Appendix A. A typical sequence of lab activities/experiments.

Date	Activities	Pages in lab manual	Data Sheet Pages	Assignment Given	Assignment Due	Quiz
Lab 1	No class					
Lab 2	lab safety; course design, notebook description, etc. assign unk group, photos, ubiquity exp. (demonstrate simple streak)	1-8, 27-29		(Individual) Research what you might expect to find in the environment your group has been assigned-sources, predictions		
Lab 3	Observe ubitquity results; observe colony morphology (ubiquity plates and controls), groups report of predictions; work on sampling protocol (get approved before leaving); give out materials needed for sampling	9-25, 30-37	391-394	(Group) Write up sampling protocol; individual report hypothesis/observation on ubiquity. Less than 1 page single-spaced	Research what you might expect to find in the environment your group has been assigned. Report as group.	#1 (1-37)
Lab 4	Collection and or inoculation of environmental samples; streak bacteria for isolated colonies; microscopy--prepared slides				Ubiquity report (Individual). Sampling protocol (discuss in lab)	
Lab 5	Demonstrate different inoculation techniques. Inoculate controls different ways (minimize number of samples): Agar slants, broth cultures - 2 per group -share the experiences. Take next step in isolating unknowns	63-71	429-430			#2 (pp 63-71, 77-85)
Lab 6	Staining and microscopy, negative and simple stain	77-85	435-438	Individual drawings, Report on isolation and staining of unknowns (oral, group)		
Lab 7	Gram stain - unknown and controls	86-90			Individual drawings, Report on isolation and staining of unknowns (oral, group)	#3 (pp 86-90, 95-99)
Lab 8	Gram staining continued, dichotomous key, Bergey's manual	95-99		Introduction to paper (Individual)		
Lab 9	Skills Test				Notebooks collected	
Lab 10	Lecture Exam					
Lab 11	Effect of temperature and pH on growth	49-52	411-416			#4 (pp 49-52, handout)
Lab 12	PCR - rDNA	Handout				
Lab 13	Oxygen requirements	42-48	403-410		Oral report on isolation and staining of unknowns	#5 (pp 42-48, 108-110, 118-119, 193-195)
Lab 14	Selective and differential media	108-110, 118-119, 193-195	453-454, 461-462, 519-520	Each group prepares 1 page report giving several possibilities for each unk ID with justification.	Introduction to paper (Individual)	

Lab 15	Biochemical and physiological tests			Materials and Methods, Results for paper (Individual)	Notebooks collected	#6 (pp 136-140, 177-180, 141-144, 196-197)
Lab 16	Biochemical and physiological tests	141-144, 196-197	477-480, 521-522			
Lab 17	Lecture Exam					
Lab 18	In-class discussion of progress with unknown ID				Group report on possible IDs for unknowns (written)	
Lab 19	Antibiotic sensitivity	242-244	559-560			#7 (pp 242-244, handout)
Lab 20	Explain growth curve and serial dilutions, give plates to count	230-232, Handout			Materials and Methods, Results for paper (Individual)	
Lab 21	Perform growth curve - 5-8 hr experiment	230-232, Handout		Dilution scheme and quantitation (Individual)		# 8
Lab 22	Discuss growth curve			Oral report on growth curve results (group)		
Lab 23	rRNA sequence analysis - BLAST			Posters and formal paper (group)		
Lab 24	Lecture Exam					
Lab 25	TBD					
Lab 26	TBD					
Lab 27	TBD				Paper (group), Notebooks (Individual)	
Lab 28	Poster Presentations					