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Literature

Textbook for the course (available online and on file server, free of charge):

Hjorth-Jensen, M., *"Computational Physics"*, University of Oslo, 2012.

Some other resources that you may find useful:

[TAB] Beu, T. A., "Introduction to NUMERICAL PROGRAMMING" A Practical Guide for Scientists and Engineers Using Python and C/C++, CRC Press, ISBN-13 978-1-4665-6967-6 (Paperback), 2015.
Available pdf's on the file server:

- Chapter 9.5 – 9.7: Data Modeling.
- Chapter 11: Monte-Carlo.

[WRG] Gibbs, R. W., "Computation in Modern Physics", 3rd edition, World Scientific, 2006.
Available pdf's on the file server:

- Chapter 1: Integration.
- Chapter 5.2: Linear Systems.
- Chapter 5.3: Eigensystems.
- Chapter 7: Finite Elements.
- Chapter 2: Monte-Carlo.
- Chapter 8: Digital Signal Processing (FFT).

[LPB] Landau, R. H., Paez, M. J., Bordeianu, C. C., *"Computational Physics"*, 2nd edition, Wiley-VCH, 2007. ➔ CD containing the programs for the examples in the book in java, C, and fortran.

- Chapter 15.5: Algorithms for Ordinary Differential Equations.

[EMG] Enns, R. H., and McGuire, G. C., *"An Introductory Guide to the Mathematical Models of Science"*, Springer, 2006. ➔ CD includes programs for the examples in the book for Maple 10.

[NR] Press, W. H., Teukolsky, S. A., Vetterling, W. T., Flannery, B. P., and Metcalf, M., *"Numerical Recipes in Fortran 90"*, 2nd edition, Vol. 2 of Fortran Numerical Recipes: "The Art of Parallel Computing", Cambridge University Press, 1996 ➔ Also available online: http://www.nr.com/. Among the legacy codes there are also versions for C and Fortran 77. It appears that in more recent versions only C++ continues to be supported.

- Chapter 11.1: Jacobi method: eigenvalues and eigenvectors of symmetric matrices.
- Chapter 11.3: QR/QL method: eigenvalues and eigenvectors of tridiagonal matrices.
- Chapter 10: Minimization of Maximization of Functions.
- Chapter 12: Fast Fourier Transform.

[AT] Allen, M. P., and Tildesley, D. J., "Computer Simulations of Liquids", Oxford Science Publications, 1987.

[DB] Frenkel, D., and Smit, B., "Understanding Molecular Simulations, From Algorithms to Simulations", Academic Press, 2002.

[MET] Tuckerman, M. E., "Statistical Mechanics: Theory and Molecular Simulations", Oxford University Press, 2010.

[NB] Newman, M. E. J., and Berkema, G. T., "Monte Carlo Methods in Statistical Physics", Oxford University Press, 2001.

Landau, D. P., and Binder, K., "A Guide to Monte Carlo Simulations in Statistical Physics", Cambridge University Press, 2000.

[RSA] Rousseau, C. and Saint-Aubin, Y., “Mathematics and Technology”, Springer, 2008.

[WMK] McKinney, W., “Python for Data Analysis”, O’Reilly Media, 2013.

[SS] Samarasinghe, S., “Neural Networks for Applied Science and Engineering”, Auerbach Publications, 2006.

[SR] Raschka, S., “Python Machine Learning”, Packt Publishing, 2015.

[PG] Paarsch, H. J. and Golyaev, K., “A Gentle Introduction to Effective Computing in Qantitative Research, MIT Press, 2016.

[JG] Gleick, J., “The Information”, Vintage Books, 2011.

Representation of Numbers and standards:
https://en.wikipedia.org/wiki/IEEE_floating_point
https://en.wikipedia.org/wiki/IEEE_754-1985

This list may be updated during the semester. Of course you are welcome to use any other literature resources available to you online or otherwise.