



# Wyant College of Optical Sciences Course List

## Undergraduate Courses

100H.....	What is Light? Honors (3) Spring .....	Koshel
170B1.....	Optics and the Fourth Industrial Revolution (3) Fall .....	Kost
200.....	Light, Color and Vision (3) Fall & Spring .....	Nofziger
201R.....	Geometrical and Instrumental Optics I (4) Fall, P: MATH 125, 129 PHYS 141, MSE110.....	Sawyer
201L.....	Geometrical and Instrumental Optics Lab I (1) Fall, CR: OPTI 201R.....	Nofziger
202L.....	Geometrical and Instrumental Optics Lab II (1) Spring, CR: OPTI 202R.....	Nofziger
205.....	Optics of Photography and Videography (3) Spring.....	Furenlid
210.....	Physical Optics I (3) Spring, P: MATH 223, 254, PHYS 241, OPTI 280 .....	Wilson
280.....	Computer Programming (1) Spring .....	Pau
299/H.....	Independent Study (1-4) / Honors (1-3) Fall & Spring.....	All Professors
306.....	Radiometry, Sources and Detectors (3) Fall,P: OPTI 201R, 380A, and ECE 207/220, OPTI 360, or OPTI 380B.....	Koshel
330.....	Physical Optics II (3) Spring, P: OPTI 310, MATH 322 .....	Kolesik
340.....	Optical Design (3) Spring, P: OPTI 201R, 202R, 310 .....	Takashima
340A.....	Intro to Optical Design (1) Fall, P: OPTI 201R & 201L, 202R & 202L.....	Takashima
341.....	Semiconductor Physics & Lasers (3) Fall, P: PHYS 241 MATH 223, CR: MATH 254 .....	Fallahi
345.....	Quantum Mechanics and Optical Physics (3) Spring: OPTI 341 (B or better).....	Seyler
370.....	Lasers and Photonics (3) Spring, P: OPTI 240, 310, MATH 223 .....	Binder
380A.....	Intermediate Optics Laboratory I (1) Fall, CR: OPTI 310; OPTI 240 suggested .....	Milster
380B.....	Intermediate Optics Laboratory II (1) Spring, P/CR: OPTI 330, 340, ECE 207/220 .....	Nofziger
392.....	Directed Research (1-3) Fall, Spring & Summer.....	All Professors
399/H.....	Independent Study (1-6) / Honors(1-3) Fall, Spring & Summer .....	All Professors
403A.....	Mathematical Methods for Optics & Photonics (3) Spring, P: MATH 322 .....	Mansuripur
404.....	MSE: Optical Spectroscopy of Materials (3) Spring, P: PHYS 141, MATH 223, MSE 110, 320 .....	Potter
414.....	Optical Instrumentation (3) Spring, P: OPTI340 .....	STAFF
414A.....	ECE: Photovoltaic Solar Energy Systems (3) Spring .....	Kostuk
415.....	Optical Specifications, Fabrication & Testing (3) Spring, P: OPTI 201R, 202R, 310, 330, 340 .....	Sasian
415L.....	Optical Specifications, Fabrication & Testing Lab (1) Spring CR: OPTI 415.....	STAFF
416.....	Modern Astronomical Optics (3) Spring.....	Guyon
420.....	BME: Biophotonics (3) Spring, P or CR:BME 330 or OPTI 310 (can be concurrent), Junior status or higher .....	Su
421.....	Introductory Optomechanical Engineering (3) Fall .....	Chalifoux
421L.....	Introductory Optomechanical Engineering Laboratory (1) Fall, CR: OPTI 421 .....	Staff
423.....	Optomechanical Design and Analysis (3) Spring, P: OPTI 421 .....	Chalifoux
423L.....	Optomechanical Design and Analysis Lab (2) Spring, CR: OPTI 423 .....	STAFF
424A.....	Optical Systems Engineering (3) Spring P: senior status only .....	STAFF
425.....	MSE: Sol-Gel Science (3) Fall .....	Loy
428.....	Adaptive Optics and Imaging through Random Media (3) Fall.....	Staff
429.....	Integrated Optics for Information Technology (3) Fall .....	Fallahi
430.....	Optical Communication Systems (3) Fall, P: OPTI 360, 380A, & 380B or ECE 207 & 220 .....	Kieu
434.....	MSE: Electrical and Optical Properties of Materials (3) Fall, P: PHYS 241.....	Potter
435.....	Visual Optics (3) Fall, P: OPTI 202R, 330.....	STAFF
439A.....	From Photonics Innovation to the Marketplace (3) Spring P: OPTI 380A, 380B.....	Norwood
447.....	Optical Physics (3) Spring, P: PHYS 241, MATH 223, 254, 322, OPTI 280, 210, 330 .....	Wright
468.....	Introduction to Optical Spectroscopy (3) Spring, P: OPTI 340, 370, ECE207/220 or 360.....	Peng
469L.....	System Programming for Engineers (2) Fall .....	Peng
471A.....	Adv. Optics Laboratory (2) Fall, P: (OPTI 330 & 370) and (ECE 207 or ECE 220).....	ElKabbash
471B.....	Adv. Optics Laboratory (2) Spring, P: OPTI 471A.....	Hua
475.....	Thin Film Optics and Photonics (3) Fall, P: OPTI 310 or 505R.....	Norwood
481A.....	Innovation, Translation and Entrepreneurship (2) Fall & Spring .....	STAFF
484.....	Polarized Light and Polarimetry (3) Spring, P: OPTI 330.....	Mer. Kupinski
485.....	Illumination Engineering (3) Spring, P: OPTI 201R, OPTI 306 .....	Koshel
489.....	Optics Outreach (1) Fall & Spring.....	Koshel
490.....	REM: Remote Sensing for the Study of Planet Earth (3) Fall .....	Leeuwen
492.....	Directed Research (1-6) Fall, Spring & Summer.....	All Professors
493.....	Directed Research (1-12) Fall, Spring & Summer.....	All Professors
495B.....	Information in a Photon (3) Spring.....	STAFF
498H.....	Honors Thesis / Honors (3) Fall & Spring.....	All Professors
499/H.....	Independent Study (1-6) / Honors(1-3) Fall, Spring .....	All Professors

## Graduate Courses

500A/B/C.....	Photonic Communications Engineering I (3) Fall .....	Staff
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## Wyant College of Optical Sciences Course List

500D/E/F	Photonic Communications Engineering II (3) Spring, P, OPTI 500A/B/C	Staff
501	Electromagnetic Waves (3) Fall, P, PHYS 241, MATH 223	Mansuripur
502	Optical Design and Instrumentation (3) Fall, P, PHYS 142, 241	Guzman
502L	Fundamentals of Applied Optics Lab (1) Fall, P or C, OPTI 502	D. Kim
503	Optical Design and Instrumentation II (3) Spring, P, OPTI 502	Liang
503A	Mathematical Methods for Optics & Photonics (3) Spring	Mansuripur
504	MSE: Optical Spectroscopy of Materials (3) Spring	Potter
505R	Diffraction and Interferometry (3) Spring, P, Opti 501, 512R or 604	Milster
505L	Fundamentals of Physical Optics Lab (1) Spring, P, OPTI 501 or 505R	Milster
506	Radiometry, Sources, and Detectors (3) Fall, P, OPTI 502	Driggers
507	Solid-State Optics (3) Fall, P, PHYS 371 or OPTI 511R	Binder
508	Probability and Statistics in Optics (3) Spring	Kupinski
509	Statistical Optics (3) Fall, P, OPTI 501, 508 or consent	Ashok
510R	Photonics (3) Spring, P, OPTI 501, 505R, 507, 511R	Kieu
511R	Optical Physics & Lasers (3) Spring	Jones
511L	Lasers and Solid-State Devices Lab (1) Fall, P, OPTI 511R, 507	Seyler
512R	Linear Systems, Fourier Transforms (3) Fall, P, MATH 223, PHYS 142, 241	Mer. Kupinski
512L	Mathematical Optics Lab (1) Fall, P, OPTI 512R or 604	Mat. Kupinski
513R	Optical Testing (3) Spring, P, OPTI 505R	D. Kim
513L	Optical Testing Lab (1) Fall, P, CR OPTI 513R	D. Kim
514	Optical Instrumentation (3) Fall	Staff
514A	ECE: Photovoltaic Solar Energy Systems (3) Spring	Kostuk
516	Modern Astronomical Optics (3) Spring	Guyon
517	Lens Design (4) Fall, P, OPTI 502	Sasian
518	Introduction to Aberrations (3) Spring, P, OPTI 502	Sasian
519	ASTR: Adaptive Optics (1) Spring	Staff
520	BME: Biophotonics (3) Spring	Su
521	Introductory Opto-Mechanical Engineering (3) Fall	Chalifoux
521L	Introductory Opto-Mechanical Engineering Laboratory (1) Fall, P or C, 521	Chalifoux
522	BME: Contrast Agents, Molecular Imaging, and Kinetics (3), Spring	Kuo, Avery, Matsunaga
523	Optomechanical Design and Analysis (3) Spring, P, OPTI 521	Guzman
523L	Optomechanical Engineering Lab (2) Spring	STAFF
524A	Optical Systems Engineering (4) Spring	STAFF
525	MSE: Sol-Gel Science (3) Fall	Loy
526	Optical Design in Multiscale Photonic System (2) Fall, P, OPTI 502, 505R, 512R, 600A	Takashima
527	Holography and Diffractive Optics (3) Fall, P, OPTI 502, 505R	Takashima
528	Adaptive Optics and Imaging through Random Media (3) Fall	Staff
529	Integrated Optics for Information Technology (3) Fall	Fallahi
530	Optical Communication Systems (3) Fall, P, ECE 207/220 or 360, OPTI 380A, 380B	Kieu
532	ECE: Digital Image Analysis (3) Fall, P, ECE 340 or OPTI 512R (or instructor consent)	Staff
533	ECE: Digital Image Processing (3) Fall, P, ECE 340, 503, 529 or OPTI 512R	Staff
534	MSE: Advanced Topics in Optical & Electronic Materials (3)	Potter
535	Visual Optics (3) Fall, P, OPTI 502, 512R	STAFF
536	Introduction to Image Science (3) Spring	Gmitro/Furenlid
537	Imaging Physics and Devices (3) Fall, P, OPTI 501, 511R or equivalent	Furenlid
539A	From Photonics Innovation to the Marketplace (3) Spring	Norwood
540	PHYS: Medical Physics (3) Fall, P, PHYS103 or 132 or OPTI 330	Watchman
541	Laser Physics (2) Fall, P, OPTI 511R	Jones
541A	Introduction to Laser Physics (1) Fall	Jones
541B	Laser Systems and Applications (1) Fall	Jones
541C	Ultrafast Optics (1) Fall	Jones
544	Foundations of Quantum Optics (3) Spring P, OPTI 570	Jessen
547	The Beam Propagation Method (3) Spring, P: OPTI 501, 512R, or 546	Kolesik
549	Atom Optics (2) Spring, P: OPTI 570	Anderson
550	Quantized Matter Waves (2) Spring, P: OPTI 570 or equivalent [Effective Spring 2015]	Wright
551	Computational Optics: Light-matter interactions (1) Spring, P: OPTI 501	Kolesik
553	Nonlinear Photonics (3) Fall	Norwood
556A	Computational Imaging (3) Fall	Brady
556B	Computational Photography (3) Spring	Brady
557	Laser Engineering and Applications (2) Spring, OPTI 345 or 511R suggested	Polynkin



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560	Quantum Nanophotonics (3) Spring	Elkabbash
561	PHYS: Physics of Semiconductors (3) Spring P, OPTI 507 or PHYS 460	Binder
567	Nanophotonics (3) Fall P, OPTI 50	STAFF
570	Quantum Mechanics (3) Fall	Anderson
572	Quantum Photonic Integrated Circuits (3) Spring P, OPTI 501 and 511R recommended	STAFF
578	PHYS: Laser Spectroscopy & Atomic Structure (4) Fall	Cronin
581A	Innovation, Translation and Entrepreneurship (2) Fall & Spring	STAFF
583	Computational Optics (3) TBD Spring	Kolesik
584	Polarized Light and Polarimetry (3) Spring	Mer. Kupinski
585	Illumination Engineering (3) Spring	Koshel
586	Polarization in Optical Design (3) Fall, P, OPTI 502	Mer. Kupinski
586L	Polarization in Optical Design (1) Fall	Smith
587L	Photonic Communications Laboratory (1) Spring	Kieu
588	Introduction to Display Science & Technology (3) Fall, P, OPTI 502	Hua
589	Optics Outreach Laboratory (1) Fall, Spring	Koshel
590	REM: Remote Sensing for the Study of Planet Earth (3) Fall	Leeuwen
595A	Current Subjects in Optics-Colloquium (1) Fall, Spring	STAFF
595B	Information in a Photon (3) Spring	STAFF
596-002	Computational Imaging and Machine Vision Seminar (3) Spring	Willomitzer
596-004	Open Quantum Systems (3) Spring, P, OPTI 570 recommended	Sinha
597A	Optical Shop Practices (3) Spring P, OPTI 201R or 502	Sasian
597B	Technical Writing and Communication (3) Fall	Su
599	Independent Study (1-5)	All Professors
600A	Photonics in Lens Design (1) Fall, P, OPTI 502, 505R, 512R	Takashima
600B	Linear Algebra for Optics (1) Fall	STAFF
600D	Diffraction Optical Elements- Theory and Design (1) Fall, P, OPTI 505R	Milster
600E	Diffraction Optical Elements- Fabrication and Testing (1) Fall, P, OPTI 505R, 600D	Milster
600F	Spatial Frequency Analysis of Optical Systems (1) Fall, P, OPTI 505R	Milster
600G	Laser Beams and Resonators (1) Fall P, OPTI 501, 502	Wilson
600K	Cavity Optomechanics I (3) Spring P, 570	Wilson
600L	Cavity Optomechanics II (3) Spring P, 570, 600K	Wilson
604	Advanced Math. Methods for Optics (3) Fall, P, MATH 223, PHYS 142, 241	STAFF
613	Introduction to Infrared Systems (3) Spring, P, OPTI 505R, 512R	Driggers
617	Advanced Optical Design (3) Fall, P, OPTI 517	Liang
630	Biomedical Optics & Biophotonics (3) Spring	Kang
636	Noise in Imaging Systems (3) Fall P, OPTI 508, 512R	Mat. Kupinski
637	Principles of Image Science (3) Spring P, OPTI 512R, 508	Mat. Kupinski
638	Advanced Medical Imaging (3) Spring, P, OPTI 512R or equivalent	Witte
639	Image Science for Oncology (3) Fall	STAFF
646	Introduction to Quantum Information and Computation (3) Even Years Fall	Jessen
647A	Photonic Gaussian Information (3) Fall, P, Recommended OPTI 570	SOH
647B	Photonic Quantum Information Processin (3) Spring	STAFF
656A	PTYs: Atmospheric Radiation and Remote Sensing A (3) Odd Springs	Dong
656B	ATMO: Atmospheric Radiation and Remote Sensing B (3) Spring	Dong
671	Advanced Optical Networks (3) Spring	STAFF
677	Microfabrication in Opto-Electronics (2) Spring	Fallahi
696A	Advanced Lens Design (2) Fall, P: OPTI 517	Sasian
696D	Practical Optics: Engineering Optical Systems (1) Fall	STAFF
792	Directed Introductory Graduate Research (1-3)	All Professors
900	Research (1-8)	All Professors
909	Master's Report (1-3)	All Professors
910	Thesis (1-8)	All Professors
920	Dissertation (1-9)	All Professors