

Syllabus - Geoscience 777 - Fall 2016 - Version 9/5/2016

Week#	Week of	Topic/s	PPT#	Problem Set Assigned (due one week later)	Lab Exercise (week performed) (due one week later)
1	09/05/16	Introduction: What is 777? Electron-sample interactions	0 20		
2	09/12/16	Electron-optical Column Historical Background (optional)	30 10	Monte Carlo (CASINO 2.48)	Intro to S3400 SEM: column set up; SEI; BSE
3	09/19/16	EDS	40 111	EDS Simulation I (DTSA II)	Intro to NSS EDS; Deadtime, artifacts
4	09/26/16	Vacuum VP-SEM/ESEM Low Voltage SEM	31 35 36	EDS Simulation II (DTSA II)	SEM of complex material; EDS
5	10/03/16	Image Acquisition Advanced topics in SEM and EDS (including mapping)	110 120	EDS Simulation III (DTSA II)	VP-SEM operation; ESED vs BSED
6	10/10/16	EBSD CL	140 112	Image J exercise	SEM-EDS Lab Exam
7	10/17/16	WDS I: Spect, xtals, PHA	50	Spectro Xtals Exercise	Intro to PfE: Peaking, PHA, wavescans
8	10/24/16	WDS II: Interferences, pk shifts, bkg models, comparison EDS vs WDS	51	ID of peaks in WDS scan	Pulse Height Analysis
9	10/31/16	Standards Matrix correction	75 60	CalcZAF exercise	Analysis of unknown
10	11/07/16	Specimen Preparation Thin Films	130 100	Virtual WDS	Analysis of unknown
11	11/14/16	Light Elements Trace elements	90 80	GMR Film exercise	Trace element analysis
12	11/21/16	Particles Difficult materials: glass, calcite, etc	160 170	EDS-WDS comparison	Time Dependent Intensities
13	11/28/16	SIMS (WiscSIMS lecture and visit)			EPMA Lab Exam
14	12/05/16	XRF (Bruker Fitchburg Visit			Field Trip
15	12/12/16	Atom Probe (CAMECA Fitchburg visit)			Field Trip