

# Mathematics 3820H – Mathematics from medieval to modern times

TRENT UNIVERSITY, Fall 2012

## Readings & Schedule

The schedule below is firm, barring unforeseen events and necessities, for due dates and such, but it is a polite fiction so far as progress through the content of the course is concerned – no lesson plan survives contact with students! – and our actual pace will be adjusted as necessary. The skeleton of our readings is from the text:

*A Short Account of the History of Mathematics* (4th Edition), by Walter W. Rouse Ball, 1908.

It is available online (pdf and  $\text{\TeX}$ ) from Project Gutenberg at:

<http://www.gutenberg.org/etext/31246>

The text is somewhat dated in style and content, and is, in any event, intended as a relatively sparse outline. The skeleton it provides will be fleshed out in the lectures and with readings from various sources, original and otherwise, available on line. Please note that the readings and additional sources given below are potentially subject to change.

Just for fun, the 1st edition of the text (MacMillan and Co., London, 1888) is also available online (pdf and epub) from Google Books at: <http://books.google.ca/books?id=U9zuAAAAAAAJ>

**Week 0.** (3–7 September, 2012.) Classes start on Thursday, 6 September, which means we only have the seminar at 09:00 on Thursday this week. We will use this for the usual administrative (review the course outline, distribute the first few handouts, answer organizational questions, *etc.*).

**Week 1.** (10–14 September, 2012.) Please read pp. 120–129 in Chapter IX of the text and pp. 1–8 & 21–50 of the *Āryabhaṭīya*,

by Āryabhaṭa, trans. by W.E. Clark, Univ. of Chicago Press, Chicago, 1930. It can be found (pdf) online at:

<http://www.wilbourhall.org/pdfs/aryabhatiyaEnglish.pdf>

**Week 2.** (17–21 September, 2012.) Please read pp. 129–135 in Chapter IX and pp. 136–137 in Chapter X of the text, and pp. 1–21 of *The Algebra of Mohammed ben Musa* [*i.e.* al-Kwarizmi], ed. and trans. by Frederic Rosen (London, 1831), which can be found (pdf) online at:

[http://www.wilbourhall.org/pdfs/The\\_Algebra\\_of\\_Mohammed\\_Ben\\_Musa2.pdf](http://www.wilbourhall.org/pdfs/The_Algebra_of_Mohammed_Ben_Musa2.pdf)

- Assignment #1 due on Tuesday, 18 September, 2012.

**Week 3.** (24–28 September, 2012.) Please read pp. 109–119 in Chapter VIII and pp. 138–164 in Chapters X–XI of the text.

- Assignment #2 due on Tuesday, 25 September, 2012.

**Week 4.** (1–5 October, 2012.) Please read pp. 165–189 in Chapter XII of the text and pp. 207–276 of *Jerome Cardan: The life of Girolamo Cardano, of Milan, physician*, Vol. I, by Henry Morley (London, 1854), which can be found (pdf and epub) online at:

<http://books.google.ca/books?id=lskVAAAAAYAAJ>

- Assignment #3 due on Tuesday, 2 October, 2012.

**Week 5.** (8–12 October, 2012.) Please read pp. 189–201 in Chapter XII of the text and all of the *History of the Invention of Logarithms*, an appendix (pp. 435–507) in *Memoirs of John Napier of Merchiston*, by Mark Napier (London, 1834), which can be found (pdf and epub) online at:

<http://books.google.ca/books?id=husGAAAAAYAAJ>

[Chapters IX–X (pp. 328–434) of this book give a more detailed account of Napier’s part in the invention of logarithms, and may be worth a look too.]

- Assignment #4 due on Tuesday, 9 October, 2012. Project proposals due on Friday, 12 October.

**Week 6.** (15–19 October, 2012.) Please read pp. 202–210 in Chapter XIII of the text and pp. 153–187 of *Dialogues Concerning Two New Sciences*, by Galileo Galilei, trans. by H. Crew & A. de Salvio (MacMillan, New York, 1914), which can be found (pdf, epub, & other formats) online at:

<http://openlibrary.org/works/OL15231447W>

- Assignment #5 due on Tuesday, 16 October, 2012.

**Week R.** *Reading Week!* (22–26 October, 2012. Enjoy reading something else – or work on your project!

**Week 7.** (29 October – 2 November, 2012.) Please read pp. 210-237 in Chapters XIII-XV of the text and all of the *Essay on Conics*, by Blaise Pascal, trans. by F.M. Clarke. This can be found in *A source book in mathematics*, Volume 1, by David Eugene Smith (Dover Publications, 1984, ISBN 0486646904); the relevant part can be found online (though not for download) at:

[http://books.google.ca/books?id=awAf07Ff\\_z0C&pg=PA326](http://books.google.ca/books?id=awAf07Ff_z0C&pg=PA326)

- Assignment #6 due on Tuesday, 30 October, 2012.

**Week 8.** (5–9 November, 2012.) Please read pp. 237-290 in Chapters XV-XVI of the text.

- Assignment #7 due on Tuesday, 6 November, 2012.
- The last date to drop Fall term half-courses without academic penalty is Tuesday, 6 November, 2012.

**Week 9.** (12–16 November, 2012.) Please read pp. 291-301 in Chapter XVII of the text and *An Account of the Book Entituled commercium Epistolicum Collinii et Alliorum, de Aanalysisi Promota*, by Isaac Newton [writing anonymously], *Philosophical Transaction of the Royal Society of London*, No. 342, January and February 1714, pp. 173-224. This is reprinted on pp. 116-153 of *The Philosophical Transactions of the Royal Society of London, from their commencement, in 1665, to the year 1800; Abridged*, Vol. VI (London, 1809), which can be found online (pdf and epub) at:

<http://books.google.ca/books?id=t0JKAAAAAQA&pg=PA116>

An edition prepared by D.R. Wilkins can be found online (pdf) at:

<http://www.maths.tcd.ie/pub/HistMath/People/Newton/CommerciumAccount/>

- Assignment #8 due on Tuesday, 16 November, 2012.

**Week 10.** (19–23 November, 2012.) Please read pp. 301-321 in Chapter XVII of the text and pp. 51-68 of *A Treatise of Fluxions*, Vol. I, by Colin MacLaurin (Edinburgh, 1742), which can be found online (pdf and epub) at:

<http://books.google.ca/books?id=dCA0AAAAQA&pg=PA51>

This book was MacLaurin's attempt to make the foundations of calculus rigorous in response to George Berkeley's criticisms, for which check out, if you wish, *The Analyst* [2nd edition] (London, 1754). It can be found online (pdf) at:

<http://books.google.ca/books?id=TqCZhiQdXogC>

- Assignment #9 due on Tuesday, 20 November, 2012.
- The take-home final examination will be distributed on Wednesday, 21 November.

**Week 11.** (26–30 November, 2012.) Please read pp. 322-364 in Chapter XVIII of the text and pp. 54-70 & 144-157 of *Elements of Algebra* (2nd Edition), Vol. I, by Leonard Euler (trans. by ?, London, 1810), which can be found online (pdf) at:

<http://books.google.ca/books?id=hqI-AAAAAQA&pg=PA54>

- Assignment #10 due on Tuesday, 27 November, 2012.

**Week 12.** (3–7 December, 2012.) Please read pp. 365-401 in Chapter XIX of the text.

- A possible Assignment #11 would be due on Tuesday, 4 December, 2012.
- Projects due on Wednesday, 5 December, 2012.
- The last day of classes is on Wednesday, 5 December, 2012.

**Mid-term test and Fall half-course final examination period.** (7–19 December, 2012.)

- The take-home final examination will be due on Wednesday, 19 December, 2012.

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