Required Course List for Astronomy Major  (Revised Sep. 9, 2019)

Required Basic Astronomy Courses (14 credits):
- ASTR 120 Astrophysics I: The Solar System (3 cr)
- ASTR 121 Astrophysics II: Stars and Beyond (4 cr)
- ASTR 310 Observational Astronomy (4 cr)
- ASTR 320 Theoretical Astrophysics (3 cr)

Advanced Astronomy Courses (6 credits; any two 400-level Astronomy courses are required):
- ASTR 406 Stellar Structure and Evolution (3 cr)
- ASTR 410 Radio Astronomy Techniques (3 cr)
- ASTR 415 Computational Astrophysics (3 cr)
- ASTR 421 Galaxies (3 cr)
- ASTR 422 Cosmology (3 cr)
- ASTR 430 The Solar System (3 cr)
- ASTR 435 Physics of Exoplanets (3 cr)
- ASTR 450 Orbital Dynamics (3 cr)
- ASTR 480 High Energy Astrophysics (3 cr)

Optional Astronomy Seminars
- ASTR 288C Astronomy Research Techniques (2 cr)
- ASTR 288I Introduction to the Astronomy Major (1 cr)
- ASTR 288M Current Events in Astronomy Research (1 cr)
- ASTR 288P Introduction to Astronomical Programming (1 cr)

Required Introductory Physics Courses (16 credits):
- PHYS 165 Introduction to Programming for Physical Science (3 cr) *(Students with computer programming experience may replace this course with PHYS 474: Computational Physics (3 cr) or ASTR 415: Computational Astrophysics (3 cr); students completing ASTR 415 for this requirement may not count it toward the 400-level Astronomy course requirement.)*
- PHYS 171 Mechanics and Thermal Physics (3 cr)
- PHYS 272 Fields (3 cr)
- PHYS 273 Waves (3 cr)
- PHYS 275 Experimental Physics I: Mechanics, Heat and Fields (2 cr)
- PHYS 276 Experimental Physics II: Electricity and Magnetism (2 cr)
  *Also accepted with consent of Astronomy advisor: PHYS 161, 165, 260, 261, 270, 271 (14 cr)*

Supporting Mathematics/Mathematical Methods Courses (15 credits):
- MATH 140 Calculus I (4 cr)
- MATH 141 Calculus II (4 cr)
- MATH 241 Calculus III (4 cr)
- PHYS 274 Mathematical Methods for Physics I (3 cr) *(MATH 246 and MATH 240/461 will be accepted for PHYS 274.)*

Advanced Physics Courses (13 credits):
- PHYS 371 Modern Physics (3 cr)
- PHYS 373 Mathematical Methods for Physics II (3 cr)
- PHYS 401 Quantum Mechanics I (4 cr)
- PHYS 404 Statistical Thermodynamics (3 cr)

Total credits required for the Astronomy major = 64 cr. Grades in all of the above required courses must be C- or better.
Four-year Plan for Astronomy Majors  
(Revised September 9, 2019)

**FIRST YEAR**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ASTR 120 (DSNS)</td>
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<tr>
<td>ENGL 101 (FSAW)</td>
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<td>MATH 140 (FSMA/AR)</td>
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<td>GenEd (SCIS/DSHU)</td>
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**SECOND YEAR**

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<td>PHYS 272</td>
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<td>PHYS 275</td>
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<tr>
<td>ASTR 288C (option 1)</td>
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<tr>
<td>GenEd (DVUP) (option 2)</td>
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**THIRD YEAR**

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<td>PHYS 371</td>
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<td>PHYS 373</td>
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**FOURTH YEAR**

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<td>PHYS 404</td>
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<tr>
<td><strong>Total</strong></td>
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</table>

Total credits with “Option 1” and no ASTR 288M: 124 cr.  Total credits with “Option 2” and no ASTR 288M: 125 cr. (A minimum of 120 cr is required for graduation.) A grade of C- or better must be earned in all courses that are required for the major.

Required Astronomy major credits: 64 cr.
Four-year Plan for Astronomy/Physics Double Majors  
(Revised September 9, 2019)

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**THIRD YEAR**

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<td>PHYS 373</td>
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<tr>
<td>PHYS 375 (DSSP)</td>
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<tr>
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<td>GenEd (DSHU)</td>
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**FOURTH YEAR**

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<td>PHYS 410</td>
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<td><strong>Total</strong></td>
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</table>

Total credits with “Option 1” and no ASTR 288M: 124 cr. Total credits with “Option 2” and no ASTR 288 M: 1235cr. (A minimum of 120 cr is required for graduation with double major.) A grade of C- or better must be earned in all courses that are required for the major.

Required Astronomy major credits: 64 cr.
Required Physics major credits: 68 cr.