

USPAS 2019 CRYOGENICS COURSE OUTLINE
T. Peterson & J. G. Weisend II

Lecture	Subject		Instructors
Monday			
1	Introduction – course goals, cryogenics in accelerators	1 hr	TP, JW
2	Properties of Cryogenic Fluids	¾ hr	JW
3	Behavior of normal cryogenic fluids	¾ hr	TP
4	Cryogenic Properties of Materials	1½ hr	JW
5	Introduction to thermodynamics for cryogenics	1 hr	TP
6	Refrigeration & Liquefaction	1 hr	JW
	Class Project introduction, form teams, startup discussions	½ hr	JW TP
	Total time	6½ hr	
Tuesday			
	Homework review	½ hr	
7	Thermal Insulation and Cryostat Basics	1 hr	JW
8	Cryogenic Considerations for Cryomodule Design	1 hr	TP
9	Magnet and RF Cavity Test Stand Design	1 hr	TP
10	Superconductivity, Superconducting RF & Superconducting Magnets	1½ hr	JW
11	Helium II	1 hr	JW
	Total time	6 hr	
Wednesday			
	Homework review	½ hr	
12	Cryogenic Distribution	½ hr	TP
13	Magnet Current Leads	½ hr	TP
14	Instrumentation	1 hr	JW
15	Superconducting Magnet Cryogenics and Engineering	1 hr	TP
16	Cryogenic Safety (including examples)	2 hrs	TP
	Project discussion	1/2 hr	JW, TP
	Total time	6 hr	
Thursday			
	Homework Review	½ hr	
17	Cryogenic Equipment 1	1/2 hr	JW
17b	Cryogenic Equipment 2	1 hr	TP
18	Sub-Kelvin Cooling	1 hr	JW
19	Cryocoolers	1 hr	JW
	In class work & discussion on project	2 hrs	JW, TP
	Total time	6 hr	
Friday			
	Class project Presentations	4 hrs	