Day 1

· A brief introduction to nano: surprisingly familiar yet ripe for discovery
· Nano science through the lens of new companies and entrepreneurship
· Nanoscience: new behaviors in physical systems
· Nanotechnology: applying insights across disciplines

· Survey of new companies, current applications and their supporting toolsets and established companies deploying new products in new markets.
· Tour of fabrication and metrology toolsets inside new MIT.nano facility
· Collaborative analysis

The focus theme of the course is Systems.
The Design and Use of: Products and Systems made via Nano Fabrication.
Instruments to Characterize phenomena at the nano scale:
- The use of Data from Sensors for Manufacturing and Decision Making
- The use of Data from Instruments for accelerated learning and modeling.

Day 1:	Intro and Context		
10:00 AM	**Nano Dictionary**	**What is nano intro / framing / terms**	
	Nano MAP for today	Outline for the course / day	
	Nano sensors, instruements, and data In …	**Textiles**	History, Why, Technology, Uses, Future
	(Established)	**Food**	""
		Oil and Gas	""
			""
	Manufacturing and Scaling….	see selected papers	Landscape of established mfg proceseses
	(Technologies)	reseach dive into SAM and roll-2-roll	New
	(Challenges)		
11:10 - 11:20	Break		
11:20 AM	**Nano and Sensors In Startups….**	**Hardware and Devices**	
		QD Vision	
		Kateeva	
		Universal Display Corporation	
	Analysis and Discussion	(what take to make a startup successful)	
12:30 - 1:00pm	Break		
1:00 PM	**Getting into MIT.nano** (fab)	**gown glove go….tools and examples**	
	Mud Cards		
2:10pm	Class Ends		
At home	**Nano at Home**	Watch Nano Explorations -	
		Review start-ups	

Day 2

· Case studies of startup companies, MIT-based research and/or commercialized applications in nanoscience and nanoengineering.
· Facilitated discussion
· Interactive discussions about participants' existing and planned use of nano
· Nano in systems - sensors, instruments,
· Intetgrated photonics
· Nano metrology

Day 2:	Topics		
11:00 AM	**Discussion**	Q&A. MUD Clean-up	
		Review of Home Exercises	
12:00 PM	**Nano in systems …**	**Light**	
		… Solar power	Technology, Uses, Future
		… Guiding -	
1:00 - 1:15	Break		
1:15 PM	**Intro**	**Nano / bio / medicine context**	
	Nano in systems -- sensors, instruments, data in	**Medical Sensors / Light**	Research Context, Results, Path to commercial
		… Integrated Photonics and Biosensors	
		… Nano Sensor Device Design and ML	
		Imaging - LUS	Research Context, Results, Path to commercial
		eNumage	
	Discussion	(foreshadowing on nanoparticle reporters)	
2:30 - 3:00 PM	Break		
3:00 PM	**Getting into MIT.nano, Tour** (metrology)	**Tools and Examples**	
	Twist and Shout	Why is our metrology so good. We control our world. Vibration analysis	
	Mud Cards		
4:15 PM	Class Ends		
At home (optional)	**Nano at Home**	Watch Nano Explorations -	
		Review start-ups	

	Day 3	

· The visualization and interaction side of data from nano metrology and sensors: managing, processing, and visualization
• Final Q&A and wrap-up: what next?"
· Nano in compute
· Nano in imaging

Day 3:	Topics	
10:00 AM	Discussion	Q&A. MUD Clean-up
		Review of Homework
11:00 AM	**Spin spin spin**	**NMR / MRI**
	Nano in Research…	**Compute:**
		(Computing Needs and Computing Platforms)_
		… miniaturization of traditional compute
		… Quantum computing
12:00 - 12:15 PM	Break	
12:15 PM	**Nano in Research…**	**Imaging**
		Imaging and Learning (and visualization)
12:45	**Getting into MIT.nano, Tour** **(immersion)**	**Tools and Examples**
1:30 - 2:00	Break	
2:00 PM	**Discussion Q&A and wrap-up: what's next**	
3:00 PM	**Closing and recognition to all**	
3:30 PM	Class Ends	