

E. QUANTUM INFORMATION SCIENCE AND ENGINEERING M.S. SUBPLAN REQUIREMENTS

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WYANT COLLEGE OF OPTICAL SCIENCES QISE SUB-PLAN REQUIREMENTS (version 2022.06.28)

MS Thesis option: 26 units of coursework + 6 units of OPTI 910: Thesis

MS Report option: 29 units of coursework + 3 units of OPTI 909: Report.

Total coursework units include Core and Approved Elective units (below) + 3 additional units of any graded OPTI coursework not listed below.

With advisor and Associate Dean approval, up to 3 units of OPTI 599: Independent Study may be taken in place of the same number of units of Approved Electives.

CORE COURSES - COMPLETE ALL COURSES: 12 UNITS	Units	Term	Prereq
OPTI 570 Quantum Mechanics (or other graduate-level Quantum Mechanics course)	3	F	OPTI 511R or undergraduate quantum mechanics
OPTI 544 Foundations of Quantum Optics	3	S	OPTI 570 or equiv
OPTI 646 Introduction to Quantum Information and Computation	3	F	OPTI 570 or equiv
OPTI 560 Quantum Nanophotonics	3	S	E&M (OPTI 501 or equiv), intro. QM (OPTI 511R)

APPROVED ELECTIVES - 11 UNITS FOR MS THESIS OPTION OR 14 UNITS FOR MS REPORT OPTION (includes minimum 2 units of lab courses)			
<i>Thesis and Report options allow for 3 units outside of the approved elective list to satisfy total coursework units requirements.</i>			
<i>With Faculty Advisor and Associate Dean approval, a student may use a suitable course in place of one of the approved electives in this list.</i>			
Elective lab courses - AT LEAST TWO ELECTIVES MUST BE LAB COURSES	Units	Term	Prereq
<i>One lab may be waived for relevant industry experience (with Assoc. Dean approval)</i>			
OPTI 511L Lasers and Solid-State Devices	1	F	OPTI 511R or other QM course; or 507 co-req
OPTI 571L Optical Physics Computational Laboratory	1	F	OPTI 570 or equiv
OPTI 587L Photonics Communications	1	S	
Approved Elective courses	Units	Term	Prereq
OPTI 501 Electromagnetic Waves	3	F	
OPTI 507 Solid-state Optics	3	F	OPTI 511R, OPTI 570, or other QM course
OPTI 508 Probability and Statistics in Optics	3	S	
OPTI 509 Statistical Optics	3	S	OPTI 501, OPTI 508
OPTI 510R Photonics	3	S	basic E&M, OPTI 501 preferred
OPTI 511R Optical Physics and Lasers	3	S	OPTI 501 preferred; linear algebra
OPTI 539A From Photonics Innovation to Marketplace	3	S	
OPTI 553 Nonlinear Photonics	3	F	OPTI 501 or equivalent
OPTI 595B Information in a Photon	3	S	complex numbers, probability, linear algebra
OPTI 600G Laser Beams and Resonators	1	S	OPTI 501
OPTI 600K Cavity Optomechanics I	1	S	OPTI 501. Rec: OPTI 570, OPTI 600G
OPTI 600L Cavity Optomechanics II	1	S	OPTI 501, OPTI 570, OPTI 600K
OPTI/ECE 632: Advanced Optical Communication Systems	3	S	OPTI 530 or equiv
OPTI 647 Photonic Quantum Information Processing	3	F	OPTI 511R or OPTI 544
ECE 501B Linear Systems Theory	3	F	see course catalog
ECE 503 Probability and Random Processes	3	F	see course catalog
ECE 534 Advanced Topics in Optical and Electronic Materials	3	S	see course catalog
ECE 535A Digital Communications Systems I	3	S	see course catalog
ECE 536A Free-space Opt. Comm. Systems	3	S	see course catalog
ECE 537 Digital Communications Systems II	3	F	see course catalog
ECE 571 Fundamentals of Information and Network Security	3	S	see course catalog
ECE 633 Q. Inf. Processing and Q. Error Correction	3	F	see course catalog
ECE 635 Error Correction	3	F	see course catalog
ECE 639 Detection and Estimation	3	S	see course catalog
INFO 520 Ethical Issues in Information	3	F,S	see course catalog
LAW 695 Special topics in the law: The Past and Future Internet	3	S	see course catalog

