WYANT COLLEGE OF OPTICAL SCIENCES

OPTOMECHANICAL ENGINEERING SUB-PLAN REQUIREMENTS (version 2024.06.05)

MS Thesis option: 24 units of coursework + 8 units of OPTI 910: Thesis
MS Non-thesis option: 32 units of coursework + 3 units of OPTI 909: Report or an approved technical writing course

The Associate Dean for Graduate Academic Affairs may approve course substitutions when a required course is not offered.
* The OPTI 502 core course requirement is waived if student has prior undergraduate degree in optics or optical engineering.
** The AME core course requirement is waived if student has prior degree in mechanical engineering. Replace with an Elective.
*** The non-thesis option requires a minimum of 29 units of coursework from the lists below, but 32 total coursework units, giving the student the ability to take 3 additional units of elective coursework from other OPTI classes not listed below.

DL = available for Distance Learning

CORE COURSES - 12 UNITS, REQUIRED OF ALL OME MS SUB-PLAN STUDENTS	**Units**	**Term**	**DL?**	**Prereq**
OPTI 502 Optical Design & Instrumentation I (see note * above)	3	F	yes	
OPTI 521 Introductory Optomechanical Engineering	3	F	yes	optical systems familiarity
OPTI 523 Optomechanical Design & Analysis	3	S	yes	OPTI 521
AME 552 Planar Multi-body Dynamics with Applications (see note ** above)	3	F	yes	
AME 561, AME 564A, or AME 550 may be used in place of AME 552				

DESIGN COURSES - MINIMUM 4 UNITS REQUIRED, ANY OF THE FOLLOWING	**Units**	**Term**	**DL?**	**Prereq**
OPTI 516/ASTR 516, Modern Astronomical Optics	3	S	yes	
OPTI 517 Lens Design	4	F	yes	OPTI 502
OPTI 585 Illumination Engineering	3	S	yes	OPTI 502
OPTI 586 Polarization in Optical Design *(not offered Fall 2024)*	3	TBD	yes	OPTI 502
OPTI 588 Introduction to Display Science and Technology	3	F	yes	OPTI 502
ASTR 518 Instrumentation and Statistics	2	F		

ELECTIVES - 8 UNITS FOR THESIS OR 13 UNITS FOR NON-THESIS (see note *** above)				
Any Design Course units (above) beyond 4 will count towards elective units				
ELECTIVE LAB COURSES - AT LEAST TWO ELECTIVES MUST BE LAB COURSES	**Units**	**Term**	**DL?**	**Prereq**
One lab waived if either OPTI 517 is taken, or for relevant industry experience (with approval by Assoc. Dean)				
OPTI 502L Fundamental of Applied Optics Laboratory	1	F		OPTI 502 (pre or co-req)
OPTI 513L Optical Testing Laboratory	1	S		OPTI 513R (pre or co-req)
OPTI 521L Introductory Optomechanical Engineering Laboratory	1	F		OPTI 521 (pre or co-req)
OPTI 524A Optical Systems Engineering	4	S		optical systems familiarity
OPTI 569L System Programming for Engineers	2	F	yes	
OPTI 597A Optical Shop Practices	3	S		OPTI 502
not currently offered:				
OPTI 515L Optical Specifications, Fabrication, and Testing Laboratory	1			
OPTI 523L Optomechanical Engineering Laboratory	2			
OPTI elective courses	**Units**	**Term**	**DL?**	**Prereq**
OPTI 503 Optical Design and Instrumentation II	3	S	yes	OPTI 502
OPTI 505R Diffraction and Interferometry	3	S	yes	OPTI 512R
OPTI 506 Radiometry, Sources, and Detectors	3	F	yes	
OPTI 512R Linear Systems, Fourier Transforms	3	F	yes	
OPTI 513R Optical Testing	3	S	yes	OPTI 505R
OPTI 518 Introduction to Aberrations	3	S	yes	OPTI 502
OPTI 581A/ENTR 581A Assessing Early Stage Med. Tech. for Commercial Poter	2	S		
OPTI 617 Practical Optical System Design	3	S	yes	OPTI 517
OPTI 630/BME 630 Biomedical Optics and Biophotonics	3	F		optical systems familiarity
OPTI 677 Micro/Nano-Fabrication in Optoelectronics	2	S		photonics systems familiarity
OPTI 696A Advanced Lens Design	3	F	yes	OPTI 517
not currently offered:				
OPTI 528 Adaptive Optics and Imaging through Random Media	3	F		

(other pre-approved elective courses listed on next page)

Other Pre-approved Elective Courses - check UA course schedule for term, prereqs	**Units**	**Term**	**DL?**	**Prereq**
AME 549 Hybrid Control Systems	3	See UA course catalog		
AME 550 Advanced Dynamics	3			
AME 553 Computation Multi-Body Dynamics	3			
AME 560 Advanced Vibration	3			
AME 561/EM 561 Finite Element Methods	3			
AME 562 Composite Materials	3			
AME 565 Design Optimization	3			
AME 588/ABE 588/BE 588 Micro and nano transducer physics & design	3			
AME 589A/ABE 589A/BE 589A Fabrication Techniques for Micro-& Nano-dev	3			
BE 547 Sensors and Controls	3			
BME 517/ ECE 517 Measurement and Data Analysis in Biomedical Engineering	3			
BME 520/ OPTI 520 Biophotonics	3			
BME 566 Biomedical Engineering	3			
BME 585 Nanoscience & Nanotechnology for Biomedical Engineer	3			
CHEE 583 Introduction to Polymeric Materials	3			
ECE 504 /MSE 504 Optical Spectroscopy of Materials	3			
ECE 515/ CHEE 515 Microelectronics Manufacturing and the Environment	3			
ECE 529 Digital Signal Processing	3			
ECE 532 Digital Image Analysis	3			
ECE 533 Digital Image Process	3			
ECE 542 Digital Control Systems	3			
ECE 556 Optoelectronics	3			
EM 502/ CE 502 Introduction to Finite Element Methods	3			
EM 504 Elasticity Theory and Application	3			
EM 634 Advanced Structural Dynamics	3			
SIE 506 Quality Engineering	3			
SIE 511 Human-Machine Interaction	3			
SIE 514 Law for Engineers & Scientists	3			
SIE 515 Technical Sales & Marketing	3			
SIE 554A Systems Engineering Process	3			
SIE 555 Sensor Systems Engineering	3			
SIE 556 Fundamentals of Guidance for Aerospace Systems	3			
SIE 557 Project Management	3			
SIE 558 Model-Based Systems Engineering	3			
SIE 563 Integrated Logistics and Distribution Systems	3			
SIE 564 Cost Estimation	3			
SIE 583 Computer Integrated Manufacturing Systems	3			