



LUND
UNIVERSITY

Centre for Mathematical Sciences
Mathematics, Faculty of Science

Course Literature, Autumn Term 2022

MATA21 Analysis in One Variable

- Jan-Fredrik Olsen, *Lecture Notes in One Variable Analysis for Scientists*, 2016. Provided by the department.
- A. Sasane, *The How and Why of One Variable Calculus*, Wiley 2015. E-book. Complementary reading.
- M. Spivak, *Calculus*, 4th Edition, Publish or Perish 2008. Complementary reading.
- T.W. Körner, *A Companion to Analysis*, Graduate Studies in Mathematics, Volume 62, American Mathematical Society 2004. Complementary reading.
- Robert A. Adams, Christopher Essex, *Calculus, A Complete Course*, 8th edition, 2013, ISBN: 9780321781079. Complementary reading.

MATA22 Linear Algebra 1

- Lecture Notes provided by the department.
- J. Ström, K. Åström and T. Akenine-Möller, *Immersive Linear Algebra*, 2016.
- Karl Gustav Andersson, *Lineär algebra*, 2000. (Swedish)

MATA23 Foundations of Algebra, Algebrans grunder

- Kjell Elfström, *Algebrans grunder*, 2019. Provided by the department.

MATB21 Analysis in Several Variables 1

- Robert A. Adams, Christopher Essex, *Calculus, A Complete Course*, 8th edition, 2013, ISBN: 9780321781079.
- James J. Callahan, *Advanced Calculus, A geometric View* Springer, 2010, ISBN 978-1-4419-7332-0 (complementary reading).

MATB22 Linear Algebra 2

- Kjell Elfström, *Linear algebra*, 2021. Provided by the department.

MATB23 Analysis in Several Variables 2

- Robert A. Adams, Christopher Essex, *Calculus, A Complete Course*, 8th edition, 2013, ISBN: 9780321781079.

- James J. Callahan, *Advanced Calculus, A geometric View* Springer, 2010, ISBN 978-1-4419-7332-0 (complementary reading).

MATB24 Linear Analysis

- M. Spivak, *Calculus*, 4th edition, ISBN 9780914098911.
- A. Vretblad, *Fourier Analysis and Its Applications*, Springer, Graduate Texts in Mathematics, 2005, ISBN: 9780387008363.

MATB25 Discrete Mathematics

- Grimaldi, Ralph, *Discrete and Combinatorial Mathematics, An Applied Introduction*, Pearson, 2014, ISBN: 9781292022796.
- Karl-Gustav Andersson, *Finite Fields and Error-Correcting Codes*, Lund University, 2015. Provided by the department.

MATC12 Ordinary Differential Equations 1

- Karl Gustav Andersson, Lars-Christer Böiers, *Ordinary Differential Equations*, 2019, Studentlitteratur, First Ed., ISBN: 9789144134956.

MATC20 Image Analysis

- Szeliski, *Computer Vision - Algorithms and Applications*, Springer. E-book.
- Forsyth and Ponce, *Computer Vision - A Modern Approach*, Pearson Education, ISBN: 0-13-191193-7. Complementary reading.

MATC61 Optimization

- Lars-Christer Böiers, *Mathematical Methods of Optimization*, Studentlitteratur, 2010.

MATC70 Matrix Theory

- Anders Holst, Victor Ufnarovski, *Matrix Theory*, 2014, Studentlitteratur, 2013 or 2012.

MATM12 Analytic Functions

- Theodore W. Gamelin, *Complex Analysis*, Undergraduate Texts in Mathematics, Springer, New York, 2001, ISBN: 0-387-95093-1.

MATM30 Mathematical Foundations of Probability

- Schiryaev A.N., *Probability*, Springer.

MATM33 Differential Geometry

- Sigmundur Gudmundsson, *An Introduction to Gaussian Geometry*, Lund University, 2018. (main book)
- L. M. Woodward, J. Bolton, *A First Course in Differential Geometry - Surfaces in Euclidean Space*, Cambridge University Press, 2019. (recommended complementary reading)
- Andrew Pressley, *Elementary Differential Geometry*, 2010. (recommended complementary reading)

MATM35 Number Theory

- David M. Burton, *Elementary Number Theory*, 7th edition, McGraw-Hill, New York, 2010, ISBN: 978-007-128919-1.

MATM41 Galois Theory

- Stewart, *Galois Theory*, 3rd ed., Chapman Hall CRC Mathematics, London 2003. ISBN: 978-1584883937 (main textbook)
- A. Cox, *Galois Theory*, 2nd ed., John Wiley Sons, 2012. ISBN: 978-1439854297 (additional recommended reading)
- Rotman, *Galois Theory*, 2nd ed., Springer, 1990. ISBN: 978-0387985411 (additional recommended reading)

MATP32 Harmonic Analysis

- Grafakos, Loukas, *Classical Fourier analysis*, Third edition. Graduate Texts in Mathematics, 249. Springer, New York, 2014. xviii+638 pp.
- Grafakos, Loukas, *Modern Fourier analysis*, Third edition. Graduate Texts in Mathematics, 250. Springer, New York, 2014. xvi+624 pp.
- Duoandikoetxea, Javier, *Forty Years of Muckenhoupt Weights*, Function Spaces and Inequalities, Lecture Notes Paseky nad Jizerou 2013 (J. Lukes, L. Pick ed.), pp. 23-75. (Supplementary reading)
- Pereyra, Maria Cristina, *Dyadic harmonic analysis and weighted inequalities: the sparse revolution*, New Trends in Applied Harmonic Analysis, Volume 2. Applied and Numerical Harmonic Analysis. Birkhauser, Cham (2019) 159-239. (Supplementary reading)
- Pereyra, Maria Cristina; Ward, Lesley A., *Harmonic analysis. From Fourier to wavelets*, Student Mathematical Library, 63. IAS/Park City Mathematical Subseries. American Mathematical Society, Providence, RI; Institute for Advanced Study (IAS), Princeton, NJ, 2012. xxiv+410 pp. (Supplementary reading)

MATP35 Linear Functional Analysis

- Peter D. Lax, *Functional Analysis*, Wiley Pure and Applied Mathematics: A Series of Texts, Monographs and Tracts, 2002, ISBN: 978-0-471-55604-6.

MATP45 Specialised Course on Linear Functional Analysis

- Peter D. Lax, *Functional Analysis*, Wiley Pure and Applied Mathematics: A Series of Texts, Monographs and Tracts, 2002, ISBN: 978-0-471-55604-6.

NUMA01 Computational Programming with Python

- Führer, Solem, Verdier, *Scientific Computing with Python 3*, Packtpub 2016 (paperback, epub, Kindle).

NUMB11 Numerical Linear Algebra

- Lloyd N. Trefethen and David Bau III, *Numerical Linear Algebra*, SIAM, Philadelphia, ISBN 0-89871-361-7.

NUMN32 Numerical Methods for Differential Equations

- Lennart Edsberg, *An Introduction to Modeling and Computation for Differential Equations*. Complementary reading.

NUMN21 Advanced Course in Numerical Algorithms with Python/SciPy

- Stig Larsson, Vidar Thomée, *Partial Differential Equations with Numerical Methods*, Springer Link, ISBN 978-3-540-88705-8

MASA02 Mathematical Statistics, Basic Course

- Anevski, D., *A concise introduction to Mathematical Statistics*, Studentlitteratur 2017, second printing.
- Evans, M. J., Rosenthal, Jeffrey Seth, *Probability and statistics: the science of uncertainty*, 2010, 2. ed. W. H. Freeman. ISBN: 9781429224628