Class schedule: Algebraic Systems Biology, 2025

All slides, papers, and book chapters will be made available on the course webpage.

WEEK 1

Mon. 21 April. No class (Easter Monday).

Tues. 22 April. Welcome, introductions, and course overview. Lecture (3.5 hrs) on "What is algebraic biology?", pp. 1–39, and Chemical reaction networks, pp. 1–11.

READ: "The case for algebraic biology, from research to education", by Macauley and Youngs (16 pages).

Wed. 23 April. Lecture (2 hrs) on *Biochemical reaction networks*, pp. 12–17, and *Gene regula*tion by operons, pp. 1–15, and "Delay differential equation models of gene regulation, pp. 1–6.

READ: Robeva/Hodge, Chapter 2: Bistability in Lactose Operon of Escherichia coli: A Comparison of Differential Equation and Boolean Network Models". Sections 2.1–2.3, pp. 37–46.

Thurs. 24 April. Lecture (3.5 hrs) on "Delay differential equation models of gene regulation (pp. 7–29), and "Basics of Boolean modeling", pp. 1–17.

READ: Robeva/Hodge, Chapter 2, Sections 2.4, pp. 47–57, and Chapter 1: "*Mechanisms of Gene Regulation: Boolean Network Models of the Lactose Operon in Escherichia coli*", by Robeva, Kirkwood, and Davies. Sections 1.1–1.2, pp. 1–6.

Fri. 25 April. Lecture on "*Fixed points of Boolean models*", pp. 1–14. *READ*: Robeva/Hodge, Chapter 1, Section 1.3–1.4, pp. 6–31.