Suggested study guide for one and two semester courses on Organic Electronics (15 week semester)

Week	Topic (1 semester)	Chapter/Sec. reading	Week (2 sem.)	Topic (2 semester)	Chapter/Sec. reading
1	Introduction to OE: Overview, history	1.1-1.3	1-1	Introduction to OE: Overview, history, language	1.1-1.3
2	Common language, crystal structure & binding	1.4, 2.1-2.4	1-2	Common language, crystal structure & binding	1.4, 2.1 -2.4
3	Optical Prop. 1: Born-Oppenheimer & Franck-Condon, Fermi's golden rule, transitions	3.1, 3.2, 3.5	1-3	Calculating structure, epitaxy, self-assembly	2.5 – 2.8
4	Optical Prop. 2: Excitons, Spin, Energy transfer	3.6, 3.7.1, 3.7.4, 3.8	1-4	Optical Prop. 1: Born-Oppenheimer and Franck-Condon, LCAO, Fermi's golden rule, transitions	3.1-3.5.2
5	Optical Prop. 3: Exciton diffusion and recombination; Electronic Properties 1: Energy bands, electron transport	3.9-3.10; 4.1-4.3.1, 4.3.2.1, 4.3.2.2	1-5	Optical Prop. 2: Understanding spectra, dimers, excimers, exciplexes	3.5.3-3.6.5
6	Electronic Prop. 2: Conduction, mobility, doping, HJs	4.4-4.7	1-6	Optical Prop. 3: Excitons, CT states, spin, energy transfer	3.6.6-3.8.2
7	Materials growth & purification, device patterning, packaging	5	1-7	Optical Prop. 4: energy transfer, exciton diffusion, recomb. & annihilation; Electron Prop. 1, Energy bands	3.8.2-3.10; 4.1
8	Light emitters 1: Basics, efficiency, fluorescence, phosphorescence, TADF	6.1-6.3.4, 6.4	1-8	Electronic Prop. 2: Energy bands, hopping, conduction, mobility	4.2-4.4
9	Light emitters 2: Rolloff, White OLEDs, outcoupling	6.5-6.6.1	1-9	Electronic Prop. 3: Mobility, doping, metal contacts	4.4-4.6.2
10	Light emitters 3: Outcoupling, reliability	6.6.2-6.7	1-10	Electronic Prop. 4: Contacts, HJs	4.6.3-4.7.2
11	Light detectors 1: Basics	7.1-7.3.2	1-11	Electronic Prop. 5: O-O and O-I HJs	4.7.2-4.8
12	Light detectors 2: Efficiency, architect., materials, transparency	7.3.3-7.4.3	1-12	Purity and crystal growth	5.1-5.4.2.3
13	Light detectors 3: Multjunc. OPV,	7.5, 7.8, 7.9; 8.1-8.3.2	1-13	Thin film dep, processing, patterning	5.4.2.4-5.6 (except 5.6.4)

	reliability, modules; Transistors 1: Basics				
14	Transistors 2: Architectures, morphology, reliability, apps.	8.3.2-8.4, 8.9	1-14	Nanopatterning, R2R, packaging	5.6.4, 5.7-5.9
15	Semester Review		1-15	Semester Review	

Week	**Topic (1 semester)**	**Chapter reading**	**Week**	**Topic (2 semester)**	**Chapter/Sec. reading**
1			2-1	Review Semester 1. Light emitters 1: Basics, Displays	6.1, 6.4
2			2-2	Light emitters 2: OLED basics, efficiency, emission processes, materials	6.1-6.3.3
3			2-3	Light emitters 3: TADF, annihilation, White OLEDs	6.3.4-6.3.4,6.5.1-6.5.4
4			2-4	Light emitters 4: WOLEDs, outcoupling	6.5.4-6.6
5			2-5	Light emitters 5: Reliability, lasers	6.7.4 – 6.8
6			2-6	Detectors 1: Basics, photoconductivity, photodiodes	7.1-7.2
7			2-7	Detectors 2: PD apps, solar cell basics, efficiency, architecture	7.2.2.4-7.4.1
8			2-8	Detectors 3: Morphology, materials, transparency	7.4
9			2-9	Detectors 4: Multijunction OPV, singlet fission, light trapping, reliability	7.5-7.7
10			2-10	Detectors 5: Modules; Transistors 1: Basics	7.9-7.10; 8.1-8.3.3
11			2-11	Transistors 2: Ambipolar, circuits, architectures, phototransistors, morphology, patterning	8.4-8.7
12			2-12	Transistors 3: SAMs, reliability, apps.	8.6.1, 8.7-8.9

13			2-13	Other topics	Selected from Ch. 9 or other sources
14			2-14	Other topics	Selected from Ch. 9 or other sources
	Review		2-15	Review of Semester 2 and the entire course	