

# ASTR 792 Fall 2023 Class Schedule

		Topics	Readings	Due
<b>W 1</b>		<b>No Class</b>		
8/22	T	No Class		
8/24	R	No Class		
<b>W2</b>		<b>Introduction I</b>		
8/29	T	Github and logistics		
8/31	R	The ISM	Draine 1.1-1.3	
<b>W3</b>		<b>Physics Fundamentals I</b>		
9/5	T	Radiative Transfer	Draine 7.1-7.4	
9/7	R	Radiation Fields & Thermal Plasma	Draine 10.1-10.2, 10.5-10.7, 12	
<b>W4</b>		<b>Physics Fundamentals II</b>		
9/12	T	Cross Sections and Rate Coefficients	Draine 2.1	<b>DP 1.1abd</b>
9/14	R	Temperature and Energy States	Draine 3.1-3.4	
<b>W5</b>		<b>Physics Fundamentals III</b>		
9/19	T	No Class		<b>DP 2.3 abc</b>
9/21	R	Detailed Balance	Draine 3.5-3.6	
<b>W6</b>		<b>Atomic and Molecular Structure I</b>		
9/26	T	Atoms and Ions	Draine ch 4, 6.7 (T&S ch 5)	<b>DP 1.3</b>
9/28	R	Diatomic & Linear Polyatomic Molecules	Draine 5.1, 31.3-31.6 (T&S ch 1,2)	
<b>W7</b>		<b>Atomic and Molecular Structure II</b>		
10/3	T	Symmetric & Asymmetric Top Molecules	Draine 5.2 (T&S ch 3,4)	<b>DP 8.2</b>
10/5	R	The ammonia molecule: $\text{NH}_3$	Draine 5.2.1 (T&S ch 12)	
<b>W8</b>		<b>Collisions and Spectral Lines</b>		

10/10	T	Collisional Excitation	Draine 6.1, 17.1-17.4	<b>DP 5.3abc</b>
10/12	R	Absorption Lines and Line Profiles	Draine 9.1-9.4, 9.8, 9.10, 6.2-6.6	
<b>W9</b>		<b>Radiative Trapping</b>		
10/17	T	No Class		
10/19	R	Radiative Trapping	Draine ch 19.1-19.3, 19.5	<b>DP 17.2</b>
<b>W10</b>		<b>Gas and Dust I</b>		
10/24	T	Collisional Processes	Draine 2.2-2.6	<b>DP 16.2</b>
10/26	R	Astrochemistry	Draine ch 14.6-14.7, 33	
<b>W11</b>		<b>Gas and Dust II</b>		
10/31	T	H <sub>2</sub>	9.9, 31.1-31.2	<b>DP 19.1</b>
11/2	R	Dust Properties, Extinction	Draine ch 21, 23.1	
<b>W12</b>		<b>Heating and Cooling I</b>		
11/7	T	Dust Heating & Cooling	Draine ch. 24	<b>DP 33.1abc</b>
11/9	R	HI Heating and Cooling	Draine ch 8, 30	
<b>W13</b>		<b>Ionized Gas</b>		
11/14	T	Ionization and Recombination	Draine 13.1, 13.4-13.5, 14.1-14.3	<b>DP 5.1a/c</b> <b>DP 1.1cefg</b>
11/16	R	HII Regions	Draine ch 15.1-15.3, 15.5	
<b>W14</b>		<b>Heating and Cooling II</b>		
11/21	T	Heating & Cooling of HII Regions	Draine 27.1, 27.3-27.5,	<b>DP 24.3</b>
11/23	R	No Class		
<b>W15</b>				
11/28		Nebular Diagnostics	Draine 18.1-18.3, 18.5, 18.7	<b>DP 15.10</b>
11/30		Interactions between Dust and Gas	Draine ch 25.7, 26.1-26.2	
<b>W16</b>				

12/5		Fluid Dynamics	Draine ch 35	<b>DP 27.1a</b>
12/7		Shocks & The Three-Phase ISM	Draine 36.1-36.3, 39	
<b>W17</b>		<b>FINALS</b>		
12/12	T	<b>7:30 AM - 10:00 AM Problem Fest</b>		