MATH2001/MKS/ms/2007-2008

Some Useful References For Course MATH2001 (Development of Mathematical Ideas) Department of Mathematics, University of Hong Kong

The following list of books and articles, despite its length, is by no means complete nor exhaustive. (It develops like the course title says — in 1980 this handout consisted of only three pages! If you find a disproportionate number of references to my own articles, it is only because I am more familiar with those rather than because they are more important than others.) I hope it can be of some help to you. Such reading material supplements the course. Obviously — just look at the length of the list — I would not make that compulsory reading. You can browse over the items at your leisure and at your own pace. You may like to study some of them in more detail and skim over the rest. (Maybe you can even do that AFTER taking this course!) The decision is yours, but remember, whether you agree or disagree with opinions expressed therein, it is a good thing to be exposed to different views. I would also recommend further references pertaining to special topics when we come to them in class. Since topics may vary from year to year, these would not be listed here.

Try to MAKE GOOD USE OF the LIBRARY. The 18th century English writer and lexicographer Samuel Johnson said, "Knowledge is of two kinds. We know a subject ourselves, or we know where we can find information upon it." To save you the time in locating these items, I append, whenever possible, their respective call numbers (in the HKU Library) in brackets at the end.

A. General references

Although topics may vary from year to year, the following general accounts are helpful.

(1) E.T. Bell, *The Development of Mathematics*, 2nd edition, McGraw-Hill, 1945. (510.9 B433 d)

(2) C.B. Boyer, *A History of Mathematics*, John Wiley, 1968; 2nd edition (with U.C. Merzbach), 1989. (510.9 B79, [E]510.9 B79)

(3) H. Eves, [C.V. Newsom], *[An Introduction to the] Foundations and Fundamental Concepts of Mathematics*, Holt, Rinehart & Winston, 1958; revised edition, 1965; 3rd edition, PWS-Kent Publishing, 1990. (510.1 E9, 510.1 E93 i)

(4) I. Grattan-Guinness, *The Fontana History of the Mathematical Sciences*, Fontana Press, 1997. (510.9 G7f)

(5) G.G. Joseph, *The Crest of the Peacock: The Non-European Roots of Mathematics*, Tauris, 1991; reprinted with revision by Penguin Books, 1994. (510.9 J83)

(6) V. Katz, *A History of Mathematics: An Introduction*, Harper Collins, 1993; 2nd edition, 1998. (510.9 K19)

(7) M. Kline, *Mathematics in Western Culture*, Oxford University Press, 1953. (510.9 K65 m)

(8) M. Kline, *Mathematical Thoughts from Ancient to Modern Times*, Oxford University Press, 1972. (510.9 K65 m4)

(9) G. Pólya, *How to Solve It*, 2nd edition, Princeton University Press, 1957; reprinted by Penguin Books, 1990 (original edition 1954). (510.7 P78 h, [E]510.7 P78 h)

(10) J. Stillwell, *Mathematics and Its History*, Springer-Verlag, 1989. (510.9 S85)

(11) D.J. Struik, *A Concise History of Mathematics*, Dover, 1948; 4th edition, 1987. (510.9 S927 c)

(12) 朱學志, 周金才, 高沛田, *數學的歷史、思想和方法*, 哈爾濱出版社, 1990.

(13) 李文林, *數學史概論*, 高等教育出版社, 2002. (1st edition with title *數學史教程*, 2000)
([中]QA21.L52 2002)

(14) 李迪, *中國數學史簡編*, 遼寧人民出版社, 1984. ([中]410.92 403)

(15) 李迪(編), *中外數學史教程*, 福建教育出版社, 1993. ([中]410.9 50)

(16) 李儼, 杜石然, *中國古代數學簡史*, 中華書局, 1963. ([山]510.92 157-95)
(English translation by J.N. Crossley and A.W.C. Lun, Clarendon, 1987.) (510.951 L66, [E]510.951 L66)

(17) 沈康身, *中算導論*, 上海教育出版社, 1986. ([中]410.92 34)

(18) 袁小明, *數學思想史導論*, 廣西教育出版社, 1991. ([中]410.9 409)

(19) 解恩澤, 徐本順(編), *世界數學家思想方法*, 山東教育出版社, 1994. ([中]410.99 446-2)

(20) 劉鈍, *大哉言數*, 遼寧教育出版社, 1993. ([中]410.92 72)

(21) 錢寶琮, *中國數學史*, 科學出版社, 1964. ([中]410.92 83-4)

There are numerous other books on history of mathematics or on the nature of mathematics. Our library does not have an extensive collection, but has throughout these years built up a collection which is quite adequate for the purpose of this course. Learn to LOCATE them and USE them. You will find a good bibliography (up to 1981, and confined to books in English) in the appendix to article (43) in Section **C**, with more recent items (up to 1990) found in the booklet (39) in Section **D**. The following three anthologies make for good reading.

(22) D.M. Campbell, J.C. Higgins (eds.), *Mathematics: People, Problems, Results*, vol.1 - vol.3, Wadsworth International, 1984. (510 C18)

(23) J.R. Newman (ed.), *The World of Mathematics*, vol.1 - vol.4, Simon & Schuster, 1956. (510.2 N55 w)

(24) F.J. Swetz (ed.), *From Five Fingers to Infinity: A Journey Through the History of Mathematics*, Open Court, 1994. (510.9 F93)

Six interesting books that contain much food for thought are the following.

(25) P.J. Davis, R. Hersh, *The Mathematical Experience*, Birkhäuser, 1980; study edition (with E.A. Marchisotto), 1995. (510.1 D26)

(26) M. Kline, *Mathematics: The Loss of Certainty*, Oxford University Press, 1980. ([E]510.9 K65 m42)

(27) I. Lakatos, *Proofs and Refutations: The Logic of Mathematical Discovery*, Cambridge University Press, 1976.

(164 L19)

(28) R.L. Wilder, *Evolution of Mathematical Concepts*, John Wiley, 1968; Open University Press, 1978. (510.1 W67)

(29) 丁石孫, 張祖貴, *數學與教育*, 湖南教育出版社, 1989. ([中]410.3 101)

(30) 鄭毓信, *數學教育哲學*, 四川教育出版社, 1995. ([中]410.03 87)

B. Articles about the importance of history of mathematics (*)

I suggest you read at least articles (26), (28), (29), (30), (38), (44), (45) and (46) in this section, not because they were written by me, but because they set down the tone, the aim and the philosophy of this course.

(1) C.B. Boyer, Myth, the muse, and mathesis, *Math. Teacher*, 57(1964), 242-253.

(2) V. Byers, Why study the history of mathematics? *Int. J. Math. Educ. Sci. Technol*., 13(1982), 59-66. ([S]510.7 I6 M42)

(3) J. Fauvel, Using history in mathematics education, *For the Learning of Mathematics*, 11(2)(1991), 3-6.

(4) J. Fauvel, J. van Maanen, Discussion document for ICME study on the Role of History of Mathematics in the Teaching and Learning of Mathematics, *L'Enseignement Mathématique*, 2^e Série, t.43 (1997), 199-203. ([S]510 E59) (***)

(5) F. Furinghetti, The history of mathematics as a coupling link between secondary and university teaching, *Int. J. Math. Educ. Sci. Technol*., 31(2000), 43-51.

(6) A.D. Gardiner, Human activity: The soft underbelly of mathematics? *The Mathematical Intelligencer*, 6(3)(1984), 22-27.

(7) J.V. Grabiner, The mathematician, the historian, and the history of mathematics, *Historia Mathematica*, 2(1975), 439-447.

(8) I. Grattan-Guinness, Not from nowhere: History and philosophy behind mathematical education, *Int. J. Math. Educ. Sci. Technol*., 4(1973), 421-453.

(9) I. Grattan-Guinness, A history of mathematics course for teachers, *Historia Mathematica*, 4(1977), 341-343.

(10) I. Grattan-Guinness, On the relevance of the history of mathematics to mathematical education, *Int. J. Math. Educ. Sci. Technol*., 9(1978), 275-285.

(11) I. Grattan-Guinness, A residual category: Some reflections on the history of mathematics and its status, *The Mathematical Intelligencer*, 15(4) (1993), 4-6.

(12) T. Heiede, Why teach history of mathematics? *Math. Gazette*, 76 (1992), 151-157.

(13) R. Hersh, Let's teach philosophy of mathematics!, *College Math. J*., 21(1990), 105-111.

(14) F. Hickman, R. Kapadia, A history of mathematics course for teachers, *Int. J. Math. Educ. Sci. Technol*., 14(1983), 753-761.

(15) P.S. Jones, The history of mathematics as a teaching tool, *Math. Teacher*, 50(1957), 59-64.

(16) P.S. Jones, The history of mathematics — New sources and uses, *Southeast Asian Bull. Math*., 4(1980), 1-5.

(17) M. Kline, Logic versus pedagogy, *Amer. Math. Monthly*, 77(1970), 264-282.

(18) C.K. Lit, M.K. Siu, N.Y. Wong, The use of history in the teaching of mathematics: Theory, practice and evaluation of effectiveness, *Educational Journal*, 29(1) (2001), 17-31.

(19) O. Ore, Mathematics for students of the humanities, *Amer. Math. Monthly*, 51(1944), 453-458.

(20) D. Pimm, Why the history of mathematics should not be rated X -The need for an appropriate epistemology of mathematics for mathematics education, *Proc. 4th Intern. Cong. Math. Education*, Birkhäuser, 1983, 450-452. (510.7 I61 M04)

(21) L. Rogers, The mathematics curriculum and the history of mathematics, *Proc. 4th Intern. Cong. Math. Education*, Birkhäuser, 1983, 400-402. (510.7 I61 M04)

(22) A. Schenitzer, Some thoughts on the teaching of mathematics, *The Mathematical Intelligencer*, 8(1)(1986), 21-24.

(23) M. Seltman, P.E.J. Seltman, Growth process and formal logic: Comments on history and mathematics regarded as combined educational tools, *Int. J. Math. Educ. Sci. Technol*., 9(1978), 15-29.

(24) F.K. Siu, M.K. Siu, History of mathematics and its relation to mathematical education, *Int. J. Math. Educ. Sci. Technol*., 10(1979), 561-567.

(25) M.K. Siu, Mathematics for math-haters, *Int. J. Math. Educ. Sci. Technol*., 8(1977), 17-21.

(26) M.K. Siu, {History of [(Mathematics)} Teachers], *Mathematical Tall Timbers, Supp. Math. Log*, 11(1985); French transl. in *Bull. de l'Association des Prof. de Math*., nº 354(1985), 309-319.

(27) M.K. Siu, Mathematical thinking and history of mathematics, in *Learn From the Masters! Proceedings of the Kristiansand Conference on the History of Mathematics and Its Place in Teaching, August 1988*, edited by F. Swetz et al, Pennsylvania State University, 1992, 311-315; revised edition, Mathematical Association of America, 1995, 279-282. (510.9 K92 H88, 510.9 L4)

(28) M.K. Siu, The ABCD of using history of mathematics in the (undergraduate) classroom, *Bulletin Hong Kong Math. Soc*., 1 (1997), 143-154; reprinted in *Using History To Teach Mathematics: An International Perspective*, edited by V. Katz, Mathematical Association of America, 2000, 3-9. (510.71 U85)

(29) M.K. Siu, "No, I don't use history of mathematics in my class. Why?", in *Proceedings of HPM2004 & ESU4 (ICME 10 Satellite Meeting of the HPM Group & Fourth European Summer University on History and Epistemology in Mathematics Education) at Uppsala, July 2004*, edited by F. Furinghetti et al, Uppsala Universitet, 2006, 268-277.

(30) M.K. Siu, C. Tzanakis, History of Mathematics in classroom teaching — Appetizer? main course? or dessert? *Mediterranean Journal for Research in Mathematics Education*, 3 (1-2) (2004), v-x.

(31) F.J. Swetz, Some thoughts on teaching the history of mathematics, *J. Sci. Math. Educ. S.E. Asia*, 6(1981), 34-39.

(32) F.J. Swetz, Seeking relevance? Try the history of mathematics, *Math. Teacher*, 77(1984), 54-62.

(33) A. Weil, History of mathematics: Why and how, *Proc. Intern. Cong. Math. at Helsinki*, 1978, 227-236. (510.601 I61 M78)

(34) R.L. Wilder, History in the mathematics curriculum: Its status, quality and function, *Amer. Math. Monthly*, 79(1972), 479-495.

(35) 朱學志, 關於在高等師範院校開設 "數學史、數學方法論" 課的幾點看法, *數學通報*, 第 3 期 (1984), 20-23, 29. ([期]410 866)

(36) 洪萬生, 數學史與數學教學 — 數學教育研究的一個新面向, *孔子與數學 — 一個人文的懷想*, 洪萬生, 明文書局, 1991, 47-53. ([中]410.7 34)

(37) 陳鳳潔, 周錫昌, 蕭文強, 對國內中學數學大綱的一些意見 — 兼談數學教育之目的, *抖擻*, 38 (1980), 76-83. ([期]070 31)

(38) 梁鑑添, 蕭文強, 一門與數學發展史有關的課程, *抖擻*, 41 (1980), 38-44.

(39) 蕭文強, 數學發展史給我們的啓發, *抖擻*, 17 (1976), 46-53.

(40) 蕭文強, 從幾何發展史看幾何在中學教育的作用, *數學研習*, 大學畢業同學會, 1977, 1-12; *教與學*, 9 (1977), 27-33.

(41) 蕭文強, 從數學發展史看學習數學的方法和意義, *數學教學途徑的探討*, 香港教育專業人員協會, 1979, 18-21.

(42) 蕭文強, 對學習數學的一些體會, *Quill'80* (香港大學文學院學生會年刊), 1980, 42-45.

(43) 蕭文強, 數學教學上如何古爲今用, *抖擻*, 44 (1981), 70-73.

(44) 蕭文強, 數學, 數學史, 數學教師, *抖擻*, 53 (1983), 67-72.

(45) 蕭文強, 誰需要數學史, *數學通報*, 第 4 期 (1987), 42-44.

(46) 蕭文強, 數學史和數學教育: 個人的經驗和看法, *數學傳播*, 第 16 卷第 3 期(1992), 23-29. Excerpt in an appendix to 蕭文強, *爲什麼要學習數學?*, revised edition 九章出版社, 1995; original edition, 學生時代出版社, 1978. ([期]410 86.77, [E]410.7 443-1)

(47) 楊淑芬, 數學史在數學教育中的重要性, *數學傳播*, 第 16 卷第 3 期(1992), 16-22. ([期]410 86.77)

(***) A comprehensive study volume is available as *History in Mathematics Education: The ICMI Study*, edited by J. Fauvel and J. van Maanen, Kluwer Academic Publishers, 2000 (see item (40) in Section **D**). Chapter 7 and Chapter 8 are particularly pertinent to the nature of this course. (510.71 H67 F27)

C. Some related articles which may be helpful (*)

(1) S. Avital, I. Kleiner, Mathematics as part of culture, *Ontario Math. Gazette*, 21(2)(1982), 20-27.

(2) E. Barbin, The role of problems in the history and teaching of mathematics, in *Vita Mathematica: Historical Research and Integration with Teaching*, edited by R. Calinger, Mathematical Association of America, 1996, 17-25. ([LB]510.7 V8)

(3) H.J.M. Bos, Mathematics and its social context: A dialogue in the staff room, with historical episodes, For the Learning of Mathematics, 4(3)(1984), 2-9; also in *Lectures in the History of Mathematics*, H.J.M. Bos, American Mathematical Society, 1993, 181-197. (510.9 B74)

(4) H.J.M. Bos, H. Mehrtens, The interactions of mathematics and society in history: Some exploratory remarks, *Historia Mathematica*, 4(1977), 7-30.

(5) R. Brown, T. Porter, Mathematics in context: A new course, *For the Learning of Mathematics*, 10(1)(1990), 10-15.

(6) V. Byers, S. Erlwanger, Content and form in mathematics, *Educational Studies in Mathematics*, 15(1984), 259-275. ([S]370 E241 S93)

(7) M.J. Crowe, Ten "laws" concerning patterns of change in the history of mathematics, *Historia Mathematica*, 2(1975), 161-166.

(8) M.J. Crowe, Ten misconceptions about mathematics and its history, in *History and Philosophy of Modern Mathematics*, edited by W. Aspray and P. Kitcher, University of Minnesota Press, 1988, 260-277. (510.9 H67 p)

(9) J. Dauben, Mathematics: An historian's perspective, *Philosophy and the History of Science*, 2 (1993), 1-21; also in *The Intersection of History and Mathematics*, edited by C. Sasaki et al, Birkhäuser, 1994, 1-13. (510.9 I61)

(10) P. Ernest, The philosophy of mathematics and mathematics education, *Int. J. Math. Educ. Sci. Technol*., 16(1985), 603-612.

(11) F. Furinghetti, L. Radford, Historical conceptual developments and the teaching of mathematics: From phylogenesis and ontogenesis theory to classroom practice, in *Handbook of International Research in Mathematics Education*, edited by L.D. English, Lawrence Erlbaum, 2002, 631-654. (510.71 H23 E58)

(12) I. Grattan-Guiness, History or heritage? An important distinction in mathematics and for mathematics education, *Amer. Math. Monthly*, 111(2004), 1-11.

(13) R. Hersh, Some proposals for reviving the philosophy of mathematics, *Adv. Math*., 31(1979), 31-50. ([S]510 A2 M4)

(14) M. Kline, The meaning of mathematics, *Saturday Evening Post*, Sept. 3, 1960; in *Mathematics: People, Problems, Results*, Vol. 2, edited by D.M. Campbell, J.C. Higgins, Wadsworth International, 1984, 11-18. (510 C18)

(15) J.V. Grabiner, Is mathematical truth time-dependent? *Amer. Math. Monthly*, 81(1974), 354-365.

(16) J.V. Grabiner, The centrality of mathematics in the history of western thought, *Math. Magazine*, 61(1988), 220-230.

(17) G. Hanna, More than formal proof, *For the Learning of Mathematics*, 9(1)(1989), 20-23.

(18) A. Jaffe, F. Quinn, “Theoretical mathematics”': Towards a cultural synthesis of mathematics and theoretical physics, *Bull. Amer. Math. Soc. (New Series)*, 29(1993), 1-13. (See also responses by various authors, *Bull. Amer. Math. Soc. (New-Series)*, 30(1994), 159-207.) ([S]510 A5 M42 B)

(19) S. MacLane, Mathematical models: A sketch for the philosophy of mathematics, *Amer. Math. Monthly*, 88(1981), 462-472.

(20) J. McCleary, A. McKinney, What mathematics isn't, *The Mathematical Intelligencer*, 8(3) (1986), 51-53, 77.

(21) H. Mehrtens, T.S. Kuhn's theories and mathematics: A discussion paper on the "New Historiography" of mathematics, *Historia Mathematica*, 3(1976), 297-320.

(22) H. Poincaré, Mathematical Discovery, in *Science and Method*, Dover, 1952, 46-63 (originally published in 1914; reprinted in 1996); also in *The World of Mathematics*, vol.4, edited by J.R. Newman, Simon & Schuster, 1956, 2041-2050; abridged version in *Mathematics in the Modern World*, edited by M. Kline, Freeman, 1968, 14-17. (501.8 P75 s, 510.2 N55 w, 510 S41)

(23) G. Pólya, On learning, teaching, and learning teaching, *Amer. Math. Monthly*, 70(1963), 605-619; also in *Collected Papers of G. Pólya, vol.4: Probability; Combinatorics; Teaching and Learning in Mathematics*, edited by G.C. Rota, MIT Press, 1984, 539-553. (510.8 P76)

(24) D.E. Rowe, New trends and old images in the history of mathematics, in *Vita Mathematica: Historical Research and Integration with Teaching*, edited by R. Calinger, Mathematical Association of America, 1996, 3-16. ([LB]510.7 V8)

(25) A. Shenitzer, An unorthodox "test", *Amer. Math. Monthly*, 99 (1992), 20-30.

(26) F.K. Siu, M.K. Siu, N.Y. Wong, Changing times in mathematics education: The need of a scholar-teacher, *Proceedings of International Symposium on Curriculum Changes for Chinese Communities in Southeast Asia*, June 1993, CUHK, Hong Kong, 223-226. ([HK]375.00951 I61)

(27) M.K. Siu, Proof and pedagogy in ancient China: Examples from Liu Hui's Commentary on JIU ZHANG SUAN SHU, *Educational Studies in Mathematics* (Special issue on Aspects of Proof), 24(4) (1993), 345-357. ([S]370 E241 S93)

(28) M.K. Siu, Mathematics education in ancient China: What lesson do we learn from it? *Historia Scientiarum*, 4-3 (1995), 223-232. ([S]509 H67 S4)

(29) M.K. Siu, How did candidates pass the state examination in mathematics in the Tang Dynasty (618-907)? — Myth of the "Confucian-Heritage-Culture" classroom, *Actes de la troisième université d'été européenne sur l'histoire et l'épistémologie dans l'éducation mathématique*, July 1999 (2001), 320-334. (A much expanded version appears as Chapter 6 in *How Chinese Learn Mathematics: Perspectives From Insiders*, edited by L.H. Fan et al, World Scientific, 2004.)

(30) M.K. Siu, "Algorithmic Mathematics" and "Dialectic Mathematics": The "Yin" and "Yang" in mathematics education, *Proceedings of the 2nd ICTM*, edited by C. Tzanakis et al, July 2000 (CD-Rom by John Wiley).

(31) M.K. Siu, Harmonies in Nature: A dialogue between mathematics and physics, *Proceedings of the 5th European Summer University on the History and Epistemology in Mathematics Education, July 2007*, Univerzita Karlova at Prague, 2008.

(32) M.K. Siu, N.K. Tsing, You are living in a world of mathematics, *Int. J. Math. Educ. Sci. Technol*., 15(1984), 47-52.

(33) M.K. Siu, A. Volkov, Official curriculum in traditional Chinese mathematics: How did candidates pass the examinations? *Historia Scientiarum*, 9-1(1999), 85-99.

(34) C. Smorynski, Mathematics as a cultural system, *The Mathematical Intelligencer*, 5(1) (1983), 9-15.

(35) E. Snapper, The three crises in mathematics: Logicism, intuitionism and formalism, *Math. Magazine*, 52(1979), 207-216.

(36) L.A. Steen, Mathematics today, in *Mathematics Today*, edited by L.A. Steen, Springer-Verlag, 1978, 1-12. (510.8 S81)

(37) I. Stewart, The science of significant form, *The Mathematical Intelligencer*, 3(2)(1981), 50-58.

(38) T. Tymoczko, Making room for mathematicians in the philosophy of mathematics, *The Mathematical Intelligencer*, 8(3)(1986), 44-50.

(39) C. Tzanakis, The quest of beauty in research and teaching of mathematics and physics: A historical approach, *Nonlinear Analysis, Theory, Methods & Applications*, 30 (1997), 2097-2105. ([S]515.3 N81 A53)

(40) C. Tzanakis, Unfolding interrelations between mathematics and physics, in a presentation motivated by history: two examples, *Int. J. Math. Educ. Sci. Technol.*, 30 (1999), 103-118.

(41) J. von Neumann, The mathematician, in *The Works of the Mind*, edited by R.B. Heywood, University of Chicago Press, 1947, 180-196; also in *The World of Mathematics*, vol.4, edited by J.R. Newman, Simon & Schuster, 1956, 2053-2063. (153.35 U5, 510.2 N55 w)

(42) R.L. Wilder, The origin and growth of mathematical concepts, *Bull. Amer. Math. Soc.*, 59(1953), 423-448.

(43) Mathematics appreciation courses: The report of a CUPM Panel, *Amer. Math. Monthly*, 90(1983), 44-51, c11-c20.

(44) 陳鳳潔, 黃毅英, 蕭文強, 教(學)無止境：數學「學養教師」的成長, *Proceedings of the Conference on Curriculum Changes in Hong Kong*, April 1994, CUHK, Hong Kong, 53-56. ([HK] 375.0095125 C97 C94)

(45) 梁鑑添, 評論近二十年來中學數學課程改革, *抖擻*, 38 (1980), 64-73, 83.

(46) 鄭毓信, 數學教師應當關注的幾個問題 — 兼論 "數學教育哲學" 的研究, *數學傳播*, 第 19 卷 第 2 期 (1995), 86-93.

(47) 蕭文強, 數學 — 科學的語言, Spectrum '82 (香港大學理學會年刊), 1983, 57-62; *數學傳播*, 第 9 卷第 4 期 (1985), 43-47; *1,2,3,...以外 — 數學奇趣錄*, 蕭文強, 三聯書局(香港), 1993, 192-205. ([中]410.7 40-21, [E]410.7 40-21)

(48) 蕭文強, 第一章 (証明的由來), 第二章 (証明的功用), *數學証明*, 蕭文強,江蘇教育出版社, 1990, 1-45; 修訂版, 九章出版社, 2007, 1-48. ([中]411.3 440, [E] QA9.54.X53 2007)

(49) 蕭文強, 數學=証明? *數學傳播*, 第 16 卷第 4 期(1992), 50-58; French transl. in *Bull. de l'Association des Prof. de Math.*, nº 434 (2001), 374-386; English transl. in *Mathematical Medley*, 27(2002), 3-14.

(50) 蕭文強, 我看 "大眾數學", *面向 21 世紀的中國數學教育*, 嚴士健(編), 江蘇教育出版社, 1994, 256-265. ([中]410.3 102)

(51) 蕭文強, 少者多也:普及教育中的大學數學教育, *香港數學教育的回顧與前瞻: 梁鑑添博士榮休文集*, 蕭文強(編), 香港大學出版社,1995, 109-118. (An expanded version in English appears in *Themes in Education*, 1(2)(2000), 163-171, also available on web at <http://hkumath.hku.hk/~mks/>. (HK510.07 H87, [中]410.3 20)

(52) 蕭文強,「歐先生」來華四百年, *科學文化評論*, 第四卷, 第六期 (2007). ([期]Q174.K52)

D. Some source material

This section was originally written to suggest some source material for project work, which formed an integral part of the course at the time when it was offered as a year-course under the course number Sc511 but which becomes impracticable when the course changes its format from a year-course to the present semester-course. However, the books listed in this part are still useful references. [The course is now run on a three-class-session per week basis with about 22 lectures and 14 tutorials. A tutorial sheet will be put on web in advance, to be discussed in class. The final written examination in December/January counts for 60% of the final grade, while coursework (including participation in tutorial or possibly oral presentation) counts for 40%. The **textbook** adopted for this course this year is *Mathematical Expeditions: Chronicles by the Explorers* by R. Laubenbacher and D. Pengelley (See item (13) in Section **D**). — This passage refers to the course when it was offered between 1997 and 2005.]

At least look through the questions in the tutorial sheet. Try to work on as many as you can. Learn how to USE library resources, COLLECT material, ORGANIZE your thought and WRITE UP your answer clearly. Treat your writing with respect, for writing is a way of growing. (There are many books on the writing of English. I can suggest one helpful reference which is quite suitable for undergraduates: *The Little, Brown Handbook*, edited by H.R. Fowler et al, Little, Brown, 1980 (428.20202 F7). A checklist for avoiding plagiarism contained in one of its chapters is especially instructive.)

You will find the bibliography in article (43) in Section **C** and items (36), (39) and (46) in Section **D** useful (mainly on items that were in print in English up to 1990). There are also numerous good books in Chinese of similar nature that are not included. Go to a Chinese bookstore or the Chinese section of the library to find out. There is a body of excellent material (in French, some of which has been translated, for instance see item (10) in Section **D**) produced by the group on Epistemology and History of Mathematics of IREM (Instituts de Recherche sur l'Enseignement des Mathématiques). Item (40) in Section **D** is a comprehensive updated account of the use of history of mathematics in mathematics education.

The following fifteen books are good sources for suggestions of a topic for a project.

(1) O. Bekken, J. Fauvel, B. Johansson, F. Swetz (eds.), *Learn From the Masters! Proceedings of the Kristiansand Conference on the History of Mathematics and Its Place in Teaching, August 1988*, Pennsylvania State University, 1992; revised edition, Mathematical Association of America, 1995. (510.9 K92 H88, 510.9 L4)

(2) L.N.H. Bunt, P.S. Jones, J.D. Bedient, *The Historical Roots of Elementary Mathematics*, Prentice-Hall, 1976; reprinted by Dover, 1988. (512.109 B9)

(3) R. Calinger (ed.), *Vita Mathematica: Historical Research and Integration With Teaching*, Mathematical Association of America, 1996. ([LB]510.7 V8)

(4) H. Dörrie, *100 Great Problems of Elementary Mathematics* (transl. by D. Antin), Dover, 1965 (German original edition, Physica-Verlag, 1958). (510.76 D71)

(5) W. Dunham, *Journey Through Genius*, John Wiley, 1990. (510.9 D91)

(6) W. Dunham, *The Mathematical Universe: An Alphabetical Journey Through the Great Proofs, Problems, and Personalities*, John Wiley, 1994. ([E]510 D91)

(7) H. Eves, *Introduction to the History of Mathematics*, 5th edition, Holt, Rinehart & Winston, 1983; 6th edition, Saunders, 1990. (Note the problem sets at the end of the chapters.) (510.9 E93, [E]510.9 E93)

(8) H. Eves, *Great Moments in Mathematics (Before 1650)*, Mathematical Association of America, 1980. ([E]510.9 E93 g)

(9) H. Eves, *Great Moments in Mathematics (After 1650)*, Mathematical Association of America, 1981. (510.9 E93 g7, [E]510.9 E93 g7)

(10) J. Fauvel (ed.), *History in the Mathematics Classroom: IREM Papers*, The Mathematical Association, 1990. ([E]510.9 H67 f)

(11) V. Katz (ed.), *Using History to Teach Mathematics: An International Perspective*, Mathematical Association of America, 2000. (510.71 U85)

(12) A. Knoebel, R. Laubenbacher, J.M. Lodder, D. Pengelley, *Mathematical Masterpieces: Further Chronicles by the Explorers*, Spinger-Verlag, 2007.

(13) R. Laubenbacher, D. Pengelley, *Mathematical Expeditions: Chronicles by the Explorers*, Springer-Verlag, 1999. (510.9 L36)

(14) *The History of Mathematics*, Nuffield Advanced Mathematics, Longman, 1994. (510.9076 H6)

(15) *NCTM 31st Yearbook: Historical Topics for the Mathematics Classroom*, National Council of Teachers of Mathematics, 1969; revised edition, 1989 (Note the capsules.) (510.9 H673)

You may also like to look for ideas by browsing through the following journals (which our library holds). Learn to locate the bound volumes on the shelves as well as recent unbound issues in the pigeonholes.

(16) *American Mathematical Monthly* ([S]510 A5 M42) Vol.32-

(17) *College Mathematics Journal* ([S]510 T97 C69) Vol.22-

(18) *For the Learning of Mathematics* ([S]510.7 F69 L4) Vol.1-

(19) *Historia Mathematica* ([S]510 H67 M42) Vol.1-

(20) *Mathematical Gazette* ([S]510 M42 G2) Vol.1-

(21) *Mathematics Magazine* ([S]510 M421 M1) Vol.22-

(22) *Mathematics Teacher* ([S]510.7 M421 T2) Vol.51-

(23) *The Mathematical Intelligencer* ([S]510 M42 I61) Vol.2-

The following are some books containing primary source material you can find in our library.

(24) L. Berggren, J. Borwein, P. Borwein (eds), *Pi: A Source Book*, Springer-Verlag, 1997. (516.22 P579Q)

(25) R. Calinger (ed.), *Classics of Mathematics*, Moore Publ., 1982; reprinted by Prentice Hall, 1995. (510 C61)

(26) P. Dedron, J. Itard, *Mathématiques et Mathématiciens*, Editions Magnard, 1959.
(510.9 D299 m, [E]510.9 D299 m4, [EX]510.9 D299 m4)

(27) J. Fauvel, J. Gray (ed.), *The History of Mathematics – A Reader*, Macmillan Education, 1987. (510.9 H67)

(28) T.L. Heath, *Euclid, The Thirteen Books of the Elements*, 2nd edition, Cambridge University Press, 1925; reprinted by Dover, 1956. (516.2 E86 t)

(29) H. Midonick (ed.), *A Treasury of Mathematics*, Philosophical Library, 1965. (510.8 M62)

(30) D.E. Smith, *A Source Book in Mathematics*, McGraw-Hill, 1929; reprinted by Dover, 1959. (510 S645 s)

(31) D.J. Struik, *A Source Book in Mathematics: 1200-1800*, Harvard University Press, 1969. (510.8 S92)

(32) 李文林(編)，*數學珍寶 – 歷史文獻精選*，科學出版社，1998. ([中]410.9 58-3)

(33) 沈康身, *九章算術導讀*, 湖北教育出版社，1997. ([中]410.98 41-5)
(English translation by K.S. Shen, J.N. Crossley and A.W.C. Lun, Oxford University Press and Science Press, 1999.) (510.951 S546n)

(34) *中國科學技術典籍通彙, 數學卷 1-5*, 郭書春*(編)*，河南教育出版社, 1993. ([中]408.2 50)

(35) *中國歷代算學集成, 上. 中. 下冊，靖玉樹(編)*，山東人民出版社，1994. ([中]QA27.C5 C48 1994)

Finally, I like to add eleven general references plus a few websites. (There are many more webpages on topics in history of mathematics. Being brought up in this IT age, you probably are much more proficient than I in such search. I welcome any information and hint from you. But when surfing on the internet, please remember not to equate information with knowledge, or knowledge with wisdom.)

(36) A. Arcavi, History of mathematics and mathematics education: A suggested bibliography, in *History in Mathematics Education: Proceedings of a Workshop held at the University of Toronto, July-August 1983*, edited by I. Grattan-Guinness, *Cahiers d'histoire & de philosophie des sciences*, nº 21, 1987, 197-203.
(510.7 H67)

(37) J.W. Dauben, *The History of Mathematics from Antiquity to the Present: A Selective Bibliography*, Garland Press, 1985; revised edition on CD-ROM, American Mathematical Society, 2000.
([R]016.5109 D2; RD016.5109 H67)

(38) A.R. Dorling, *Use of Mathematical Literature*, Butterworths, 1977. ([R]016.51 D71)

(39) J. Fauvel, *Mathematics Through History: A Resource Guide*, QED Books, 1990. ([ER]510.9 F27)

(40) J. Fauvel, J. van Maanen (eds.), *History in Mathematics Education: The ICMI Study*, Kluwer Academic Publishers, 2000. (510.71 H67 F27)

(41) C.C. Gillespie (ed.), *Dictionary of Scientific Biography*, vol.1 - vol.18, Scribner's, 1970-1990.
([R]509.2A D55)

(42) I. Grattan-Guinness (ed.), *Companion Encyclopaedia of the History and Philosophy of the Mathematical*

Sciences, 2 volumes, Routledge, 1993. (510.9 C73)

(43) V. Katz, K.D. Michalowicz, *Historical Modules for the Teaching and Learning of Mathematics*, Mathematical Association of America, 2005. ([AV]372.7 H67)

(44) F. Le Lionnais (ed.), *Great Currents of Mathematical Thought* vol.1, 2 (translated from the 1962 edition by R.A. Hall and H.G. Bergmann (vol.1), C. Pinter and H. Kline (vol.2)), Dover, 1971. (510.8 L54)

(45) K.O. May (ed.), *Bibliography and Research Manual of the History of Mathematics*, University of Toronto Press, 1973. ([R]016.5109 M4)

(46) L. Rogers, History of mathematics: Resources for teachers, *For the Learning of Mathematics*, 11(2)(1991), 48-52. ([S]510.7 F69 L4)

(47) *Encyclopaedia Britannica: Macropaedia*, 15th edition, 1974. ([R]032 E56 e)

(48) 數學史與數學教學工作坊(主講:蕭文強), July 1999. ([AV]410.9 44, [E]410.9 44)

(49) http://www-history.mcs.st-andrews.ac.uk/history/

(50) http://www.math.nmsu.edu/~history

(51) http://www.edp.ust.hk/previous/default.htm

(52) http://convergence.mathdl.org

(53) http://www.clab.edc.uoc.gr/hpm/

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January, 2008

Articles (37), (38), (39) and (43) in Section **B** and article (45) in Section **C** can be found in
抖擻文選: 數學教學論叢, 抖擻雙月刊, 1981. ([E]374.41 54)

Article (38) in Section **B** and articles (44), (45) and (51) in Section **C** can be found in
香港數學教育的回顧與前瞻: 梁鑑添博士榮休文集, 蕭文強(編),香港大學出版社, 1995.
(HK510.07 H87, 中 410.3 20, [E]410.3 20)

Articles (24), (25) and (46) in Section **B** and articles (44) and (50) in Section **C** can be found in
迎接新世紀: 重新檢視香港數學教育, 黃毅英(編), 香港數學教育學會, 2005.
([中]QA14.H6 Y56 2005, [E]QA14.H6 Y56 2005, HK 510.71 Y51)

Articles (28), (29), (30) and (46) in Section **B** and articles (29), (30), (31), (50) and (52) in Section **C** can be found on web at <http://hkumath.hku.hk/~mks/>.