

University of Pittsburgh
HPS 2520: Newton Seminar (Spring Term 2002)

1. [Jan. 10] Introduction — McGuire and Goldstein
2. [Jan. 17] Kepler (I) — Goldstein
 1. B. R. Goldstein, "Historical Perspectives on Copernicus's Account of Precession", *Journal for the History of Astronomy*, 25 (1994), pp. 189–197.
 2. B. R. Goldstein and P. Barker, "The Role of Rothmann in the Dissolution of the Celestial Spheres", *British Journal for History of Science*, 28 (1995), pp. 385–403.
 3. P. Barker and B. R. Goldstein, "Realism and Instrumentalism in Sixteenth Century Astronomy: A Reappraisal", *Perspectives on Science*, 6 (1998), pp. 232–258.
 4. V. Thoren, "Tycho Brahe", in *Planetary Astronomy from the Renaissance to the rise of astrophysics: Tycho Brahe to Newton*, ed. by R. Taton and C. Wilson (Cambridge, 1989), pp. 3–21.
 5. B. Stephenson, *Kepler's Physical Astronomy* (Princeton, 1987), pp. 1–49.
3. [Jan 24] Kepler (II) — Goldstein
 1. J. Kepler, *Astronomia Nova*, trans. W. H. Donahue (Cambridge, 1992), Chapters 1, 4, 21 (only pp. 300–301), 33, 39, 40.
 2. P. Barker and B. R. Goldstein, "Distance and Velocity in Kepler's Astronomy", *Annals of Science*, 51 (1994), pp. 59–73.
 3. P. Barker and B. R. Goldstein, "Theological Foundations of Kepler's Astronomy", *Osiris*, 16 (2001), 88–113.
 4. V. Thoren, "Kepler's Second Law in England", *BJHS*, 7 (1974), pp. 243–258.
4. [Jan 31] Descartes: Laws, God and the mechanical world-picture. — McGuire
 1. *Principles of Philosophy In Philosophical Writings of Descartes*, Vol. 1 (Cambridge, 1989), trans. Cottingham, Stoothoff, & Murdoch, Part II, pp. 224–243.
 2. Daniel Garber, *Descartes' Metaphysical Physics* (University of Chicago, 1992), pp. 156–230.
 3. E.J. Aiton, *The Vortex Theory of Planetary Motions* (New York, 1972), Chapter 3, pp. 30–58.
5. [Feb 7] Early Newton — McGuire
 1. John Herivel, *The Background to Newton's Principia* (Oxford, 1965), pp. 128–143, 152–161, 236–245.
 2. J. A. Bennett, "Magnetical philosophy and astronomy from Wilkins to Hooke", in *Planetary Astronomy from the Renaissance to the rise of astrophysics: Tycho Brahe to Newton*, ed. by R. Taton and C. Wilson (Cambridge, 1989), pp. 222–230.

6. [Feb 14] *Principia*, Preliminaries and Book I, Defs. 1–8, Cor. 1, 3, 4; Laws. — McGuire
 1. D. Densmore, *Newton's Principia: The central Argument* (Santa Fe, 1995), pp. 3–16.
7. [Feb 21] *Principia*, Mathematical Background; Book I, lemmas 1, 2, 3, 4, 9, 10. — Goldstein
 1. Densmore, pp. xix–xl, 17–80.
 2. F. De Gandt, *Force and Geometry in Newton's Principia*, trans. C. Wilson (Princeton, 1995), pp. 3–57 (Preamble and the *De Motu* of 1684), 159–202 (mathematical methods).
8. [Feb 28] *Principia*, Book I, props. 1–10. — Goldstein
 1. Densmore, pp. 93–182.
9. [Mar 14] Book I, props. 11–13, 69, 71, 74, 75. — Goldstein
 1. Densmore, pp. 183–209, 317–330, 348–352, 359–381.
10. [Mar 21] Rules, Hypotheses, and phenomena — McGuire
Principia, Book III, Rules, I, II, III, IV; Phenomena I–VI.
 1. Alexandre Koyre, “Newton's ‘Regulae Philosophandi’”, *Newtonian Studies* (London, Chapman & Hall, 1965) pp. 261–272.
 2. A.I. Sabra, *Theories of Light from Descartes to Newton* (Olbourne, London, 1967) Chapters XI & XII, pp. 273–219.
 3. J.E.McGuire, “The Origin of Newton's Doctrine of Essential Qualities”, in *Tradition and Innovation: Newton's Metaphysics of Nature* (Kluwer, Boston, 1995), Chapter 6, pp. 239–261.
11. [Mar 28] Newton's Theology and Alchemy — McGuire
Principia, Book III, General Scholium.
 1. J. E. McGuire “ The Fate of the Date: The Theology of Newton's Principia Revisited”, in *Rethinking the Scientific Revolution*, ed. by Margaret J. Osler (Cambridge, 2000) Part III, Chapter 13, pp. 271–295.
 2. B. J. T. Dobbs, *The Janus Faces of Genius: The role of Alchemy in Newton's Thought* (Cambridge, 1991), Chapters 3 & 4, pp. 53–121.

12. [Apr 4] *Principia*, Book III, preliminaries and props. 1–5. — Goldstein

1. Densmore, pp. 239–317.

13. [Apr 11] Comets — McGuire

Principia Book III, Lemma 4 to Prop 39; Propositions 40 and 41.

1. J. Ruffner, *The Background and Early Development of Newton's Theory of Comets*. Ph.D. Thesis, Indiana University, 1966. (Univ. Microf. No. 66-14,877). Chapters VIII & IX, pp. 239–353.

2. C. Wilson, "The Newtonian Achievement in Astronomy" in *Planetary Astronomy from the Renaissance to the Rise of Astrophysics: Tycho Brahe to Newton*, ed. By R. Taton and C. Wilson (Cambridge, 1989), pp. 270–274 only.

14. [Apr 18] Summary — McGuire and Goldstein

McGuire: 4, 5, 6, 10, 11, 13.

Goldstein: 2, 3, 7, 8, 9, 12.

McGuire and Goldstein: 1, 14.