## List of chapters & videos (Each chapter is a module. Watch videos or read notes if you miss a lecture)

W	Week / date				
		Chapter 16 - Electric Charge and Electric Field	Read this section in the		
	IVI Aug-22		text book		
		1A Static electricity and Conservation of Charge	16.1 - 16.2		
		1B Insulators and Conductors, Induced Charge: Electrophorus and Electroscope	16.3 - 16.4		
	W Aug-24	2A Coulomb's Law, Quantization of charge	16.5		
1		2B E Field: General definition, point charge	16.7		
		2C Problem solving: electric dipole	16.6		
	R Aug-25	Recitation	worksheet 1		
	F Aug-26	3A Field lines	16.8		
		3B Electric Fields and conductors	16.9		

	M Aug-29	4A Gauss's Law and Electric Flux	16.12
	T Aug-30	Homework 1 + Checkpoint Question 1 (11 pm)	
2	W Aug-31	Chapter 17 -Electric Potential	
		5A Potential energy (PE) and Potential (V)	17.1
		5B Potential: point charge and capacitor. Equipotentials, Relation between E and V	17.2, 17.3, 17.5
	R Sep-1	Recitation	worksheet 2
	F Sep-2	6A Electron Volts and Work	17.4

3	M Sep-5	University Holiday	
	T Sep-6	Homework 2 + Checkpoint Question 2 (11 pm)	
	W Sep-7	7A Assembling point charges	Example 17.5
		7B Capacitance and Dielectrics	17.7- 17.8
	R Sep-8	Recitation	worksheet 3
	F Sep-9	8A Stored PE	17.9
		Chapter 18 - Electric currents	
		8B The Electric Battery and Current	18.1 - 18.2
		8C Ohm's Law and Resistivity	18.3 - 18.4

4	M Sep-12	9A Electric Power and kWh	18.5; Example 18-8
		9B Alternating current	18.7
	T Sep-13	Homework 3 + Checkpoint Question 3 (11 pm)	
	W Sep-14	Review for Exam 1	
	R Sep-15	Recitation	worksheet 4
	F Sep-16	EXAM 1 (lectures 1-9)	

	M Sep-19	Chapter 19 - DC circuits	
		10A EMF, Terminal voltage	19.1
		10B Resistors in series	19.2
5		10C Resistors in parallel	19.2
	W Sep-21	11A Kirchhoff's rules.	19.3
	R Sep-22	Recitation	worksheet 5
	F Sep-23	12A EMFs and Capacitors in series and parallel	19.4, 19.5
		12B RC circuits, Ammeters and Voltmeters	19.6, 19.8

	M Sep-26	Chapter 20 - Magnetism	
		13A Magnets, Magnetic fields and Field lines	20.1
		13B Earth's magnetic field and other fields	20.1
		13C Electric currents create B fields, field due to a current and a current loop	20.2, 20.5
	T Sep-27	Homework 4 + Checkpoint Question 4 (11 pm)	
6	W Sep-28	14A Force on a current in a magnetic field	20.3, 20.5, 20.6
		14B Force on a charge moving in a <i>B</i> field	20.4
		14C Charge moving perpendicular to B goes in a circle, crossed E and B fields	Example 20-6, 20.11
	R Sep-29	Recitation	worksheet 6
	F Sep-30	15A Solenoids and electromagnets, Ampere's Law	20.7 - 20.9, 20.11
		15B Torque, types of magnetism	20.9, 20.12

7	M Oct-3	Chapter 21 - Electromagnetic induction and Faraday's Law	
		16A Magnetic Flux, Faraday's Law	21.1
		16B Lenz's Law, Faradays' Law generalized	21.2, 21.4
	T Oct-4	Homework 5 + Checkpoint Question 5 (11 pm)	
	W Oct-5	17A Motional EMF and Eddy currents (magnetic brakes)	21.3
	R Oct-6	Recitation	worksheet 7
	F Oct-7	18A Applications: Generators, Transformers, Inductors, Energy stored in a B field	21.5 - 7, 21.10 - 21.11
		18B LR circuits	21.12

8	M Oct-10	Chapter 22 - Electromagnetic waves	
		19A Maxwell's equations and Electromagnetic waves	22.1 -22.2
		19B EM Spectrum and energy transported	22.3 - 22.5
	T Oct-11	Homework 6 + Checkpoint Question 6 (11 pm)	
	W Oct-12	Review for Exam 2	
	R Oct-13	Recitation	worksheet 8
	F Oct-14	EXAM 2 (lectures 10-19)	

	M Oct-17	Chapter 23 - Light: Geometric optics	
		20A Light rays, Plane Mirrors	23.1 - 23.2
		20B Spherical Mirrors: Ray diagrams	23.3
9	W Oct-19	21A Spherical Mirrors: equations and sign convention, spherical aberrations	23.3
		21B Index of Refraction, Snell's Law	23.4 - 23.5
		21C Total Internal reflection	23.6
	R Oct-20	Recitation	worksheet 9
	F Oct-21	22A Thin lenses: Ray diagrams, equations and sign convention	23.7 - 23.8

	M Oct-24	Chapter 24 - The wave nature of light	
		23A Polarization and the Brewster angle	24.10
		23B Huygen's principle	24.1 - 24.2
	T Oct-25	Homework 7 + Checkpoint Question 7 (11 pm)	
10	W Oct-26	24A Diffraction and Interference: Double slit	24.3
10		24B Single slit	24.5
		24C Diffraction grating	24.6 - 24.7
	R Oct-27	Recitation	worksheet 10
	F Oct-28	25A The visible spectrum and Dispersion	24.4
		25B Thin film interference	24.8

	M Oct-31	Chapter 25 - Optical instruments	
		26A Eye, Corrective lenses	25.2
		26B Magnifier	25.3
	T Nov-1	Homework 8 + Checkpoint Question 8 (11 pm)	
11	W Nov-2	27A Compound Microscopes	25.5
11		27B Aberrations and Distortion, Limits of Resolution (Rayleigh Criterion)	25.6 - 25.8
	R Nov-3	Recitation	worksheet 11
	F Nov-4	Chapter 26 - The Special Theory of Relativity	
		28A Postulates of special relativity and Time Dilation	26.1 - 26.4
		28B Length contraction	26.5

12	M Nov-7	29A Relativistic momentum, mass and KE	26.7 - 26.8
		29B E=mc <sup>2</sup> , units, momentum and energy	26.9, 26.11
	T Nov-8	Homework 9 + Checkpoint Question 9 (11 pm)	
	W Nov-9	Review for Exam 3	
	R Nov-10	Recitation	worksheet 12
	F Nov-11	EXAM 3 (lectures 20-29)	

13	M Nov-14	Chapter 27 -Early Quantum Theory and Models of the Atom	
		30A Black body radiation, photons	27.2
		30B Photoelectric effect	27.3
	W Nov-16	31A Photons: Properties, interaction with matter, Pair Production and annihilation	27.4, 27.6
		31B Wave-particle duality, de Broglie wavelength and Electron Microscopy (SEM, TEM)	27.7, 27.8, 27.9
	R Nov-17	Recitation	worksheet 13
	F Nov-18	32A Early atom models, Atomic line spectra, Bohr Model: part 1 (Radius of orbits)	27.10, 27.11, 27.12
	F Nov-18	Homework 10 + Checkpoint Question 10 (11 pm)	

## Thanksgiving Break Nov 21-25

14	M Nov-28	33A Bohr Model: part 2 (Energy levels, Atomic line spectra)	27.12, 27.13
	W Nov-30	Chapter 28 -Quantum Mechanics of Atoms	
		34A The Wavefunction and Double-slit experiment (revisited)	28.1 - 28.2
		34B The Heisenberg Uncertainty Principle	28.3 - 28.5
	R Dec-1	Recitation	worksheet 14
	F Dec-2	35A Quantum numbers (part 1)	28.6 - 28.8
		35B Quantum numbers (part 2)	28.6 - 28.8
	F Dec-2	Homework 11 + Checkpoint Question 11 (11 pm)	·

15	M Dec-5	Chapter 30 - Nuclear Physics and radioactivity	
		36A The Nucleus, approximate size, binding energy and nuclear forces	30.1 - 30.2
		36B Radioactivity: alpha, beta and gamma decay.	30.3 - 30.7
	W Dec-7	37A Q-value	30.4
		37B Half-Life and Rate of decay	30.8 - 30.9
	R Dec-8	Recitation	worksheet 15
	F Dec-9	Homework 12 (11 pm)	Homework 12 is optional.
	F Dec-9	No lecture - although I will be available to answer questions	~1% bonus on top of final
			grade

M Dec-12 Final Exam, 12:00 - 2:00 pm (lectures 1-37)