

MATH20009: Perspectives in Mathematics

View Online



This unit will be comprised of three periods of activity, in each of which there will be a choice between a task which uses the students' maths background to develop communication or career skills, and one which gives scope for independent exploration of new mathematics.

The unit will also involve aspects of group work, peer review and support, peer assessment, as well as presenting work orally and in written form. As these skills are important in almost any career, whether professional or academic, it is suggested that all 2nd year students seriously consider taking this course.

Adams, C.C. (1994) *The knot book: an elementary introduction to the mathematical theory of knots*. New York: W.H. Freeman.

'Ancestral Inference in Population Genetics' (no date). Available at: https://link.springer.com/content/pdf/10.1007/978-3-540-39874-5_1.pdf.

Andrews, G.E., Askey, R. and Roy, R. (1999) *Special Functions*. Cambridge: Cambridge University Press. Available at: <http://dx.doi.org/10.1017/CBO9781107325937>.

Apostol, T.M. (1976) *Introduction to analytic number theory*. New York: Springer.

Austin, B., Barry, D. and Berman, D. (2000) 'The Lengthening Shadow: The Story of Related Rates', *Mathematics Magazine*, 73(1). Available at: <https://doi.org/10.2307/2691482>.

Bhattacharya, K. (2003) *Microstructure of martensite: why it forms and how it gives rise to the shape-memory effect*. Oxford: Oxford University Press.

Boaler, J. and Dweck, C.S. (2016) *Mathematical mindsets: unleashing students' potential through creative math, inspiring messages, and innovative teaching*. San Francisco: Jossey-Bass.

Brawner, J.N. (2000) 'Dinner, Dancing, and Tennis, Anyone?', *Mathematics Magazine*, 73(1). Available at: <https://doi.org/10.2307/2691486>.

Doyle, Peter G. (2000) 'Random Walks and Electric Networks'. Available at: <https://arxiv.org/abs/math/0001057>.

Durksen, T.L. et al. (2017) 'Motivation and engagement in mathematics: a qualitative framework for teacher-student interactions', *Mathematics Education Research Journal*, 29(2), pp. 163–181. Available at: <https://doi.org/10.1007/s13394-017-0199-1>.

Falconer, K.J. (2014) *Fractal geometry: mathematical foundations and applications*. Third edition. Chichester, West Sussex: John Wiley & Sons Ltd. Available at: <https://ebookcentral.proquest.com/lib/bristol/detail.action?docID=1557285>.

Foulds, L.R. (1984) *Combinatorial optimization for undergraduates*. New York: Springer-Verlag.

Gelbaum, B. and Olmstead, J.M.H. (1964) *Counterexamples in analysis*. San Francisco: Holden-Day.

Graver, J.E. and Mathematical Association of America (2001) *Counting on frameworks: mathematics to aid the design of rigid structures*. Washington, D.C.: Mathematical Association of America.

Grimmett, G. and Stirzaker, D. (2001) *Probability and random processes*. 3rd ed. Oxford: Oxford University Press.

Horak, M. (2006) 'Disentangling Topological Puzzles by Using Knot Theory', *Mathematics Magazine*, 79(5). Available at: <https://doi.org/10.2307/27642974>.

Houston, K. (2009) *How to think like a mathematician: a companion to undergraduate mathematics*. Cambridge: Cambridge University Press.

'How to Write Mathematics' (no date). Available at: https://uob-my.sharepoint.com/personal/mancs_bristol_ac_uk/Documents/htwm.pdf.

Joshua D. Laison and Michelle Schick (2007) 'Seeing Dots: Visibility of Lattice Points', *Mathematics Magazine*, 80(4), pp. 274–282. Available at: http://www.jstor.org/stable/27643042?seq=1#page_scan_tab_contents.

Ko

rner, T.W. (1988) *Fourier Analysis*. Cambridge: Cambridge University Press. Available at: <http://dx.doi.org/10.1017/CBO9781107049949>.

Korte, B.H. and Vygen, J. (no date) *Combinatorial optimization: theory and algorithms*. 3rd ed. Berlin: Springer. Available at: <https://doi.org/10.1007%2F3-540-29297-7>.

MICHAEL A. JONES (2009) 'The Geometry behind Paradoxes of Voting Power', *Mathematics Magazine*, 82(2), pp. 103–116. Available at: <http://www.jstor.org/stable/27765883>.

'Netflix Prize problem notes' (no date). Available at: https://uob-my.sharepoint.com/personal/mancs_bristol_ac_uk/Documents/Netflix%20prize%20problem.pdf?slrid=1f6a1b9e-b026-4000-7aa2-edb69d56df80.

Niven, I. (2014) *Irrational Numbers*. Cambridge: Cambridge University Press. Available at: <http://dx.doi.org/10.5948/9781614440116>.

'On Lexell's Theorem' (2017) *The American Mathematical Monthly*, 124(4). Available at: <https://doi.org/10.4169/amer.math.monthly.124.4.337>.

Rousseau, C. and Saint-Aubin, Y. (2008) *Mathematics and technology*. New York: Springer.

Available at: <https://doi.org/10.1007/978-0-387-69216-6>.

Sam C. Saunders, N. Chris Meyer and Dane W. Wu (1999) 'Compounding Evidence from Multiple DNA-Tests', *Mathematics Magazine*, 72(1), pp. 39–43. Available at: http://www.jstor.org/stable/2691312?seq=1#page_scan_tab_contents.

SIEHLER, J. (2010) 'How Long Until a Random Sequence Decreases?', *Mathematics Magazine*, 83(5). Available at: <https://doi.org/10.4169/002557010x529798>.

Silverman, J.H. and Tate, J.T. (2015) *Rational points on elliptic curves*. Second edition, enlarged and updated. Cham: Springer.

Thomas J. Pfaff and Max M. Tran (2009) 'Series That Probably Converge to One', *Mathematics Magazine*, 82(1), pp. 42–49. Available at: http://www.jstor.org/stable/27643157?seq=1#page_scan_tab_contents.

Tufte, E.R. (1997) *Visual explanations: images and quantities, evidence and narrative*. Cheshire, Conn: Graphics Press.

Ware, C. (2013) *Information visualization: perception for design*. 3rd ed. Waltham, MA: Morgan Kaufmann. Available at: <https://ebookcentral.proquest.com/lib/bristol/detail.action?docID=892223>.

Weiner, P.A. (2000) 'The Abundancy Ratio, a Measure of Perfection', *Mathematics Magazine*, 73(4). Available at: <https://doi.org/10.2307/2690980>.