



University of Technology
Laser and Optoelectronics Engineering Department
مواضيع الامتحان التنافسي للمتقدمين للدراسات العليا
ماجستير هندسة الليزر للعام الدراسي ٢٠٢٥-٢٠٢٦



No.	Subject	Reference	Author	Chapters
1	Laser Applications	Principles of Laser Materials Processing	Elijah Kannatey-Asibu, Jr. John Wiley & Sons, Inc 2009	Chapter15: Laser Cutting and Drilling Chapter 16: Laser Welding Chapter 17: Laser Surface Modification Chapter 20: Medical and Nanotechnology Applications of Lasers
2	Engineering Analysis	Advanced Engineering Mathematics (10th edition)	Erwin Kreyszig	Ch15: 1. Power series 2. Taylor and Maclaurin series
		Thomas' Calculus (12 th Edition)	George B. Thomas, Jr.	Ch3: Differentiations Ch5: Integrations
3	Lasers (Gas and Semiconductor)	Semiconductor Physics and Devices (Fourth Edition)	Donald A. Neamen	Chapter 4: The Semiconductor in Equilibrium Chapter 6: Non-equilibrium Excess Carriers in Semiconductors
		Gas Lasers	Masamori Endo & Robert F. Walter	Chapter 1: Principles of Gas Lasers
4	Solid - State Laser Design	Solid-State Laser Engineering (6 th edition)	W.Koechner.	Ch5: Optical Resonator Ch6: Optical Pump System Ch7: Thermo-optic effects
5	Power Electronics	Power electronics Circuits, Devices and Applications	Muhammad H. Rashid	Ch2: Power Diodes and Rectifiers Ch3 : Diode Rectifiers Ch4: Power Transistors Ch5: DC–DC Converters Ch10: Controlled Rectifiers



No.	Subject	Reference	Author	Chapters
1	Optical Communications	Optical Fiber Communications Principles and Practice (3 rd Edition)	John M. Senior	Ch1: Introduction Ch2: Optical Fiber Waveguides Ch3: Transmission Characteristics of Optical Fibers
2	Engineering Analysis	Advanced Engineering Mathematics (10 th edition)	Erwin Kreyszig	Ch15: 1. Power series 2. Taylor and Maclaurin series
		Thomas' Calculus (12 th Edition)	George B. Thomas, Jr.	Ch3: Differentiations Ch5: Integrations
3	Optoelectronic	Fundamentals of photonics	Bahaa E. A. Saleh	Ch21: Electro-Optics
		Optics	Eugene Hecht	Ch6: More on Geometrical Optics.
		Principles of Nanophotonics	Motoichi Ohtsu	Ch4: Nanophotonic Fabrication
4	Detectors	PHOTODETECTORS An Introduction to Current Technology	P. N. J. Dennis	Ch 2: Detectors Performance Ch 3: Thermal Detectors Ch 4: Photosensitive Detectors Ch 5: Solid State Photon Detectors
5	Electronics	Electronic Devices and Circuit Theory	Robert Boylestad	Ch2: Diode Applications Ch4: DC Biasing—BJTs Ch5: BJT Transistor Modeling
		Digital Fundamentals (Eleventh Edition)	Thomas L. Floyd	Ch2: Number Systems, Operations, and Codes Ch4: Boolean Algebra and Logic Simplification Ch7: Latches, Flip-Flops, and Timers