Midterm Format

There will be three sections (bear in mind this is only a 70 minute exam).

1. Multiple choice and True/False questions.
2. Short answer questions.
3. A choice of short essay questions.

The assignments (both the questions you have done and the ones from SZE that you haven't) are a good guide to sections 2 and 3 in terms of format of questions.

Topics Covered

The midterm will cover everything up to and including Week 7. That is, up to and including Newton's Principia, the Leibniz-Clarke Correspondence, and Berkeley and Mach. You will be expected to remember general information about the various topics including the beliefs, arguments, discoveries and importance (for the philosophy of space) of the historical figures we have studied. You will also need to be able say how they relate to one another. For example, knowing whom they were arguing against, and about what. Remember that the overall topic of the course is **space**: the philosophy of space and the history of conceptions of space.

Exam Advice

You have a limited amount of time. In general, it is far better to answer every question rather than get full marks for half the paper. One strategy is to go through the exam paper, mark questions that you know how to answer and do those first, going back to answer the ones you are less sure about (leaving room on your exam booklet to do this). What you want to avoid is spending 30 minutes writing out an answer to an earlier question that you already suspect is wrong and miss out on points later in the paper as a result.

Think about what the question is asking. Does it have more than one part? Think about what a complete answer would look like. Which pieces of information are essential to answer the question? How do the parts of the answer fit together? When you have it, compare your answer with the question. Have you explicitly answered each part of the question? Writing down everything you know about a topic is not usually the best way to approach a question. Try to clearly articulate and connect the parts of your answer. The grader (me) is going to be looking for evidence that you have understood everything that you have used in your answer.

How to prepare

Try to prepare some notes or flashcards (or whatever) over the weekend and bring them and remaining questions to class on Tuesday and the study sessions next week. Try to cover all the material below, presenting the relevant information for yourself in a brief and memorable form. I don't expect you to need more than a page for each of the boldface topics below. Think about how you would go about answering the assignment questions again or the extra questions from SZE.

Plato and the Presocratics

- The Milesians
- Pythagoras, Parmenides
- Plato's Timeaus

Logical Arguments

- Recognize and construct invalid and valid arguments, including indirect proofs.
- Know how to use concepts of soundness, inconsistency, counterexamples etc.
- State and explain the difference between abduction and deduction.

Euclid

- The Elements: axioms and demonstrations.
- The Euclidean Hypothesis

Zeno

- Zeno's paradoxes (aims, interpretation, logical form of)
- Solution of Zeno's paradoxes using (i) Cauchy's limits (ii) Cantor's cardinality argument.

Aristotle

- Aristotle's theory of place.
- Aristotle's physics: (i) motion (ii) elements (iii) cosmos.
- Arguments against a moving Earth, for a finite world, against many worlds.

Astronomy

- The Two Sphere model / Ptolemaic system
- The Copernican System / The Tychonic System
- Kepler's cosmology, Kepler's Laws
- Arguments for heliocentrism and against Aristotelian cosmology/physics (including observations).

Mechanics

- Galilean freefall / projectile motion
- Galileo's view of natural motions
- Cartesian physics: Descartes' laws and definitions of motion.
- Newton's critique of Descartes.
- Inertial frames / Galilean Relativity
- Newtonian Mechanics

Absolute/Relative Space

- Newton's definition of absolute space/position/motion/acceleration.
- Leibniz's argument against absolute position/velocity.
- Newton's bucket: significance for Descartes and Leibniz
- Mach and Berkley's reply to Newton's bucket