, independent of Google, Dropbox, etc., and each team must create and maintain a page. Teams are expected to update it with their progress weekly, key notes from internal, project proposer and mentor meetings, key design decisions, important milestones, decision matrices, images and papers. Copies of all presentations must be posted to the Wiki. This Wiki is viewable by everyone in the class - look at past projects for inspiration!

Intellectual Property

While our focus is on learning, Intellectual Property (IP) is sometimes generated in this course, and we follow the best practices and guidelines of the MIT Technology Licensing Office (TLO). It is essential that all team members keep bound, signed, dated and, ideally, witnessed notebooks documenting individual contributions. The definition of inventorship is strict, as we will discuss in lecture. Just being on the team or helping to build and test does not make a person an inventor.

IP created by students in an MIT course is generally considered the property of the students, however, teams may assign IP to MIT and if the project is related to and funded by a research grant MIT will claim ownership of any IP. Potential IP requires a disclosure to the TLO which will take appropriate course of action according to MIT policy. Teams may assign IP to MIT.

Note that patents are expensive and not an end in themselves; it is rare that one is simply bought by a company and turned into a commercial success. We will talk about the hard path of building a company in the second half of the course. Contributing to a meaningful project, publishing a peer reviewed article and/or showcasing your project in your portfolio is likely the most valuable outcome of the course, in terms of career progression.

Communication

Communication is an integral part of any engineering endeavor and instruction will be provided in class and mentor meetings over the duration of the semester. This is a CI-M subject for MechE and EECS and can be used in place of 2.009. Graduate students, of course, also benefit from practice and instruction with communication skills.

Students are required to communicate as professionals throughout the course formally and informally, including:

- Weekly mentor meetings
- In-class strategy presentation
- In-class concept presentation
- In-class *Most Critical Module* review
- Final presentation
- Final journal quality and format article & one-slide Executive Summary

In-class Design Reviews & Presentations

Three in-class design reviews will be conducted in the manner of professional progress presentations. These are opportunities to harness the hive and receive fantastic feedback from the entire class, students and instructors alike, therefore, teams should briefly introduce or remind the audience about their project, dive right into an update with the most critical details and then identify the current challenges. The better these are elucidated, the more useful the feedback will be, so be sure to leave ample time for discussion. Everyone present is expected to participate, asking questions and providing constructive feedback.

The Final Presentations should cover the project's development and an honest evaluation of the results. We ask teams to also touch upon the clinical, technical and regulatory/IP/business aspects of the project. We invite industry visitors to the final presentations, and their questions and feedback have been invaluable in helping papers become publications and ongoing projects.

By the end of the course, every student will be comfortable talking about their work and ready to give a professional presentation.

Final Paper

Each team must write a final paper which must follow the guidelines and format of an established journal or conference, e.g., the ASME Journal of Medical Devices, ASME Journal of Mechanical Design or IEEE Transactions on Biomedical Engineering. This requirement has enabled many past teams to rapidly and successfully submit their work for peer reviewed publication! For examples see Past Projects and the MIT Emergency Ventilator Project, which began as a 2010 project and an ASME publication.

Write early and write often. It is critical to write as-you-go to prevent last minute, binge writing. By the end of Week 6, every team will start writing their journal article. Ideally, this drafting over time permits genuine reflection on your accomplishment that, in turn, allows you to more effectively communicate the value you have added.

Artificial Intelligence (AI) Policy

AI-based tools are powerful, proliferating and have the potential to change how we work as engineers. However, the quality of their output varies greatly, with hallucinations and biases well documented. We encourage you to explore these new tools, with the caveat that, as an engineer, you are ultimately responsible for verifying the output of any tools that you use. Therefore, any use of AI to help discover references or potential solutions, must be disclosed, cited and assessed. Any AI tools used to help develop ideas must be fully disclosed. For example, document any prompts used in your “methods” section of the paper, reference the specific engine(s) used and evaluate and critique the output. Please engage with your mentors, who are as curious as you about the effective and ethical application of AI!

Recommended Texts

1. FUNdaMENTALS of Design, A.H. Slocum, posted to the course website. This is a MUST download and read (as well as the design spreadsheets). Carefully reading and comprehending this design knowledge will lead the greatly enhanced design happiness in the class and in your professional design career.
2. https://www.youtube.com/@FUNdaMENTALs42/videos are videos of the lecture topics.
3. Precision Machine Design, A.H. Slocum, for the serious deep thought machine designer. Copies are available from the course administrator at the author price.
4. *The Art of Electronics*, 3rd Edition, Horowitz and Hill, Cambridge University Press.
5. *Practical Electronics for Inventors*, 4th Edition, Paul Scherz & Simon Monk, McGraw Hill Education.
6. *The Science of Scientific Writing*

Absences & Support

We are committed to making this a positive learning experience for all of us, so please come and talk to us.

Absences

The professional world does not offer makeup or late assignments and, although an occasional absence or late assignment usually causes no issues, continued absences or missed deadlines will incur your colleagues’ wrath and boss’ unwanted scrutiny. Therefore, we have a “no makeups” and “no late work” policy and ask each of you to be professionals:

Communicate in advance if you know you must be absent or miss a deadline and work proactively on your project deliverables. For both planned and emergency absences, we automatically drop two quizzes and have some flexibility to reschedule labs. With proper planning, most problems can be avoided and, together, we will keep everyone moving forward with minimal disruption.

If you do have significant travel or personal needs that might impact your ability to work effectively in a fast-paced team, you should probably NOT be taking the course. Please discuss any concerns with a member of the course staff at the beginning of the semester.

Support

We understand that life happens. If you are dealing with a personal or medical issue impacting your ability to attend class or complete work, we will work with you to develop a recovery plan. Please reach out to the course staff proactively.

In parallel, contact Student Support Services (S^3 for undergrads) or GradSupport. They will verify your situation, discuss with you how to address the missed work and help interface with other instructors and advisors.

Disability and Access Services

MIT values an inclusive environment. If you need an accommodation, please communicate with the course staff *at the beginning of the semester* to allow sufficient time for implementation of any services/accommodations that you may need. If you have not yet been approved for accommodations, please contact Disability and Access Services at das-student@mit.edu for assistance.

Schedule

This may be modified as circumstances demand during the course of the term – always see Canvas for the latest schedule.

Spring 2025 - Medical Device Design				
Wk	**Date**	**Lecture / Lab**	**Speaker(s)**	**Weekly Project Milestones**
1	3 February	Welcome to Medical Device Design Medical Device Landscape Communications	Nevan Hanumara & Team Dave Custer	Read this syllabus fully Come prepared with questions Have a design notebook
	5 February	Project Presentations	Project Proposers	
2	10 February	Project Presentations Teams & Project Proposers	Project Proposers Dave Custer	Project preferences due midday February 12th Once team are announced: Schedule weekly team & mentor meetings Meet project proposers (meet 1st as a team) E-mail, Slack Start prior art search
	12 February	Fundamentals 1/2/3/8/9 KC Lab Released Teams Announced	Alex Slocum Nevan Hanumara	
3	17 February	PRESIDENTS' DAY – HOLIDAY		Team Wiki page populated Initial background research into papers, patents, products and even AI-powered search Mission Statement drafted Functional Requirements identified
	18 February (Monday sch.)	How to research Medical Devices from literature and patents to products Mission Statement Exercise Teaming	Nevan Hanumara Claire Berman, MIT Libraries Dave Custer	
	19 February	Practical Electronics – Op-Amps EKG Lab Released Journal articles & CATME overview Prototyping Resources	Anthony Pennes Anthony Pennes Dave Custer Nevan Hanumara	
4	24 February	Teams Strategy Design Review (presentation, all class feedback)	Teams	Before your presentation: FRDPARRC filled out Mission statement finalized Top Strategies & preliminary Concepts Key questions identified
	26 February	Teams Strategy Design Review (Presentation, all class feedback) EKG Lab Part 1 Due	Teams	
5	3 March	Fundamentals – 5/6/7/10 KC Lab Due & Show & Tell	Nevan Hanumara Alex Slocum	Background search completed and draft paper background section Top Strategy selected Peer evaluation #1 completed
	5 March	Practical Electronics – Inputs/Outputs	Anthony Pennes	

				Investigate Concepts for strategy Key analysis identified Draft paper – Introduction & Background
6	10 March	*Class meets in 38-545* Syringe Pump Pre-lab – due Syringe Pump Team Lab – build session	Anthony Everyone	Review build plan with mentors Conduct bench level experiments on most critical item(s)
	12 March	*Class meets 38-545* Syringe Pump Team Lab – build session EKG Lab Part 2 Due	Everyone	
7	17 March	Team Concept Presentations (Presentation, all class feedback)	Teams	Before your presentation: Top 3 Concepts identified Bench level experiment results Top Concept selected
	19 March	Team Concept Presentations (Presentation, all class feedback)	Teams	
8	24 March	SPRING BREAK		
	26 March	SPRING BREAK		
9	31 March	Human Factors in MedTech	Nevan Hanumara	Mid-Point Check FRDPARRC completed for Top Concept System architecture sketched Most critical module (MCM) identified
	2 April	Adventures in Gastroenterology	Gio Traverso	
10	7 April	Prepare to be Regulated	Rumi Young, BD	Schedule to completion reviewed with mentors Most critical module (MCM) designed Paper Design section begun Journal Identified – start formatting to fit
	9 April	MCM Design Review (presentation, all class feedback)	Teams	
11	14 April	PATRIOT'S DAY – HOLIDAY		MCM fabricated and tested Supporting modules designed Testing plan for review with mentors Draft paper - Design
	16 April	Ethics in Animal & Human Testing	Gio Traverso	
12	21 April	Preparing the final communication deliverables Healthcare Reimbursement	Dave Custer Charles Mathews, Clearview Healthcare	Fabrication & Integration Last chance to order any final parts! Testing plan ready Draft paper - Methods
	23 April	Building a MedTech Business	Aidan Petrie, NEMIC	
13	28 April	Medical Device Startup Case Studies	Josh Makower, Stanford Biodesign, MIT Alum	Commence Testing & Revise Draft paper - Results

	30 April	Basics of IP Using a template to create a provisional patent	TBD	
14	5 May	Disclosures due	TBD	Experiments completed Draft Paper Discussion & Conclusions Compile full paper draft Presentation draft complete
	7 May	Final Discussion & Mentors Available		
15	Monday 12 May	FINAL PRESENTATIONS – 10-250 6 - 7 PM Preparation & Dinner 7 - 9 PM Presentations	Teams	Written deliverables due this week Journal Paper One-slide Executive Summary Wiki updated with all archival materials Peer Evaluation #2 completed