

Modular Forms - Some References

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Basic/similar to Course in Lent 2007

1. J. P. Serre, *A course in Arithmetic*, Graduate Texts in Maths. **7**, Springer, New York, 1973 (Chapter VII is an easy-going introduction to the subject).
2. J. Milne, *Modular Functions and Modular Forms*, Lecture notes from a course, download available at <http://www.jmilne.org/math>.
3. D. Bump, *Automorphic forms and representations*, Cambridge Studies in Adv. Maths. **55**, CUP, Cambridge, 1997 (Sections 1.1-1.6 of Chapter I are particularly relevant).
4. H. Iwaniec, *Topics in classical automorphic forms*, Graduate Studies in Mathematics **17**, AMS, 1997 (Exposition with an eye towards analytic number theory).
5. J. H. Silverman, *Advanced Topics in the arithmetic of Elliptic Curves*, Graduate Texts in Maths. **151**, Springer, New York, 1994 (Chapter 1 gives a nice treatment of the theory for $SL_2(\mathbf{Z})$).
6. F. Diamond, J. Shurman, *A First Course in Modular Forms*, Graduate Texts in Maths. **228**, Springer, New York, 2005 (a good reference providing also an introduction to the algebraic theory of modular forms, we'll cover most of Chapters 1-5).
7. E. Freitag, R. Busam, *Complex analysis*, Universitext, Springer, Berlin, 2005 (for background in complex analysis; covers elliptic functions and modular forms, but not theory of Riemann surfaces).
8. S. Lang, *Elliptic Functions*, Graduate Texts in Maths. **112**, Springer, New York, Second Edition, 1987 (Elliptic functions, Theta functions, Kronecker limit formula).

Computations with Modular Forms

1. W. Stein, *Modular Forms: A computational approach*, AMS 2007, download available at <http://modular.math.washington.edu/>.
2. H. Verril, Fundamental domain drawer, <http://www.math.lsu.edu/~verrill>.

Advanced texts/towards research topics

1. H. Hida, *Elementary theory of L-functions and Eisenstein series*, London Math. Soc. Student Texts **26**, CUP, Cambridge, 1993 (not so elementary introduction to arithmetic of modular forms).
2. G. Shimura, *Introduction to the arithmetic theory of automorphic functions*, Princeton University Press, 1971.
3. T. Miyake, *Modular Forms*, Springer, Berlin, 1989 (a standard reference for classical theory of modular forms).
4. F. Diamond, J. Im, *Modular forms and modular curves*, in: *Seminar on Fermat's Last Theorem*, CMS Conf. Proc. 17, Amer. Math. Soc., Providence, RI, 1995, 39-133.
5. J. Coates, Shing-Tung Yau, *Elliptic curves, modular forms & Fermat's last theorem- Conference Proceedings*, International Press, Cambridge, MA, 1997 (in particular, the survey article by H. Darmon, F. Diamond, R. Taylor, download available at <http://www.math.mcgill.ca/~darmon/pub/pub.html>).
6. Topological modular forms, elliptic cohomology etc., see www.math.uiuc.edu/~ganter/talbot/index.html

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