Corso di laurea in Matematica - AA 2017/2018
GE460 - Teoria dei grafi - Argomenti per seminari
Docente: Margarida Melo

1. Simple applications of graph theory: the shortest path problem and the Sperner Lemma. ([BM2, 1.8, 1.9])

2. Directed graphs, orientable Eulerian graphs. ([Wil, 22,23])

3. Kuratovsky theorem. ([Wil, ch. 5])

4. Markov chains. ([Wil, 24])

5. The marriage problem. ([Wil, 25,26])

6. Menger theorem. ([Wil, 28])

7. Network flows. ([Wil, 29])

8. Complexity of algorithms. ([BM1, ch. 8])

9. Graphs in other surfaces. ([Die, App. B])

10. Ramsey theory. ([Bol, ch. VI])

11. Random walks on graphs. ([Bol, ch. IX])

12. Szemerédi's regularity lemma. ([Bol, iV.5])

13. Kirkhoff's matrix tree theorem. ([GR, 13])

14. Chip-firing games. ([GR, 14])

15. Characterization of graphic/cographic matroids. ([Wil, ch. 9])

16. Planar matroids. ([Wil, ch. 9])

17. Representability of matroids. ([Wil, ch. 9])

18. Connectivity for matroids. ([Wil, ch. 9])

19. Knots and graphs. ([GR, ch. 16])

20. Divisor theory on graphs and the Riemann-Roch problem. ([BN07])

Riferimenti bibliografici

[BN07]   M. Baker, S. Norine: Riemann-Roch and Abel-Jacobi theory on a finite graph. Adv. Math. 215 (2007), no. 2, 766–788. (https://arxiv.org/abs/math/0608360)

[Big]   N. Biggs: Algebraic graph theory, Cambridge University Press.

[BM1]   J. A. Bondy, U.S.R. Murty: Graph theory, Springer GTM 244.

[BM2]   J. A. Bondy, U.S.R. Murty: Graph theory with applications, North Holland.

[Bol]   B. Bollobás: Modern Graph theory, Springer GTM 184.

[Die]   R. Diestel: Graph theory, Spriger GTM 173.

[GR]   C. D. Godsil, G. Royle: Algebraic Graph theory, Springer GTM 207.

[Oxl]   J. G. Oxley: Matroid theory. Oxford graduate texts in mathematics, 3.

[Wil]   R. Wilson: Introduction to graph theory. Prentice Hall.