

CHEM-ENG 590E - Microfluidics and Microscale Analysis in Materials and Biology

Prof. Sarah Perry

Class Schedule

Week	Date	Topic	Reading Assignment	Comments, Deadlines
Course Introduction				
1	1/19	Syllabus, Literature & Design Assignments Scaling: micro- vs. macro-fluidics		
	1/21	Microfabrication Materials, Photolithography		Design Project Proposals
2	1/26	Microfabrication Soft Lithography	Rogers and Nuzzo, Materials Today, 2005. McDonald et al, Electrophoresis, 2000.	
	1/28	Device Design Adobe Illustrator - Bring Laptop		Homework Due Introduction to Microfluidics
	2/1	**Last day to add/drop with no record**		
3	2/2	Flow Control Laminar Flow and Mixing, Droplet Microfluidics	Kenis et al, Science, 1999. Stroock et al, Science 2002. Song et al, Angew Chem, 2003. Unger et al, Science, 2000.	
	2/4	Valving Strategies	Studer et al, J Appl Phys, 2004 Mohan et al, Sens Actuators B, 2011 Thorsen et al, Science, 2002	Homework Due Introduction to Adobe Illustrator
4	2/9	Paper Microfluidics	Martinez et al, PNAS, 2008. Carrilho et al, Anal Chem, 2009. Yetisen et al, Lab Chip, 2013.	
	2/11	Hands On Team time		Homework Due Microfluidic Mazes
5	2/16	**No Class - Monday Schedule**		
	2/18	Methods for Separation	TBA	Homework Due Outline of Team Presentation
6	2/23	Hands On Photolithography		
	2/25	Hands On Soft lithography		Homework Due Outline of Design Project Plan

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	2/29	** Last day to drop with DR - Grad Students**	
7	3/1	Team Presentation #1 Topic: TBA	TBA
	3/3	Team Presentation #2 Topic: TBA	Homework Due Preliminary Device Designs
8	3/8	Team Presentation #3 Topic: TBA	TBA
	3/10	Hands On Team time	Homework Due Device Designs
9	3/15		
	3/17	**Spring Break**	
10	3/22	Team Presentation #4 Topic: TBA	TBA
	3/24	Hands On Team time	Homework Due Design Project Update
11	3/29	Team Presentation #5 Topic: TBA	TBA
	3/31	Hands On Team time	Homework Due Preliminary Draft of Wiki Page Content
12	4/5	Team Presentation #6 Topic: TBA	TBA
	4/7	Hands On Team time	

Week	Date	Topic	Comments, Deadlines
13	4/12	Team Presentation #7 Topic: TBA	TBA
	4/14	Hands On Team time	Homework Due Final Draft of Wiki Page Content
14	4/19	Hands On Team time	
	4/21	Hands On Team time	
	4/22		**AIChE Regional Conference**
	4/23		
15	4/26	Design Project Presentations	
	4/28	**Reading Day**	Homework Due Individual Reflection Paper
16	TBA	Design Project Presentations	Homework Due Final Design Report