Lectures 1 and 2 (and probably part of 3):
Theory of Unconventional superconductivity from repulsive interactions

Superconductivity from weak repulsive interactions:

Fermi liquid and its instabilities
Kohn-Luttinger effect and perturbative RG
Screening and the effect of longer range interactions
The sensitivity of unconventional superconductivity to band structure

The absence of superconductivity in the large U limit of the Hubbard model

Numerical approaches and the nature of superconductivity at intermediate coupling.

References:

S. Raghu, S. A. Kivelson, and D. J. Scalapino, "Superconductivity in the repulsive U Hubbard model: an asymptotically exact weak coupling solution," Phys. Rev. B **81**, 224505 (2010).

S. Raghu, E. Berg, A. V. Chubukov, and S. A. Kivelson, "Effects of longer-range interactions on unconventional superconductivity," Phys. Rev. B **85**, 24516 (2012).

T. Scaffidi, J. C. Romers, and S. H. Simon, "Pairing symmetry and dominat band in Sr_2RuO_4," arXiv:1401.0016

L. Liu, H. Yao, E. Berg, and S. A. Kivelson," Phases of the infinite U Hubbard model," Phys. Rev. Lett. **108**, 126406 (2012).

P. Corboz, T. M. Rice, and M. Troyer, "Competing states in the t-J model: uniform d-wave state vs. stripe state," arXiv:1402.2859

Lectures 3 and 4:
Theory of High Superconducting Transitions Temperatures

What limits the SC transition temperature in conventional superconductors?
Bipolarons, CDW, and the limit of strong electron-phonon coupling
Superconductivity in the negative U Hubbard model
Superconductivity and pseudo-gap phenomena in quasi 1D systems
Possibility of higher T_c in composite systems.

References:

E.W. Carlson, V. J. Emery, S. A. Kivelson, D. Orgad, "Concepts in High Temperature Superconductivity," in "The Physics of Conventional and Unconventional

Superconductors" ed. By K. H. Bennemann and J. B. Ketterson – also arXiv:cond-mat/0206217

T. Paiva, R. R. dos Santos, R. T. Scalettar, and P. J.H.Denteneer, "Critical temperature for the two-dimensional attractive Hubbard model," Phys. Rev. B **69**, 184501 (2004).

E. Berg, D. Orgad, and S. A. Kivelson, "A route to high temperature superconductivity in composite systems," Phys. Rev. B**78**, 094509 (2008).