

NANO 703/703L – Fall 2016
Instrumentation & Characterization of Nanomaterials
Course Schedule

WEEK	DATE	LECTURE	READING
1	M-8/22	Introduction	TEM: Ch. 1-The TEM
	W-8/24	TEM: PART 1-BASICS	TEM: Ch. 2-Scattering & Diffraction
	F-8/26		
2	M-8/29		TEM: Ch. 3-Elastic Scattering
	W-8/31		TEM: Ch. 4 - Inelastic Scattering
	F-9/2		TEM: Ch. 5- Electron Sources
3	W-9/7		TEM: Ch. 6-Lenses, Apertures, & Resolution
	F-9/7		TEM: Ch. 8- Pumps & Holders
4	M-9/12		TEM: Ch. 9-The Instrument
	W-9/14		TEM: Ch. 11-Diffraction
	F-9/16	TEM: PART 2-DIFFRACTION	TEM: Ch. 12-Reciprocal Space
5	M-9/19		TEM: Ch. 13-Diffracted Beams
	W-9/21		TEM: Ch. 14-Dynamical Diffraction
	F-9/23		
6	M-9/26		TEM: Ch. 16- Diffraction from Crystals
	W-9/28		TEM: Ch. 17- Diffraction from Small Volumes
	F-9/30		
7	M-10/3		TEM: Ch. 18- Indexing Diffraction Patterns
	W-10/5		TEM: Ch. 19- Kikuchi Diffraction
	F-10/7		TEM: Ch. 20-Convergent Beam Diffraction
8	W-10/12		Review-Exam I
	F-10/14		TEM: Ch. 21-Using CBED
9	M-10/17	TEM: PART 3-IMAGING	TEM: Ch. 22-Amplitude Contrast
	W-10/19		TEM: Ch. 23-Phase Contrast
	F-10/21		TEM: Ch. 24-Thickness and Bending
10	M-10/24		TEM: Ch. 25-Planar Defects
	W-10/26		TEM: Ch. 26: Strain Fields
	F-10/28		
11	M-10/31		TEM: Ch. 28: High-Resolution Imaging
	W-11/2		TEM: Ch. 30: Image Simulation
	F-11/4		
13	M-11/7	TEM: PART 4-SPECTROMETRY	TEM: Ch. 32 - X-Ray Spectrometry
	W-11/9		TEM: Ch. 33 - X-Ray Spectra and Images
14	M-11/14	XRD: Properties of X-Rays	TEM: Ch. 34 - Quantitative X-Ray Analysis
	W-11/16		Review-Exam II
	F-11/18		Handouts
15	M-11/21		Handouts
16	M-11/28		
	W-11/30	Ellipsometry and Optics	Handouts
	F-12/2		
17	M-12/5	Conclusion	Review-Final

Exam I: W-10/12, 7:00-8:50 PM, EP 251A
Exam II: W-11/16, 7:00-8:50 PM, EP 251A
Final: W-12/14, 1:00 PM-2:50 PM, EP 251A

EXPERIMENT	LOCATION
TEM Magnification Calibration	EP 112
TEM Diffraction Calibration	EP 112
TEM Analysis of Nanoparticles	EP 112
TEM Analysis of Carbon Nanotubes	EP 112
TEM Sample Prep I-Ultramicrotomy	EP 211
TEM Sample Prep II-Polishing, Dimpling, Ion Milling	EP 240
Atomic Force Microscopy	MI 127
Raman Spectroscopy	MI 234
Optical Spectroscopy-Absorbance and Photoluminescence	EP 211
X-Ray Diffraction	MI 232
Scanning Electron Microscopy	MI 234
Ellipsometry	MI 127
Convergent Beam Electron Diffraction	EP 112
TEM Dark-Field Imaging	EP 112
Scanning TEM/Energy Dispersive X-ray Spectrometry	EP 112
Transmission Electron Tomography	EP 112
other	To Be Announced

Note: Experiment list is subject to change.