Unit I Lecture Outline

<table>
<thead>
<tr>
<th>Lecture</th>
<th>Date</th>
<th>Topic</th>
<th>Material (see outline below)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>24 Aug</td>
<td>Introduction</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>26 Aug</td>
<td>How Science Works</td>
<td>1.1., 1.2.1.</td>
</tr>
<tr>
<td>3</td>
<td>29 Aug</td>
<td>Ancient Astronomy</td>
<td>1.2.2. – 1.2.5.</td>
</tr>
<tr>
<td>4</td>
<td>31 Aug</td>
<td>From Sumeria to Greece</td>
<td>1.3.</td>
</tr>
<tr>
<td>5</td>
<td>2 Sep</td>
<td>The Celestial Sphere</td>
<td>1.4.1. – 1.4.4.</td>
</tr>
<tr>
<td>6</td>
<td>7 Sep</td>
<td>Sphere, Classical Greece</td>
<td>1.4.4. – 1.4.6., 1.5.1. – 1.5.3.</td>
</tr>
<tr>
<td>7</td>
<td>9 Sep</td>
<td>Greece, Dark Ages</td>
<td>1.5.3. – 1.5.5., 1.6.1. – 1.6.3.</td>
</tr>
<tr>
<td>8</td>
<td>12 Sep</td>
<td>Copernicus, Galileo, Kepler</td>
<td>1.6.4. – 1.6.6., 1.7.1. – 1.7.4.</td>
</tr>
<tr>
<td>9</td>
<td>14 Sep</td>
<td>Kepler, Newton</td>
<td>1.7.5., 1.8.</td>
</tr>
<tr>
<td>10</td>
<td>16 Sep</td>
<td>Gravity and Epilogue</td>
<td>1.9.</td>
</tr>
<tr>
<td>11</td>
<td>19 Sep</td>
<td>Review</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>21 Sep</td>
<td>Mid-term Exam 1</td>
<td></td>
</tr>
</tbody>
</table>

Outline for Mid-term Exam 1

0. Introduction

0.1. The Course
0.2. The Subject
0.3. The Grand Tour

1. The Birth of Astronomy

1.1. How Science Works
    1. What is science?
    2. It’s just a theory
    3. The scientific method
    4. Science in action
    5. Origins sciences

1.2. Ancient Astronomy
    1. The need for astronomy
    2. Motion of the Sun
    3. Stars
    4. Planets
    5. Precession

1.3. From Sumeria to Greece
    1. Mesopotamia
    2. Egypt
    3. Astrology
    4. The birth of philosophy
    5. The Pythagoreans
6. The Greek outlook
1.4. The Celestial Sphere
   1. Physical solution
   2. Coordinates
   3. The Sun and the seasons
   4. The Moon, phases, and eclipses
   5. Motion of the other planets
   6. Time
1.5. Classical Greece
   1. Socrates and Plato
   2. Aristotle
   3. The Alexandrian School
   4. Hipparchus
   5. Ptolemy
1.6. The Copernican Revolution
   1. The Dark Ages
   2. The Muslim gift
   3. The Renaissance
   4. Nicholas Copernicus
   5. The heliocentric model
1.7. Galileo and Kepler
   1. The telescope
   2. The trial of Galileo
   3. Tycho Brahe
   4. Kepler’s method
   5. Kepler’s Laws
1.8. Newton and Motion
   1. Background
   2. Isaac Newton’s life
   3. Newton’s three laws of motion
1.9. Gravity
   1. The Law of Universal Gravitation
   2. Halley’s Comet
   3. Uranus and Neptune
   4. Pluto
1.10. Epilogue