

Photonics Certificate Requirements

PHOTONICS	46 – 54 credits		
Course	Title	Cr.	Pre/co-req
Math and Science courses (29 – 32 credits)			
MATH 0220	Anal. Geo. & Calc. 1	4	
MATH 0230	Anal. Geo. & Calc. 2	4	MATH 0220
MATH 0240	Anal. Geo. & Calc. 3	4	MATH 0230
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MATH 0250	Matrix Theory & Diff Equatns	3	
Or both of the following courses			
MATH 0280	Mat. & Lin. Alg.	3	MATH 0220
MATH 0290	Diff. Eq.	3	MATH 0230
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PHYS 0174	Basc Phys Sci & Engr 1 (intgd) and	4	MATH 0220
PHYS 0175	Basc Phys Sci & Engr 2 (intgd)	4	PHYS 0174 MATH 0230
CHEM 0960	General Chem for Engineers 1	3	
CHEM 0970	General Chem for Engineers 2	3	CHEM 0110 or 0410 or 0710 or 0760 or 0960 or 0101 or (CHEM 0111 and 0113)
Laboratory Requirement 1: Choose one of the following or pairs (2 – 4 credits)			
MEMS 1010	Exp. Meth. in MSE	3	REQ: ENGR 0022 or MET 1162
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PHYS 0219	Basic Lab Phys Science & Engrg	2	CREQ: PHYS 0175 or PHYS 0476
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PHYS 0520	Modern Physical Measurements	3	
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CHEM 0250	Intro Analytical Chemistry and	3	PREQ: CHEM 0120 or 0720 or 0770 or 0970 or 0102 or (CHEM 0112 and 0114)

CHEM 0260	Intro Analytical Chemistry Lab	1	CREQ: CHEM 0250 or 0201 or 0325
Laboratory Requirement 2: Choose one of the following or pairs (2 – 3 Credits)			
PHYS 0525	Analog and Digital Electronics	3	PHYS 0219 or PHYS 0520
ECE 1212	Electronic Circuit Design Lab	3	ECE 1201 or ECE 0102
CHEM 1430	Physical Chemistry Laboratory 1 and	1	CHEM 1302 or 1342 or 1410 or 1480
CHEM 1255	Instrumental Analysis Lab	1	CHEM 0260; CREQ: CHEM 1250
All of the following (9 credits)			
PHYS 1361	Wave Motion and Optics	3	ECE 1240 or CHEM 1470 or PHYS 1363
ECE 1247	Semiconductor Device Theory	3	[PHYS 0175 or 0476 or (0152 and 0153) or (0201 and 0203)] and (MATH 0202 or 0250 or 0290 or 1035) and (ECE 0101 or COE 0031)
OR			
PHYS 1374	Solid State Physics	3	PREQ: PHYS 0477 or PHYS 0479 or CHEM 0710 or CHEM 1410
ECE 1232	Intro Lasers & Optcl Electnc	3	ECE 0101 or COE 0031) and (ECE 1259 or PHYS 1351)
One of the following (3-4 credits)			
CHEM 1410	Physical Chemistry 1	3	[CHEM 0120 or 0720 or 0770 or 0970 or (0112 and 0114)] and (PHYS 0175 or 0111 or 0476) and (MATH 0240 or 0201 or 0241 or CHEM 1000)
PHYS 0477	Principles of Modern Physics 1	4	PREQ: PHYS 0175, PHYS 0476 COREQ: MATH 0240
OR			

PHYS 1375	Fundamentals of Nanoscience	3	
PHYS 1370	Intro to Quantum Mechanics 1	3	(PHYS 0477 or PHYS 0479) and (MATH 0280 or MATH 1180 or MATH 1185); CREQ: PHYS 1331 and PHYS 1351
One of the following (3 credits)			
MEMS 1058	Electromagnetic Properties of Materials	3	PREQ: ENGR 0022 or MET 1162
PHYS 1351	Intermedt Electricity/Magnetism	3	(PHYS 0175 or PHYS 0476) and MATH 0240
ECE 1259	Electromagnetics 1	3	MATH 0201 or 0240 or 0241) and (PHYS 0152 or 0175 or 0202 or 0476);
ECE 1266	Applications of Fields & Waves	3	ECE 1259 or PHYS 1351) and (ECE 0101 or COE 0031