

# PHYSICS, CERTIFICATE

## REQUIREMENTS

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The physics certificate requires 18 credits of Intermediate or Advanced-level undergraduate PHYSICS courses, with the following restrictions:

- At least 9 of the credits must be in residence.
- At most one course from each of the three semesters of an introductory sequence can be counted.
- At most 3 credits of directed study can be counted.
- Only graded courses may be used toward the certificate.
- A minimum grade point average of 2.000 is required in all certificate courses.

Code	Title	Credits
<b>First Introductory Course (complete only one):</b>		<b>5</b>
PHYSICS 247	A Modern Introduction to Physics (recommended)	
PHYSICS 207	General Physics	
PHYSICS 201	General Physics	
E M A 201 & E M A 202	Statics and Dynamics <sup>1</sup>	
E M A 201 & M E 240	Statics and Dynamics <sup>1</sup>	
<b>Second Introductory Course (complete only one):</b>		<b>5</b>
PHYSICS 248	A Modern Introduction to Physics (recommended) <sup>2</sup>	
PHYSICS 208	General Physics	
PHYSICS 202	General Physics	
<b>Third Introductory Course (complete only one):</b>		<b>3-4</b>
PHYSICS 249	A Modern Introduction to Physics (recommended) <sup>2</sup>	
PHYSICS 205	Modern Physics for Engineers	
PHYSICS/ E C E 235	Introduction to Solid State Electronics	
PHYSICS 241	Introduction to Modern Physics	
<b>Directed Study (optional, maximum 3 credits)</b>		<b>0-3</b>
PHYSICS 299	Directed Study	
PHYSICS 499	Directed Study	
PHYSICS 681	Senior Honors Thesis	
PHYSICS 682	Senior Honors Thesis	
PHYSICS 691	Senior Thesis	
PHYSICS 692	Senior Thesis	
<b>Additional Intermediate and Advanced PHYSICS courses</b>		<b>1-5</b>
PHYSICS/ MED PHYS 265	Introduction to Medical Physics	
PHYSICS 301	Physics Today	
PHYSICS 307	Intermediate Laboratory-Mechanics and Modern Physics	
PHYSICS 311	Mechanics	

PHYSICS 321	Electric Circuits and Electronics
PHYSICS 322	Electromagnetic Fields
PHYSICS 323	Electromagnetic Fields
PHYSICS 325	Optics
PHYSICS 361	Machine Learning in Physics
PHYSICS 371	Acoustics for Musicians
PHYSICS 406	Special Topics in Physics
PHYSICS 407	Advanced Laboratory
PHYSICS 415	Thermal Physics
PHYSICS 448	Atomic and Quantum Physics
PHYSICS 449	Atomic and Quantum Physics
PHYSICS 472	
PHYSICS/B M E/ H ONCOL/ MED PHYS 501	Radiation Physics and Dosimetry
PHYSICS/E C E/ N E 525	Introduction to Plasmas
PHYSICS/E C E/ N E 527	Plasma Confinement and Heating
PHYSICS 531	Introduction to Quantum Mechanics
PHYSICS 535	Introduction to Particle Physics
PHYSICS 545	Introduction to Atomic Structure
PHYSICS 546	
PHYSICS 551	Solid State Physics
PHYSICS/ MED PHYS 588	Radiation Production and Detection
PHYSICS/B M E/ MED PHYS/ PHMCOL-M/ RADIOL 619	Microscopy of Life
PHYSICS 623	Electronic Aids to Measurement
PHYSICS 625	Applied Optics

**Total Credits** **18**

<sup>1</sup> A maximum of 5 credits from E M A 201, E M A 202 and M E 240 count toward the 18 credits required for the certificate.

<sup>2</sup> Students may not transfer into the PHYSICS 247 - PHYSICS 248 - PHYSICS 249 sequence from another introductory sequence.

## CERTIFICATE COMPLETION REQUIREMENT

This undergraduate certificate must be completed concurrently with the student's undergraduate degree. Students cannot delay degree completion to complete the certificate.