Expected Course Offerings by Semester

APPLIED PHYSICS

The schedule below is based on historical patterns and expected scheduling. The semester and location in which a course may be offered **is subject to change** due to instructor availability, student

Course Offering Modalities

In-Person (IP)
[**01** = Homewood Campus]
[**31** = Applied Physics Lab]

Virtual-Live (VL)
[**01VL** = Synchronous Homewood/Online]
[**3VL** = Synchronous APL/Online]
[**8VL** = Synchronous Online]

Online (O)
[**81** = Asynchronous Online]

Core Courses		***Select four of the following (4) - At least three (3) must be from the first six (6) listed***			
Course #	**Course Name**	**Pre-Req***	**Summer**	**Fall**	**Spring**
615.641	Mathematical Methods for Physics and Engineering		O	O	O
615.642	Electromagnetics			O	O
615.651	Statistical Mechanics and Thermodynamics		O	O	O
615.653	Classical Mechanics	615.641	O	O	O
615.654	Quantum Mechanics	615.641, 615.653		O	O
615.665	Modern Physics		O		O
615.671	Principles Of Optics		O	O	O
615.680	Materials Science				
Electives		***Select six (6) of the following***			
Course #	**Course Name**	**Pre-Req***	**Summer**	**Fall**	**Spring**
615.611	Classical Physics				
615.644	Physics of Space Systems I				
615.645	Physics of Space Systems II	615.644* or 615.744*			
615.646	Physics of Magnetism				
615.647	Fundamentals of Sensors				
615.648	Alternate Energy Technology				
615.662	Introduction to Astrophysics			O	
615.731	Photovoltaic & Solar Thermal Energy Conversion				
615.744	Physics of Space Systems I				
615.745	Physics of Space Systems II	615.644* or 615.744*			
615.747	Sensors and Sensor Systems			O	O
615.748	Introduction to Relativity				O
615.751	Modern Optics	615.642		VL	VL
615.755	Space Physics	615.642		O	O
615.757	Solid State Physics	615.654		O	
615.760	Physics of Semiconductor Devices				
615.761	Introduction To Oceanography			O	
615.762	Applied Computational Electromagnetics			VL	
615.765	Chaos and Its Applications		O	O	O
615.769	Physics of Remote Sensing				O
615.772	Cosmology	615.748	O		
615.775	Physics of Climate				O
615.778	Optical System Design and Modelling	615.671			VL
615.780	Optical Detectors & Applications			O	
615.781	Quantum Information Processing	615.654		O	O
615.782	Optics and Matlab				O
615.800	Applied Physics Project				
615.802	Directed Studies in Applied Physics				
675.613	The Bold Science Motivating and Enabled by our Engineering	675.600 and 675.601 or instructor approval	O	O	O
535.614	Fundamentals of Acoustics				O

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APPLIED PHYSICS

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Materials and Condensed Matter Concentration Core Courses		***Four (4) 615.xxx core courses, below, required***			
Course #	**Course Name**	**Pre-Req***	**Summer**	**Fall**	**Spring**
615.641	Mathematical Methods for Physics and Engineering		O	O	O
615.642	Electromagnetics			O	O
615.651	Statistical Mechanics and Thermodynamics		O	O	O
615.680	Materials Science				
Materials and Condensed Matter Concentration Electives		***Select six (6) electives from the following; at least four (4) must be from the 700-level***			
Course #	**Course Name**	**Pre-Req***	**Summer**	**Fall**	**Spring**
615.646	Physics of Magnetism				
615.647	Fundamentals of Sensors				
615.747	Sensors and Sensor Systems			O	O
615.757	Solid State Physics	615.654		O	
615.760	Physics of Semiconductor Devices				
615.800	Applied Physics Project				
615.802	Directed Studies in Applied Physics				
515.617	Nanomaterials		O		O
515.635	Mechanical Properties of Materials				O
525.606	Electronic Materials				
525.621	Introduction to Electronics and the Solid State				
535.684	Modern Polymeric Materials			O	O
535.732	Fatigue and Fracture of Materials				O
535.748	Stress Waves, Impacts and Shockwaves				

Photonics Concentration Core Courses		***Four (4) 615.xxx core courses and one (1) 525.xxx core course required***			
Course #	**Course Name**	**Pre-Req***	**Summer**	**Fall**	**Spring**
615.641	Mathematical Methods for Physics and Engineering **(Required)**		O	O	O
*Select t**hree** of the Following:*					
615.642	Electromagnetics			O	O
615.653	Classical Mechanics	615.641	O	O	O
615.654	Quantum Mechanics	615.641, 615.653		O	
615.665	Modern Physics		O		O
615.671	Principles Of Optics		O	O	O
*Select **one** of the Following:*					
525.613	Fourier Techniques in Optics			O	
525.625	Laser Fundamentals	525.605		O	
525.691	Fundamentals of Photonics				O
Photonics Concentration Electives		***Five (5) electives required, including at least three (3) of the 700-level courses below, and two (2) from Applied Physics or another EP program.***			
Course #	**Course Name**	**Pre-Req***	**Summer**	**Fall**	**Spring**
615.751	Modern Optics	615.642		VL	VL
615.778	Optical System Design and Modelling	615.671			VL
615.780	Optical Detectors & Applications			O	
615.781	Quantum Information Processing	615.654		O	O
615.782	Optics and Matlab				O
615.800	Applied Physics Project				
615.802	Directed Studies in Applied Physics				
525.613	Fourier Techniques in Optics			O	
525.625	Laser Fundamentals	525.605		O	
525.636	Optics & Photonics Lab	525.605			
525.691	Fundamentals of Photonics				O
525.753	Laser Systems and Applications	525.625			
525.756	Optical Propagation, Sensing, and Backgrounds				VL
525.772	Fiber-Optic Communication Systems	525.691		VL	
525.796	Introduction to High-Speed Optoelectronics		VL		
525.797	Advanced Fiber Optic Laboratory	525.691 or 615.751			
585.734	Biophotonics				O