



# 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 (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
300.....	Practical Optics (3) Fall, P: PHYS 241 [Effective Spring 2014, never offered].....	Staff
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
396H.....	Optical Sciences Honors Special Topics Seminar (1) Last offered Fall 2012 .....	Staff
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 [effective Sp 2015].....	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 [2014].....	Peng
469L.....	System Programming for Engineers (2) Fall, [2015] .....	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 [effective Sp 2015].....	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



# College of Optical Sciences Course List

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 (3) Fall & Spring.....	All Professors

## Graduate Courses

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
503B.....	Software Tools for Photonics (3) Last offered Spring 2012.....	Staff
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
515.....	Optical Specifications, Fabrication & Testing (3) Spring.....	Staff
515L.....	Optical Specifications, Fabrication & Testing Lab (1) Spring.....	Staff
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 [effective Sp 2015].....	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



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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 or 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
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 equiv	Anderson
571L	Optical Physics Computational Lab (1) Fall P, OPTI 570A or equiv	Wright
573	PHYS: Atomic Spectroscopy for Experimentalists (3) Fall	Staff
574	PHYS: Atomic Physics for Experimentalists (3) Spring, P, PHYS 573	Staff
575	Optical Thin Films (3) Spring, Online, P, OPTI 505R	Staff
576	Thin Film Optics (3) Fall	Staff
578	PHYS: Laser Spect & 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 [effective Sp 2015]	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
596C	Aberrated Imaging and Propagation (3) Fall, P, OPTI 502, 509	Staff
596E	PHYS: Issues in Science and Technology Policy (3) Spring	Staff
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 [Effective Spring 2016]	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
632	ECE: Advanced Optical Communication Systems (3) Spring	Staff
634	ECE: Computational Sensing: Spectroscopy (3) Last offered Spring 2011	Staff
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



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647.....	Photonic Quantum Information Processing (3) Fall, P, OPTI 511R or 544.....	Guha
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 .....	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