Physics

As the most basic of the physical sciences, physics can serve as the building block for many different careers. Using their understanding of physical principles, physicists have been at the forefront of many of the most exciting discoveries of the twentieth century and will continue to lead the way to many exciting discoveries in the future. They have contributed to a wide range of areas, including, but not limited to, biology, chemistry, communication, computer science, electronics, engineering, finance, managerial consulting, geophysics, medical physics, and transportation.

The SIU Carbondale Physics program focuses on applied physics. Therefore the program seeks to provide undergraduate students with the skills necessary to apply their basic understanding of physics to real-world problems for which the solutions are of near-future concern. With this in mind, the physics program at SIU offers a first-rate undergraduate program with four different specializations in applied physics-biomedical physics, computational physics, materials and nanophysics, and the traditional physics curriculum. These specializations are targeted to high-demand areas of science and take advantage of the expertise of our faculty. Members of the physics faculty are involved in a wide range of physics research projects, both theoretical and experimental, including low temperature physics, surface physics, materials physics, superconductivity, magnetism, synchrotron radiation, infrared spectroscopy, solid-state physics, quantum mechanics, quantum computation, computational physics, and statistical mechanics. Participation in faculty research projects by students is strongly encouraged and can be very useful to students since it provides them with faculty mentors, and experience applying learned skills to real-world physics problem-solving.

Physics is an exciting field; its graduates are in high demand and enjoy high salaries and job security. Employment opportunities in physics are varied and abundant, from industrial research and development to teaching. Physicists are employed by all sectors of society, including health care, various corporations, government, and universities. Students who wish to learn more are encouraged to contact the physics program directly or visit the program web site at physics.siu.edu.

Bachelor of Science (B.S.) in Physics

A minimum GPA of 2.0 in all physics and mathematics course work is needed in order for a student to receive a degree in Physics. In terms of credit hour requirements toward a degree in Physics, a course will be counted only once. A student may not repeat a course or its equivalent in which a grade of B or better was earned without the consent of the program.

B.S. Physics - General Physics Specialization Degree Requirements

Degree Requirements	Credit Hours	
University Core Curriculum Requirements		39
Foundation Skills		13
UNIV 101	1	
CMST 101	3	
ENGL 101, ENGL 102	6	
MATH 221	3	
Disciplinary Studies		23

Degree Requirements	Credit Hours
Fine Arts	3
Human Health	2
Humanities	6
CHEM 200 or CHEM 205H	3
Biological Sciences Course	3
Social Science	6
Integrative Studies (Multicultural/Diversity)	3
Requirements for Major	81
CHEM 200 or CHEM 205H, CHEM 201, CHEM 202 or CHEM 207H (3 hours included in the UCC Physical Science hours)	(3)+2
MATH 150, MATH 221, MATH 250, MATH 251, MATH 305 (3 hours included in the UCC Mathematics hours)	(3)+14
MATH 405 or MATH 406 or MATH 407 or MATH 409 or MATH 450 or MATH 455 or MATH 475	3
PHYS 100, PHYS 205A, PHYS 205B, PHYS 206A, PHYS 206B, PHYS 255A, PHYS 255B, PHYS 305, PHYS 355, PHYS 301, PHYS 310, PHYS 320, PHYS 420, PHYS 430, PHYS 440, PHYS 445, PHYS 450	39
Physics Electives: chosen from PHYS 390, PHYS 424, PHYS 425, PHYS 428, PHYS 431, PHYS 432, PHYS 458, PHYS 470, PHYS 476B, PHYS 476C, PHYS 476M, PHYS 476Q, PHYS 490, CS 215, CS 220, CS 475	16-17
Physics Major Requirements - Supportive Skills	
Biological Science (3 hours included in the UCC Life Science hours)	(3)+3
CS 201 or CS 202, CS 280, CS 300, ENGL 290 or ENGL 291 or ENGL 391; MATH 282 or MATH 483	3-4
Total	120

B.S. Physics - Biomedical Physics Specialization Degree Requirements

Degree Requirements	Credit Hours	
University Core Curriculum Requirements		39
Foundation Skills	13	
UNIV 101	1	
CMST 101	3	
ENGL 101, ENGL 102	6	
MATH 221	3	
Disciplinary Studies	23	
Fine Arts	3	
Human Health	2	
Humanities	6	
CHEM 200 or CHEM 205H	3	
Biological Science	6	
Social Science	6	
Integrative Studies (Multicultural/Diversity)	3	
Requirements for Major		81
CHEM 200 or CHEM 205H, CHEM 201, CHEM 202 or CHEM 207H (3 hours included in the UCC Physical Science hours)	(3)+2	
MATH 150, MATH 221, MATH 250, MATH 251, MATH 305 (3 hours included in the UCC Mathematics hours)	(3)+14	
MATH 405 or MATH 406 or MATH 407 or MATH 409 or MATH 450 or MATH 455 or MATH 475	3	
PHYS 100, PHYS 205A, PHYS 205B, PHYS 206A, PHYS 206B, PHYS 255A, PHYS 255B, PHYS 301, PHYS 305, PHYS 310, PHYS 320, PHYS 355, PHYS 420, PHYS 430, PHYS 445	33	
BIOL 211, BIOL 213, PHYS 476B	(3)+8	
Physics Electives chosen from: PHYS 390, PHYS 424, PHYS 425, PHYS 428, PHYS 431, PHYS 432, PHYS 440,	17-18	

Degree Requirements	Credit Hours
PHYS 458, PHYS 470, PHYS 476C, PHYS 476M, PHYS 476Q, PHYS 490, CHEM 210, CHEM 211, CHEM 212, CHEM 340, CHEM 341, CHEM 350, CHEM 351, MICR 301, MICR 302	
Physics Major Requirements - Support Skills	
Biological Science (3 hours included in the UCC Life Science hours)* [1]	0
CS 201 or CS 202, CS 280, CS 300, ENGL 290 or ENGL 291 or ENGL 391; MATH 282 or MATH 483	3-4
Total	120

[1] **Biological Science requirement met through Biomedical Physics specialization requirement*

B.S. Physics - Computational Physics Specialization Degree Requirements

Degree Requirements	Credit Hours	
University Core Curriculum Requirements		39
Foundation Skills		13
UNIV 101	1	
CMST 101	3	
ENGL 101, ENGL 102	6	
MATH 221	3	
Disciplinary Studies		23
Fine Arts	3	
Human Health	2	
Humanities	6	
CHEM 200 or CHEM 205H	3	
Biological Sciences Course	3	
Social Science	6	
Integrative Studies (Multicultural/Diversity)		3

Degree Requirements	Credit Hours
Requirements for Major	81
CHEM 200 or CHEM 205H, CHEM 201, CHEM 202 or CHEM 207H (3 hours included in the UCC Physical Science hours)	(3)+2
MATH 150, MATH 221, MATH 250, MATH 251, MATH 305 (3 hours included in the UCC Mathematics hours)	(3)+14
MATH 405 or MATH 406 or MATH 407 or MATH 409 or MATH 450 or MATH 455 or MATH 475	3
PHYS 100, PHYS 205A, PHYS 205B, PHYS 206A, PHYS 206B, PHYS 255A, PHYS 255B, PHYS 305, PHYS 355, PHYS 301, PHYS 310, PHYS 320, PHYS 420, PHYS 430, PHYS 440, PHYS 445	36
CS 202, CS 215, CS 220, PHYS 476C	15
Physics Electives chosen from PHYS 390, PHYS 424, PHYS 425, PHYS 428, PHYS 431, PHYS 432, PHYS 458, PHYS 470, PHYS 476B, PHYS 476M, PHYS 476Q, PHYS 490, CS 475	7-8
Physics Major Requirements – Supportive Skills	
Biological Science (3 hours included in the UCC Life Science hours)	(3)+3
CS 201 or CS 202*, CS 280, CS 300, ENGL 290 or ENGL 291 or ENGL 391; MATH 282 or MATH 483 [1]	3-4
Total	120

[1] *CS 202 is a Computational Physics specialization requirement, not included as a Physics Major Requirement*

B.S. Physics - Materials and Nanophysics Specialization Degree Requirements

Degree Requirements	Credit Hours
University Core Curriculum Requirements	39
Foundation Skills	13
UNIV 101	1
CMST 101	3
ENGL 101, ENGL 102	6

Degree Requirements	Credit Hours
MATH 221	3
Disciplinary Studies	23
Fine Arts	3
Human Health	2
Humanities	6
CHEM 200 or CHEM 205H	3
Biological Sciences Course	3
Social Science	6
Integrative Studies (Multicultural/Diversity)	3
Requirements for Major	81
CHEM 200 or CHEM 205H, CHEM 201, CHEM 202 or CHEM 207H (3 hours included in the UCC Physical Science hours)	(3)+2
MATH 150, MATH 221, MATH 250, MATH 251, MATH 305 (3 hours included in the UCC Mathematics hours)	(3)+14
MATH 405 or MATH 406 or MATH 407 or MATH 409 or MATH 450 or MATH 455 or MATH 475	3
PHYS 100, PHYS 205A, PHYS 205B, PHYS 206A, PHYS 206B, PHYS 255A, PHYS 255B, PHYS 305, PHYS 355, PHYS 301, PHYS 310, PHYS 320, PHYS 420, PHYS 430, PHYS 440, PHYS 445, PHYS 450	39
PHYS 425, PHYS 476M	6
Physics Electives chosen from PHYS 390, PHYS 424, PHYS 428, PHYS 431, PHYS 432, PHYS 458, PHYS 470, PHYS 476B, PHYS 476C, PHYS 476Q, PHYS 490, CS 215, CS 220, CS 475	10-11
Physics Major Requirements - Supportive Skills	
Biological Science (3 hours included in the UCC Life Science hours)	(3)+3
CS 201 or CS 202, CS 280, CS 300, ENGL 290 or ENGL 291 or ENGL 391; MATH 282 or MATH 483	3-4
Total	120

Physics Minor

A minor in Physics requires 17 hours and must include PHYS 203A, PHYS 203B, and PHYS 253A, PHYS 253B, or PHYS 205A, PHYS 205B, and PHYS 255A, PHYS 255B, as well as PHYS 305 and PHYS 355 and five hours from any 300- or 400-level physics course except PHYS 470.

Technology Fee

The College of Agricultural, Life, and Physical Sciences assesses undergraduate majors a technology fee of $4.58 per credit hour up to 12 credit hours. The fee is charged Fall and Spring semester.

Last updated: 04/19/2024