

Own time	Video lectures	Le1 Introduction	Le5 Metabolic networks and flux analysis	Le9 Energetics and enzymes	Le13 Measuring metabolites	Le17 Experimental considerations
		Le2 Material and energy budget	Le6 Isotope tracing	Le10 Respiration and oxygen	Le14 Fatty acids and sterols	Le18 Compartmentalization and Transport
		Le3 Oxidation and reduction	Le7 The TCA cycle	Le 11 Enzyme classes	Le15 Nucleotides	Le19 Genomic aspects
		Le4 Carbohydrates	Le8 Cofactors and vitamins	Le12 Amino acids and nutrient starvation	Le16 One-carbon units and methylation	
	Literature	Stryer ch. 15,16	Stryer ch 17 Buescher et al. 2015	Stryer ch 8, 18, 23	Stryer ch 22, 25, 26 (cholesterol)	Stryer ch 27 Thiele et al 2013 Zecchin et al 2015

	Mon 7/3 Room 311	Tue 8/3 Room 311	Fri 11/3 Room 311	Mon 14/3 Room 221	Tue 15/3 Room 221	Fri 18/3 Room 221	
13--14	Introduction to course, practical issues	Q & A	Q & A	Q & A	Q & A	Q & A	<i>Review questions on lectures or study material. Other questions.</i>
14--15	Databases and tools for navigating metabolism	Material and energy	TCA cycle Isotope tracing 1	Energetics and respiration	Fatty acids	Measuring metabolism	
		Coffee break	Coffee break	Coffee break	Coffee break		<i>Each 1 hour block consists of ~45 min problem solving and ~15 min whole class discussion of solutions</i>
15--16		Redox metabolism	Flux balance analysis	Enzyme classes	Mass spectrometry and NMR	Compartments and transport	
16--17		Carbohydrates		Amino acids Isotope tracing 2	Nucleotides and one-carbon units	Genomics	

Seminar / Problem solving	Own time	Computer lab / exercise
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