Mathematics-Science 3810H – Ancient and classical mathematics
Trent University, Fall 2013

Readings & Schedule

The following schedule is *tentative* – no lesson plan survives contact with students! – and our actual pace will be adjusted as necessary.

It would be very much to your advantage, if you can manage it, to do the assigned readings before we cover them in class. Most of our readings will be from the textbook, *The Historical Roots of Elementary Mathematics*, by Lucas N.H. Bunt, Phillip S. Jones, & Jack D. Bedient, hereinafter referred to as *BJB*. We will stick fairly closely to this book for the first half or so of the course, but a little more loosely after that. A lot of readings are given from *A Short Account of the History of Mathematics* (4th Edition), by W. W. Rouse Ball, hereinafter referred to as *Ball* (available for free from Project Gutenberg at: `http://www.gutenberg.org/etext/31246`). Please note that both of these books are old and some of the some of the scholarship that went into them is obsolete, and neither manages to cover everything we need to anyway. More material will therefore be provided in lectures and in additional readings, some of which are also given below. (See the course web page for links to additional readings.)

Week 0. *(2–6 September, 2013.) Classes begin on Thursday, 6 September,* which means we will only have one lecture this week. We will use this mainly for administrivia: review the course outline, distribute the first few handouts, *etc.*

Week 1. *(9–13 September, 2013.)* BJB §1-1–1-5 & *Ball* Chapter I. Mathematics in prehistory; historical evidence and its limitations; Egyptian number system, arithmetic operations. *Seminars begin this week.*

Week 2. *(16–20 September, 2013.)* BJB §1-7–1-10. Egyptian fractions, arithmetic algorithms, algebra and geometry. Assignment #1 due on Friday, 20 September.

Week 3. *(23 September – 27 September, 2013.)* BJB §2-1–2.4. Mesopotamian number system, arithmetic operations, computing roots.

Week 4. *(30 September – 4 October, 2013.)* BJB §2-5–2-9 & *Words and Pictures: New Light on Plimpton 322*. Mesopotamian algebra and geometry. Assignment #2 due on Friday, 4 October.

Week 5. *(7–11 October, 2013.)* BJB §3-1–3-5 & *Ball* Chapters II & VII. Early Greek mathematics: Thales, Pythagoras and the Pythagoreans; Greek number systems.

Week 6. *(14–18 October, 2013.)* BJB §3-6–3-10 & *Ball* Chapter II. Pythagorean contributions to number theory and geometry; incommensurables. Project proposal due on Friday, 18 October. Assignment #3 due on Friday, 18 October. *No classes on Monday, 10 October (Thanksgiving Day).*

Fall Reading Week. *(21–25 October, 2013.)* Enjoy!

Week 7. *(28 October – 1 November, 2013.)* BJB §4-1-4-5 & *Ball* Chapter III. Development of Greek geometry; quadrature, proportion, geometric algebra, systematization and proof.

Week 8. *(4–8 November, 2013.)* BJB Chapter 5 & §6-1–6-5, & *Ball* Chapter IV (just the part on Euclid). Logic and rigour; Euclid's *Elements*: postulates and proofs, elementary geometry. Assignment #4 due on Friday, 8 November. *The last date to drop Fall half-courses without academic penalty is Tuesday, 5 November.*

Week 9. *(11–15 November, 2013.)* BJB §6-6–6-14. Euclid's *Elements*: parallel postulate, areas, geometric algebra, number theory, solid geometry.

Week 10. *(18–22 November, 2013.)* *BJB* §7-1–7-3, *Ball* Chapter IV, & *The Sand-Reckoner*. Mathematical physics, areas and volumes, conics, number systems. *Take-home final examination distributed on Friday, 22 November.* Assignment #5 due on Friday, 22 November.

Week 11. *(25–29 November, 2013.)* *BJB* §7-4–7-7 & *Ball* Chapter V. Mathematical astronomy, trigonometry, algebra.

Week 12. *(2–6 December, 2013.)* *BJB* §7-8–7-11: Influence of ancient and classical mathematics, clean-up. Assignment #6 due on Wednesday, 7 November. *The last day of classes is Wednesday, 7 December.*

Mid-term test and Fall half-course final examination period. *(6–21 December, 2011.) Project and take-home final examination both due on Friday, 20 December.*