

# BS-MS: PHYSICS

## Student Learning Outcomes

Students graduating from this program will:

- Have an advanced knowledge of the basic areas of physics.
- Be able to integrate their knowledge with critical thinking skills in order to become quantitative problem solvers.
- Be able to clearly articulate scientific information, both orally and in writing.
- Be able to effectively use the scientific literature.

The School of Science and Engineering established the BS-MS program to offer students an opportunity to meet the full requirements of the existing BS and MS degree programs in a shorter time period than the separate degree programs by completing a B.S. degree within four years and then completing an M.S. degree in the fifth year.

- Students admitted to the program will receive the unit BS-MS Scholarship which will cover the difference between Graduate and Undergraduate tuition rates
- Students are required to maintain full-time undergraduate enrollment (minimum 12 hours/ semester)
- Must be continuously enrolled from BS to MS programs (must enter graduate program the semester following completion of BS degree requirements, summer excepted)
- Students are required to maintain full-time enrollment (minimum 9 hours/semester) in the graduate phase of the program and complete the master's degree within a year of their bachelor's degree completion to continue to receive the BS/MS Scholarship

## Admission Requirements for BS-MS Program:

Students must meet the following requirements to be eligible:

- The GRE will be waived for students who meet the qualifications above and are planning to enroll in the BS/MS program
- Students must indicate their interest and apply to the program no later than the end of their junior year
- Students must complete 30 hours at UMKC prior to admission to the BS/MS program
- Students are expected to follow the recommended curriculum (although deviations are possible) and must maintain a UMKC cumulative GPA of 3.00 or higher

This program offers students an opportunity to meet the full requirements of the existing BS and MS degree programs in a shorter time period than the separate degree programs by completing a B.S. degree in Physics within four years, and then completing an M.S. degree in Physics in their fifth year.

## Requirements for Graduation

### Credit Hour Requirements

The BS and MS program in Physics requires a minimum of the following:

- 120 Undergraduate Credit Hours
- 30 Graduate Credit Hours
- 141 Total Credit Hours (9 Hours of Overlap taken in final year of Undergraduate Program)

For additional details, please contact our Department by e-mail [sse@umkc.edu](mailto:sse@umkc.edu). ([sce@umkc.edu](mailto:sce@umkc.edu))

## 5 Year BS-MS Map

### First Year

Fall Semester	Credits	Spring Semester	Credits
MATH 210	4	MATH 220	4
GEFSE 101	3	PHYSICS 240	5
ENGLISH 110	3	ENGLISH 225	3
COMM-ST 110, 140, or 277	3	GECRT-AH 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 112, 113, or 114	3
GECRT-SC 101, 102, or 103	3		
	<b>16</b>		<b>15</b>

<b>Second Year</b>					
<b>Fall Semester</b>	<b>Credits</b>	<b>Spring Semester</b>	<b>Credits</b>		
MATH 250	4	PHYSICS 350	3		
PHYSICS 250	5	PHYSICS 385L	3		
CHEM 211	4	CHEM 212R	4		
CHEM 211L	1	CHEM 212LR	1		
General Elective	1	GECRT-SS 101, 102, 104, 105, 106, 107, 108, or 111	3		
		<b>15</b>	<b>14</b>		
<b>Third Year</b>					
<b>Fall Semester</b>	<b>Credits</b>	<b>Spring Semester</b>	<b>Credits</b>	<b>Summer Semester</b>	<b>Credits</b>
PHYSICS 310	3	PHYSICS 311	3	General Elective*	3
PHYSICS 330	3	PHYSICS 410	3		
PHYSICS 395L	3	GECDV 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, or 211	3		
GECUE 201, 203, 204, 205, 206, or 272	3	General Elective	3		
HISTORY 101, 102, or POL-SCI 210	3	General Elective	3		
		<b>15</b>	<b>15</b>		<b>3</b>
<b>Fourth Year</b>					
<b>Fall Semester</b>	<b>Credits</b>	<b>Spring Semester</b>	<b>Credits</b>	<b>Summer Semester</b>	<b>Credits</b>
PHYSICS 460	3	PHYSICS 420	3	General Elective*	3
PHYSICS 472	3	PHYSICS 461	3		
PHYSICS 476LW	3	General Elective	3		
General Elective	3	General Elective	3		
PHYSICS 55XX^	3	PHYSICS 55XX^	3		
		<b>15</b>	<b>15</b>		<b>3</b>
<b>Fifth Year</b>					
<b>Fall Semester</b>	<b>Credits</b>	<b>Spring Semester</b>	<b>Credits</b>		
PHYSICS 55XX^	3	PHYSICS 55XX^	3		
PHYSICS 55XX^	3	PHYSICS 55XX/55XX^	3		
PHYSICS 55XX^	3				
		<b>9</b>	<b>6</b>		
<b>Total Credits: 141</b>					

\* Suggested that BS-MS students take 2 undergraduate general elective classes in the summers

^ In year four, students will take one two-semester sequence of PHY5000-level courses. The exact selection of courses will depend on the student's interest area (standard physics or astrophysics) and if the student's fourth year ends in an even or an odd number. If the student's fourth year fall is odd-numbered, then the recommended sequence for standard physics students is 5530/5531. For standard physics students with an even-numbered fourth year fall, 5510/5537 is recommended. For students interested in astronomy content, a sequence of 5556/5553 (odd numbered fourth year fall) and 5555/5565 (otherwise) may be selected. The fifth year consists of taking five graduate courses over two semesters. In all cases, the exact selection of courses will need to be planned in collaboration with the student's undergraduate advisor. Critically—for students interested in astronomy—any astronomy courses that are taken for graduate credit cannot be used to support an undergraduate Astronomy Emphasis transcript designation.

\*\* NOTE: 3 undergraduate courses (9 credit hours) counted toward the graduate degree for BS-MS students: PHYS 460, 461, and 472