

UCD School of Biomolecular and Biomedical Sciences
2025 Biochemistry Summer School - Lecture list

Week	No.	Title/Description	Lecturer
Week 1	L1	Introduction: What is Biochemistry?	JH
	L2	The physical basis of life: biomolecular interactions	tbc
	L3	Amino acids, the peptide bond, protein primary structure	
	L4	Secondary structure, fibrous proteins, tertiary structure	
	L5	Protein characterisation, sequencing and structure determination	
	L6	Protein purification	
	L7	Diversity of protein functions: e.g. Insulin, haemoglobin	
	L8	Protein dysfunction and disease; clinical analyses	
	T1	Protein structure/function tutorial	
Week 2	L9	Carbohydrate structure I (monosaccharides, glycosidic bond)	JH
	L10	Carbohydrate structure II (polysaccharides)	
	L11	Carbohydrates in cell-cell interactions, proteoglycans, bacterial cell wall	
	L12	Lipid structure: fatty acids, phospholipids, sphingolipids	
	L13	Lipid structure: cholesterol and steroid hormones	
	L14	Lipid signaling molecules	
		(long/additional practical sessions this week)	
	T2	Tutorial	
	E1	Assessment I	
Week 3	L15	Membranes I	JH
	L16	Membranes II	
	L17	Membrane proteins I	
	L18	Membrane proteins II	
	L19	Transport I (Thermodynamics)	
	L20	Transport II (primary transport, ion gradients, secondary transport)	
	L21	Signaling I (receptors)	
	L22	Signaling II (second messengers)	
	T3	Tutorial	
Week 4	L23	Introduction to Enzymes	JM
	L24	Coenzymes and isoenzymes	
	L25	Enzyme structure and specificity	
	L26	Mechanisms of rate enhancement and basic kinetics	
	L27	Enzymes Inhibition	
	L28	Regulation of enzyme activity	
	L29	Enzymes as targets in disease	
	T4	Enzyme tutorial	
	E2	Assessment II	
Week 5	L30	Introduction to metabolism, intro to bioenergetics	JR
	L31	Glycolysis	
	L32	Gluconeogenesis	
	L33	Glycogen metabolism	
	L34	TCA cycle	
	L35	Electron transport chain and oxidative phosphorylation	
	L36	Photosynthesis	
	L37	additional lecture/tutorial tbc	
	T5	Bioenergetics tutorial	
	E3	Assessment III	
Week 6	L38	Lipid metabolism I, beta oxidation	JR
	L39	Amino acid metabolism	
	L40	Regulation and integration of metabolism	
	L41	Hormonal regulation of metabolism	
	T6	Tutorial	
	L42	Make-up lecture/Review lecture/Tutorial	tbc
	L43	Make-up lecture/Review lecture/Tutorial	tbc
	L44	Make-up lecture/Review lecture/Tutorial	tbc
	E4	Final Exam	