

Biochem 508 Syllabus

Spring Semester

Meets M-W-F, 9:55 am – 10:45 am
Exams during class time

Instructors: [Sebastian Bednarek](#)
[Chris Wiese](#)

Part I: Biosynthesis

Instructor: Chris Wiese

- 1 Pentose phosphate shunt
- 2 Photosynthetic carbon fixation
- 3 Biosynthesis of fatty acids/eicosanoids
- 4 Biosynthesis of triacylglycerol and phospholipids
- 5 Biosynthesis of sterols and isoprenoids
- 6 Cholesterol uptake and receptor-mediated endocytosis
- 7 Cytochrome P-450 and biosynthesis
- 8 Nitrogen fixation and amino acid biosynthesis
- 9 Compounds formed from amino acids
- 10 Tissue-specific metabolism

Exam 1 covers lectures 1-10 (worth 100 points)

Part II: Biosignaling and the Integration of Metabolism

Instructor: Chris Wiese

- 11 Hormones in the integration of metabolism
- 12 Hormonal regulation of fuel metabolism and body weight
- 13 Insulin receptor and tyrosine kinase
- 14 Beta-adrenergic mechanisms; cAMP; PKA
- 15 IP₃, Ca₂₊, PKC
- 16 Biochemistry of vision and olfaction
- 17 Regulation of cell division; cdc kinases
- 18 Oncogenes and oncoproteins
- 19 Cytoskeleton
- 20 Molecular motors

Exam 2 covers lectures 11-20 (worth 100 points)

Part III: Information Pathways

Instructor: Sebastian Bednarek

- 22 Nucleic acids; topology and packaging
- 23 DNA metabolism I
- 24 DNA metabolism II
- 25 DNA metabolism III

- 26 RNA synthesis
- 27 Regulation of gene expression I
- 28 Regulation of gene expression II
- 29 Vitamin D and the regulation of eukaryotic gene expression Bednarek
- 30 RNA processing Bednarek

Exam 3 covers lectures 21-30 (worth 100 points)

Part IV: Protein Synthesis and Targeting

Instructor: Sebastian Bednarek

- 31 The genetic code
- 32 Protein synthesis I: ribosomes/tRNA
- 33 Protein synthesis II: initiation and regulation of translation
- 34 Protein synthesis III: energetics and special aspects
- 35 Molecular chaperones
- 36 Protein targeting
- 37 Secretory and nuclear protein trafficking
- 38 Co/post-translational protein processing
- 39 Protein degradation
- 40 Collagen
- 41 Class wrap-up

Final (worth 150 points; cannot be dropped)

Cumulative; includes a major section on lectures 31-41