Syllabus for final exam.

Groups of vertices — cliques, plexes & cores (k-core) 7.8.1
components & k-components (7.8.2)
Transitivity & clustering coff. (7.9, 7.9.1)
Reciprocity 7.10
Signed edges & structural balance (7.11)
Similarity — (7.12)
Homophily & assortative mixing
Modularity (7.13)

7.5, 7.6, 7.7 & 7.8

Power-law Large scale structure of networks (Ch. 8)

- Degree distribution (8.3)
- Power laws & scale free networks (8.4)
- Detecting & visualizing power laws (8.4.1)
- Properties of power-law dist. (8.4.2)

8.1, 8.2 (a) – (c)

Models of graphs.

Random Graphs. (Ch. 12) $G(n, p)$

12.3, 12.4, 12.7

Problems — 12.1, 12.6 (a), (b), (c), (e)

Small-world networks (Watts-Strogatz Model) (15.1)

- clustering & Fig. (15.5)

Barabasi-Albert model of preferential attachment.

Community Detection

Modularity maximization

Louvain Algorithm

Agglomerative methods

- Single linkage
- Average linkage
- complete linkage

Divisive methods

Girvan - Newman Algorithm
(Edge betweenness)

11.3, 11.3.1, 11.4, 11.6, 11.7, 11.11.1, 11.11.2

Problems :- 11.3 , 11.5