



Wyant College of Optical Sciences Course List

Undergraduate Courses

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| 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 (3) Fall, P: MATH 125, 129 PHYS 141, MSE110..... | Nofziger |
| 201L..... | Geometrical and Instrumental Optics Lab I (1) Fall, CR: OPTI 201R..... | Nofziger |
| 202R..... | Geometrical and Instrumental Optics II (3) Spring, P: OPTI 201R..... | Greivenkamp |
| 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, ECE 207/220 or equiv..... | Koshel |
| 330..... | Physical Optics II (3) Spring, P: OPTI 210 | Ashok |
| 340..... | Optical Design (3) Spring, P: OPTI 201R, 202R, 310 | Takashima |
| 340A..... | Intro to Optical Design (1) Fall, P: OPTI 201R, 202R..... | 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)..... | Wright |
| 370..... | Lasers and Photonics (3) Spring, P: OPTI 341, 210 | Binder |
| 380A..... | Intermediate Optics Laboratory I (1) Fall, CR: OPTI 210 | 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 | Schwiegerling |
| 415L..... | Optical Specifications, Fabrication & Testing Lab (1) Spring CR: OPTI 415..... | Staff |
| 416..... | Modern Astronomical Optics (3) Spring..... | Hart/Guyon |
| 420..... | BME: Biophotonics (3) Spring, P or CR: BME 330 or OPTI 210 or OPTI 210..... | 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 | Chalifoux |
| 424A..... | Optical Systems Engineering (3) Spring | Dubin |
| 425..... | MSE: Sol-Gel Science (3) Fall | Loy |
| 428..... | Adaptive Optics and Imaging through Random Media (3) Fall..... | Hart |
| 429..... | Integrated Optics for Information Technology (3) Fall | Fallahi |
| 430..... | Optical Communication Systems (3) Fall, P: ECE 207/220 or 360, OPTI 380A, 380B. | Staff |
| 434..... | MSE: Electrical and Optical Properties of Materials (3) Fall, P: PHYS 241..... | Potter |
| 435..... | Visual Optics (3) Fall, P: OPTI 202R, 330..... | Schwiegerling |
| 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, 310, 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, ECE 207/207 CR: 406 | McLeod |
| 471B..... | Adv. Optics Laboratory (2) Spring, P: OPTI 471A..... | Hua |
| 475..... | Optical Thin Films (3) Spring, P: OPTI 210 | Macleod |
| 481A..... | Innovation, Translation and Entrepreneurship (2) Fall & Spring | Staff |
| 484..... | Polarized Light and Polarimetry (3) Spring, P: OPTI 330..... | Chipman |
| 485..... | Illumination Engineering (3) Spring, P: OPTI 306 | Koshel |
| 489..... | Optics Outreach (1) Fall & Spring..... | Mathis |
| 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..... | Guha |
| 498H..... | Honors Thesis / Honors (3) Fall & Spring..... | All Professors |
| 499/H..... | Independent Study (1-6) / Honors(1-3) Fall, Spring | All Professors |



Wyant College of Optical Sciences Course List

Graduate Courses

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|----------------|--|-------------------------|
| 500A/B/C..... | Photonic Communications Engineering I (3) Fall | Staff |
| 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 | Greivenkamp |
| 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 340 or 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/Wright |
| 511L..... | Lasers and Solid-State Devices Lab (1) Fall, P, OPTI 511R, 507..... | Wilson |
| 512R..... | Linear Systems, Fourier Transforms (3) Fall, P, MATH 223, PHYS 142, 241..... | Ashok |
| 512L | Mathematical Optics Lab (1) Fall, P, OPTI 512R or 604 | 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..... | Hart/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 | Staff |
| 522 | BME: Contrast Agents, Molecular Imaging, and Kinetics (3), Spring | Kuo, Avery, Matsunaga |
| 523 | Optomechanical Design and Analysis (3) Spring, P, OPTI 521 | Chalifoux |
| 523L..... | Optomechanical Engineering Lab (2) Spring | Chalifoux |
| 524A..... | Optical Systems Engineering (4) Spring | Dubin |
| 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 | Kostuk |
| 528 | Adaptive Optics and Imaging through Random Media (3) Fall..... | Hart |
| 529 | Integrated Optics for Information Technology (3) Fall | Fallahi |
| 530 | Optical Communication Systems (3) Fall, P, ECE 207/220 or 360, OPTI 380A, 380B. | Staff |
| 532 | ECE: Digital Image Analysis (3) Fall, P, ECE 340 or OPTI 512R (or instructor consent)..... | Rodriguez |
| 533 | ECE: Digital Image Processing (3) Fall, P, ECE 340, 503, 529 or OPTI 512R | Rodriguez |
| 534 | MSE: Advanced Topics in Optical & Electronic Materials (3)..... | Potter |
| 535 | Visual Optics (3) Fall, P, OPTI 502, 512R..... | Schwiegerling |
| 536 | Introduction to Image Science (3) Spring..... | Gmitro/Barrett/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 |
| 544 | Foundations of Quantum Optics (3) Spring P, OPTI 543 of 570 | Jessen |
| 547 | The Beam Propagation Method (3) Spring, P: OPTI 501, 512R, or 546..... | Kolesik |
| 549 | Atom Optics (2) Even Spring..... | 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 |
| 556 | Computational Imaging (3) Fall | Brady |
| 560 | Quantum Nanophotonics (3) Spring..... | Fan |
| 561 | PHYS: Physics of Semiconductors (3) Spring P, OPTI 507 or PHYS 460..... | Binder |



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| 567 | Nanophotonics (3) Spring P, OPTI 501 [Effective Spring 2016] | McLeod |
| 568 | Introduction to Optical Spectroscopy (3) Spring | Peng |
| 569L | System Programming for Engineers (2) Fall | Peng |
| 570 | Quantum Mechanics (3) Fall P, PHYS 371 or equivalent | Anderson |
| 571L | Optical Physics Computational Lab (1) Fall P, OPTI 570A or equivalent | Wright |
| 578 | PHYS: Laser Spectroscopy & Atomic Structure (4) Fall | Cronin |
| 581A | Innovation, Translation and Entrepreneurship (2) Fall & Spring | TBD |
| 583 | Computational Optics (3) TBD Spring | Kolesik |
| 584 | Polarized Light and Polarimetry (3) Spring | Chipman |
| 585 | Illumination Engineering (3) Spring | Koshel |
| 586 | Polarization in Optical Design (3) Fall, P, OPTI 502 | Chipman |
| 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 | Mathis |
| 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 | Guha |
| 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 | Schwiegerling |
| 600C | Computational Photography (1) Fall | Schwiegerling |
| 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) Spring, P, OPTI 517 | Liang |
| 630 | Biomedical Optics & Biophotonics (3) Fall | Kang |
| 636 | Noise in Imaging Systems (3) Fall P, OPTI 508, 512R | Kupinski |
| 637 | Principles of Image Science (3) Spring P, OPTI 512R, 508 | Staff |
| 638 | Advanced Medical Imaging (3) Spring, P, OPTI 512R or equivalent | Witte, Caucci |
| 639 | Image Science for Oncology (3) Fall | Barrett, Henscheid |
| 646 | Introduction to Quantum Information and Computation (3) Even Years Fall | Jessen |
| 647 | Photonic Quantum Information Processing (3) Fall, P, OPTI 511R or 544 | Guha |
| 656A | PTY: 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 | Dubin |
| 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 |