

Day	Deadline	Class topics (order is subject to change!)	Benson	Harkleroad
1/13		How we hear music: loudness, pitch, frequency, octave equivalence, beats	1.1-1.5; 1.8	pp. 1-10
1/15		Basic number theory: primes, Euclidean algorithm, gcd, lcm; additive rhythms		rest of Ch.2
1/20		Vibrating strings & overtones, spectrum, perfect intervals; equivalence relations	1.6, 1.7	
1/22		Fourier series	2.1-2.3	
1/27		Tuning systems I: Pythagorean vs. equal temperament; irrational numbers; cents		Chapter 3
1/29		Introducing differential equations	1.10, 1.11	
2/3		Plucked strings & the wave equation	3.1-3.3	
2/5		Bowed strings; woodwind instruments	3.4, 3.5	
2/10		Drums and Bessel functions	2.9, 2.10, 3.6	
2/12		Consonance & dissonance: physics vs. aesthetics	4.1-4.6	
2/17		Midterm 1 (up to musical instruments)		
2/19		Tuning systems II: just intonation; traditional harmony	5.1-5.11	
2/24		Tuning systems III: alternative & non-Western scales; continued fractions	6.1-6.3	
2/26		Digital music	7.1-7.3, 7.6, 8.7	
		Spring Break		
3/10		Symmetry in music		9.1 Chapter 4
3/12		Group Theory		9.3
3/17		More groups: permutations & ringing bells		9.4 Chapter 5
3/19		Serial composition		9.8
	project			
3/24	outlines due	Introducing probability theory		
3/26		Chance in composition		Chapter 6
3/31		1/f music		Chapter 7
4/2		Guest Lecture		
4/7		Midterm 2 (symmetry, probability)		
4/9		Mathematics & 20th century composers (Webern, Messiaen, Babbitt, Xenakis, ...)		
4/14		Guest Lecture		
4/16		How not to mix music & mathematics		Chapter 8
4/21		Guest Lecture		
4/23		Frontiers in music & mathematics		
May 2nd	projects due 10:30pm			