Asymmetric Syntheses

Schedule:

Week 1: Significance of chirality in living organisms; stereochemistry; enantiomers and diastereomers; enantiopure materials.

Week 2: Chiral pool synthesis; stereoselectivity; basic concepts of asymmetric synthesis; topicity, prochirality.

Week 3: Cram's rule, Felkin–Anh, Bürgi–Dunitz, Prelog's rule; generations of asymmetric methods.

Week 4: Examples of first and second generation asymmetric methods.

Week 5: C–C bond-forming reactions I: asymmetric alkylation, Michael reactions.

Week 6: C–C bond-forming reactions II: additions, cycloadditions, Diels–Alder.

Week 7: Asymmetric oxidation reactions; epoxidation.

Week 8: Asymmetric reductions.

Week 9: Multiple asymmetric induction.

Week 10: Organocatalysis; memory of chirality.

Week 11: Kinetic and dynamic kinetic resolution; enzymatic reactions.

Week 12: Asymmetric total synthesis.

Week 13: Student literature presentations.

Week 14: Student literature presentations (continued).