

Course Structure for M.A. Program

Graduate Institute of Electro-optical Engineering

National Taiwan Normal University

Adaptive to Class of	Required Credit(s)	Elective Credit(s)	Free Elective Credit(s)	Minimum Total Credits for Graduation
114	4.0	15.0	9.0	28.0
	4.0	15.0	9.0	28.0

Note: The first alphabet "E" on the course name refers to the course in English as a medium of instruction

I. Required Courses: 4.0 credits are required

Course Code	Course Name	Credit(s)	Credit Unit		Note
			Lecture Hour	Lab/Practice Hour	
0EC8159	1 E Seminar	2.0	2.0	0.0	This course must be retaken with a passing score for 2 times

II. Elective Courses: 0.0 credit is required

III. Courses Offered to Students in Different Divisions

A-1. Required Course for , 0.0 credit is required

A-2. Elective Course for , 15.0 credits are required

Course Code	Course Name	Credit(s)	Credit Unit		Note
			Lecture Hour	Lab/Practice Hour	
0EC9001	1 Geometrical Optics	3.0	3.0	0.0	
0EC9002	2 Physical Optics	3.0	3.0	0.0	
0EC8012	3 E Laser Engineering	3.0	3.0	0.0	
0EC8100	4 Special Topics in Optical Fiber Network	3.0	3.0	0.0	
0EC8101	5 Thin-film Technologies (I)	3.0	3.0	0.0	
0EC8102	6 Thin-film Technologies (II)	3.0	3.0	0.0	
0EC8103	7 Introduction to Optical Information	3.0	3.0	0.0	
0EC8104	8 Near-field Optics	3.0	3.0	0.0	
0EC8105	9 Introduction to Optical Fiber Communication	3.0	3.0	0.0	
0EC8106	10 Integrated Optics	3.0	3.0	0.0	
0EC8107	11 Optical Fiber Devices	3.0	3.0	0.0	
0EC8108	12 Design of Optical Communication Systems	3.0	3.0	0.0	
0EC8109	13 Integrated Electro-optic Devices	3.0	3.0	0.0	
0EC8110	14 Fiber-optic Sensors	3.0	3.0	0.0	
0EC8111	15 Nonlinear Optics	3.0	3.0	0.0	
0EC8112	16 E Principles And Applications of Ultrafast Optics	3.0	3.0	0.0	
0EC8113	17 Image Diagnosis	3.0	3.0	0.0	
0EC8114	18 Principles And Applications of Magnetic Resonance Images	3.0	3.0	0.0	
0EC8115	19 Electro-optical Signals in Physiology	3.0	3.0	0.0	
0EC8116	20 Physics and Applications of Nano-Magnetism (I)	3.0	3.0	0.0	
0EC8117	21 E Physics and Applications of Nano-Magnetism (II)	3.0	3.0	0.0	
0EC8118	22 Optics of Liquid Crystal Display	3.0	3.0	0.0	
0EC8121	23 Liquid crystal devices and applications	3.0	3.0	0.0	
0EC8122	24 Advanced Photonics in Solid State	3.0	3.0	0.0	
0EC8123	25 Advanced Photonic Engineering	3.0	3.0	0.0	
0EC8124	26 E Optical Pattern Processing	3.0	3.0	0.0	
0EC8125	27 Optical Detectors	3.0	3.0	0.0	
0EC8126	28 Biomagnetism	3.0	3.0	0.0	
0EC8127	29 Optical Tomography	3.0	3.0	0.0	
0EC8128	30 Special Topics on Holographic Optical Element	3.0	3.0	0.0	
0EC8129	31 E Special Topics on Electro-optical System Measurement	3.0	3.0	0.0	
0EC8131	32 Flexible Electronics and Display	3.0	3.0	0.0	
0EC8132	33 Thin Film Photovoltaic Energy	3.0	3.0	0.0	
0EC8133	34 Laser Biomedical Applications	3.0	3.0	0.0	
0EC8134	35 E Technology and Electronics for Next-Transistor	3.0	3.0	0.0	
0EC8135	36 Design and Applications of Virtual Instruments	3.0	3.0	0.0	
0EC8136	37 Training of Innovation and Entrepreneurship: Orientation of Interdisciplinary Biotechnology Industry (I)	3.0	3.0	0.0	
0EC8137	38 Training of Innovation and Entrepreneurship: Orientation of Interdisciplinary Biotechnology Industry (II)	3.0	3.0	0.0	
0EC8138	39 Optical System Design and Simulation	3.0	3.0	0.0	
0EC8139	40 E Modern Holography	3.0	3.0	0.0	
0EC8140	41 Computation and Simulation on Photonic Devices (I)	3.0	3.0	0.0	

Course Code	Course Name	Credit(s)	Credit Unit		Note
			Lecture Hour	Lab/Practice Hour	
0EC8141	42 Computation and Simulation on Photonic Devices (II)	3.0	3.0	0.0	
0EC8142	43 Photodetector Theory and Application	3.0	3.0	0.0	
0EC8143	44 Introduction to Scientific Reports and Presentations	3.0	3.0	0.0	
0EC8144	45 E Fourier Optics	3.0	3.0	0.0	
0EC8145	46 Experimental Optics	3.0	3.0	0.0	
0EC8147	47 Photonic Crystal	3.0	3.0	0.0	
0EC8148	48 Optical Holography and Applications	3.0	3.0	0.0	
0EC8149	49 Nanophotonics	3.0	3.0	0.0	
0EC8150	50 Optical Display Technology	3.0	3.0	0.0	
0EC8151	51 Bio-Sensors	3.0	3.0	0.0	
0EC8152	52 The Devices Physics and Applications for Organic Led	3.0	3.0	0.0	
0EC8153	53 Nano-Optics and Near-Field Optical Microscopy	3.0	3.0	0.0	
0EC8154	54 Waveguide Optics	3.0	3.0	0.0	
0EC8155	55 E Bio-Chips Manufacturing Technology	3.0	3.0	0.0	
0EC8156	56 Inspection Science of Brain Wave	3.0	3.0	0.0	
0EC8157	57 TCAD Simulation of Advanced Devices	3.0	3.0	0.0	
0EC8158	58 TCAD Simulation of Semiconductor Process	3.0	3.0	0.0	
0EC8160	59 Optics (II)	3.0	3.0	0.0	
0EC8161	60 Optics (I)	3.0	3.0	0.0	
0EC8162	61 E Electromagnetism in Electro-Optics	3.0	3.0	0.0	
0EC8163	62 E Optical Electronics	3.0	3.0	0.0	
0EC9003	63 Introduction to English Scientific Reports	2.0	2.0	0.0	
0EC9004	64 Vacuum and Thin Film Technology	3.0	3.0	0.0	
0EC9005	65 Introduction to Numerical Methods	3.0	3.0	0.0	
0EC9006	66 E Design of Virtual Instruments	3.0	3.0	0.0	
0EC9007	67 Design of Photonics System	3.0	3.0	0.0	
0EC9100	68 E Introduction to Biophotonics	3.0	3.0	0.0	
0EC9101	69 E Semiconductor Materials and Processing	3.0	3.0	0.0	
0EC9102	70 Introduction to Nanomedicine Engineering	3.0	3.0	0.0	
0EC9103	71 E Solid-State Physics	3.0	3.0	0.0	
0EC9104	72 Applied Optics	3.0	3.0	0.0	
0EC9105	73 E Semiconductors for Electro-Optics	3.0	3.0	0.0	
0EC9106	74 Introduction to Energy Materials	3.0	3.0	0.0	
0EC9107	75 Semiconductor Devices Physics	3.0	3.0	0.0	
0EC9108	76 E Applications of Lasers	3.0	3.0	0.0	
0EC9109	77 Internship of Technology Industries	3.0	0.0	6.0	
0EC8164	78 E Optical Properties of Solids	3.0	3.0	0.0	
0EC8013	79 E Introduction to Optoelectronic Devices	3.0	3.0	0.0	
0EC8014	80 Photovoltaic Components Testing Technology	3.0	3.0	0.0	
0EC9111	81 E Advanced Optical Microscopy Technologies	3.0	3.0	0.0	
0EC9113	82 Semiconductor Laser	3.0	3.0	0.0	
0EC9112	83 E Photonics	3.0	3.0	0.0	
0EC9114	84 E Materials Science	3.0	3.0	0.0	
0EC8165	85 Principles and Applications of Plasmonics	3.0	3.0	0.0	
0EC8166	86 Introduction to Nanolithography Techniques	3.0	3.0	0.0	
0EC8167	87 Generative AI for Vision and Digital Twin Applications	3.0	3.0	0.0	
0EC9115	88 Industrial Camps and Implementation	3.0	3.0	0.0	
0EC9116	89 E Introduction to Semiconductor Memory Devices	3.0	3.0	0.0	
0EC9118	90 E Surface Physics	3.0	3.0	0.0	
0EC9119	91 E Introduction to Semiconductors	3.0	3.0	0.0	
0EC8168	92 E Fundamentals of Photoelectrochemistry	3.0	3.0	0.0	
0EC9117	93 Vision and Optics across the Lifespan	3.0	3.0	0.0	

B-1. Required Course for , 0.0 credit is required

B-2. Elective Course for , 15.0 credits are required

Course Code	Course Name	Credit(s)	Credit Unit		Note
			Lecture Hour	Lab/Practice Hour	
0EC8012	1 E Laser Engineering	3.0	3.0	0.0	
0EC8112	2 E Principles And Applications of Ultrafast Optics	3.0	3.0	0.0	
0EC8117	3 E Physics and Applications of Nano-Magnetism (II)	3.0	3.0	0.0	
0EC8129	4 E Special Topics on Electro-optical System Measurement	3.0	3.0	0.0	
0EC8134	5 E Technology and Electronics for Next-Transistor	3.0	3.0	0.0	
0EC8139	6 E Modern Holography	3.0	3.0	0.0	
0EC8144	7 E Fourier Optics	3.0	3.0	0.0	
0EC8155	8 E Bio-Chips Manufacturing Technology	3.0	3.0	0.0	

Course Code	Course Name	Credit(s)	Credit Unit		Note
			Lecture Hour	Lab/Practice Hour	
OEC8162	9 E Electromagnetism in Electro-Optics	3.0	3.0	0.0	
OEC8163	10 E Optical Electronics	3.0	3.0	0.0	
OEC9006	11 E Design of Virtual Instruments	3.0	3.0	0.0	
OEC9100	12 E Introduction to Biophotonics	3.0	3.0	0.0	
OEC9101	13 E Semiconductor Materials and Processing	3.0	3.0	0.0	
OEC9103	14 E Solid-State Physics	3.0	3.0	0.0	
OEC9105	15 E Semiconductors for Electro-Optics	3.0	3.0	0.0	
OEC9108	16 E Applications of Lasers	3.0	3.0	0.0	
OEC8164	17 E Optical Properties of Solids	3.0	3.0	0.0	
OEC8013	18 E Introduction to Optoelectronic Devices	3.0	3.0	0.0	
OEC8124	19 E Optical Pattern Processing	3.0	3.0	0.0	
OEC9111	20 E Advanced Optical Microscopy Technologies	3.0	3.0	0.0	
OEC9112	21 E Photonics	3.0	3.0	0.0	
OEC9116	22 E Introduction to Semiconductor Memory Devices	3.0	3.0	0.0	
OEC9114	23 E Materials Science	3.0	3.0	0.0	
OEC9118	24 E Surface Physics	3.0	3.0	0.0	
OEC9119	25 E Introduction to Semiconductors	3.0	3.0	0.0	
OEC8168	26 E Fundamentals of Photoelectrochemistry	3.0	3.0	0.0	

IV. Free Elective Credits

A Free Elective Credit for , 9.0 credits are required

B Free Elective Credit for , 9.0 credits are required