Required reading list. When a chapter is indicated, it refers to a chapter in the class textbook “Black holes and time warps: Einstein’s outrageous legacy” by Kip Thorne. For a given date (e.g., Feb 6), you are to have read the material before that class; an exception is for the Jan 30 class, where no report on that reading is needed as it was the first class.

1. Jan 30: Introduction, and ancient conceptions  
   http://en.wikipedia.org/wiki/Aristotelian_physics

2. Feb 6: The scientific revolution; Galileo and Kepler  
   http://www.answers.com/topic/scientific-revolution

3. Feb 13: Newton and the concept of mathematical modeling of physics  
   http://simple.wikipedia.org/wiki/Mathematical_model  
   http://en.wikipedia.org/wiki/Mathematical_model

4. Feb 20: Between Newton and Einstein  
   http://en.wikipedia.org/wiki/John_Michell and  
   http://en.wikipedia.org/wiki/Discovery_of_Neptune and  

5. Feb 27: Special relativity: the union of space and time  
   http://simple.wikipedia.org/wiki/Special_relativity  
   http://en.wikipedia.org/wiki/Special_relativity  
   http://en.wikipedia.org/wiki/Thought_experiment  
   Chapter 1

6. Mar 5: General relativity and its tests  
   http://en.wikipedia.org/wiki/Introduction_to_general_relativity  
   http://en.wikipedia.org/wiki/General_relativity  
   Chapter 2

7. Mar 12: Midterm; no extra reading

8. Mar 19: Spring break; no extra reading

9. Mar 26: Implications and rejection: black holes and the expanding universe  
   http://simple.wikipedia.org/wiki/Black_hole  
   http://cosmology.berkeley.edu/Education/BHfaq.html  
   Chapter 3
10. Apr 2: Do black holes exist? Observations of black holes; how can we rule out alternatives?
   http://en.wikipedia.org/wiki/White_dwarf and
   http://www.astro.umd.edu/~miller/nstar.html and
   Chapters 4, 5, and 6

11. Apr 9: The mathematical golden age: acceptance, proofs, and evaporation
    http://en.allexperts.com/e/n/no/no_hair_theorem.htm and
    http://en.wikipedia.org/wiki/Hawking_radiation and
    Chapters 7 and 12

12. Apr 16: The influence of black holes on their surroundings
    http://mcdonaldobservatory.org/news/releases/2009/0202.html and
    Chapters 8 and 9

13. Apr 23: Gravitational waves
    http://en.wikipedia.org/wiki/Gravitational_wave and
    Chapter 10

14. Apr 30: The far-out future: wormholes and time machines
    http://en.wikipedia.org/wiki/Wormhole and
    http://en.wikipedia.org/wiki/Time_travel and
    Chapters 13 and 14

15. May 7: Presentation of term projects; no extra reading

16. May 16, 1:30-3:30 PM: final exam; no extra reading