

DU Physics and Astronomy BA Degree Requirements (updated May 2014)

1. DU Common Curriculum (44 credits)

- First-Year Seminar (4 credits)
- Writing and Rhetoric (8 credits)
- Foreign Language (12 credits or demonstrated proficiency)
- Ways of Knowing (16 credits), including
 - Analytical Inquiry: Society and Culture (AI-S; 8 credits)
 - Scientific Inquiry: Society and Culture (SI-S; 8 credits)
- Advanced Seminar (4 credits)

2. Mathematics (15 credits)

- Calculus I, II, and III (MATH 1951, 1952, 1953; 12 credits)
- Introduction to Differential Equations (MATH 2070; 4 credits)

MATH 1951 fulfills the Analytical Inquiry: Natural and Physical World (AI-N) Common Curriculum requirement.

3. Introductory Physics (17 credits)

- Physics Preparatory (PHYS 1200; 2 credits) **recommended but not required**
- University Physics I, II, III, each with lab (PHYS 1211, 1212, 1213; 15 credits)

The PHYS 1211/2/3 sequence fulfills the Scientific Inquiry: Natural and Physical World (SI-N) Common Curriculum requirement.

4. Advanced Physics (35+ credits)

BA students must complete at least 35 quarter hours of physics coursework at 2000 level or above. This program must include the following:

- Modern Physics I and II (PHYS 2251, 2252; 4 credits each; yearly)
- Modern Lab (PHYS 2260; 1 credit; yearly)
- Uncertainty and Error Analysis (PHYS 2259; 2 credits; yearly)
- Analytical Mechanics I (PHYS 3510; 4 credits; alternate years)
- Quantum Physics I (PHYS 3111; 4 credits; alternate years)
- Electromagnetism I (PHYS 3611; 4 credits; alternate years)
- Thermal Physics (PHYS 3841; 4 credits; alternate years)
- Senior Seminar (PHYS 3100; 2 credits; yearly)

These required courses total 29 credits. Thus the student must complete at least 6 additional elective credits in physics at the 2000+ level. Recommended electives include PHYS 2311 *Intermediate Lab I*, PHYS 3112 *Quantum Physics II*, PHYS 3520 *Analytical Mechanics II*, and PHYS 3612 *Electricity & Magnetism II*. PHYS 3991 *Independent Study* and PHYS 3995 *Independent Research* count toward this total, as do graduate-level courses in physics and biophysics (BIOP) with special permission.

5. Minor

BA students must complete at least one minor.

Junior/senior timeline

- Fall quarter of junior year: Enroll in Senior Seminar (PHYS 3100, offered each fall) if planning to study abroad in senior fall. This capstone course provides background in research methods and scientific writing.
- Fall quarter of senior year:
 - Enroll in Senior Seminar (PHYS 3100, offered each fall) if you did not take it as a junior. This capstone course provides background in research methods and scientific writing.
 - Apply for spring graduation: <http://www.du.edu/registrar/graduation/graduationapp.html> .
- Winter quarter of senior year: If you have conducted research, consider registering to present a poster or talk at the undergraduate Symposium in early May (this is required for completion of a PINS award).

DU Physics and Astronomy BA Sample Degree Planner (updated May 2014)

	Fall	Winter	Spring
Fr	PHYS 1200 <i>Physics Prep</i> (2) MATH 1951 <i>Calculus I</i> (4) FSEM 1111 <i>First Year Seminar</i> (4) <i>Foreign Language</i> (4) <i>Total Credits</i> _____	PHYS 1211 <i>Univ. Phys. I</i> (5) MATH 1952 <i>Calculus II</i> (4) WRIT 1122 <i>Acad. Writing</i> (4) <i>Foreign Language</i> (4) <i>Total Credits</i> _____	PHYS 1212 <i>Univ. Phys. II</i> (5) MATH 1953 <i>Calculus III</i> (4) WRIT 1133 <i>Acad. Writing</i> (4) <i>Foreign Language</i> (4) <i>Total Credits</i> _____
So	PHYS 1213 <i>Univ. Phys. III</i> (5) AI-S (4) ¹ SI-S (4) ¹ <i>Total Credits</i> _____	PHYS 2251 <i>Mod. Phys. I</i> (4) PHYS 2259 <i>Uncertainty</i> (2) MATH 2070 <i>Diff. Eqns.</i> (4) AI-S (4) ¹ <i>Total Credits</i> _____	PHYS 2252 <i>Mod. Phys. II</i> (4) PHYS 2260 <i>Modern Lab</i> (1) SI-S (4) ¹ <i>Total Credits</i> _____
Ju	ASEM <i>Advanced Seminar</i> (4) Minor requirements as needed This is the best quarter for physics majors to study abroad. <i>Total Credits</i> _____	PHYS 3510 <i>Analyt. Mech. I</i> (4) ² PHYS 3611 <i>E&M I</i> (4) ² Minor requirements as needed <i>Total Credits</i> _____	PHYS <i>Elective</i> (4) ³ Minor requirements as needed <i>Total Credits</i> _____
Se	PHYS 3100 <i>Senior Seminar</i> (2) Minor requirements as needed <i>Total Credits</i> _____	PHYS 3111 <i>Quantum Physics I</i> (4) ² Minor requirements as needed <i>Total Credits</i> _____	PHYS 3841 <i>Thermal Physics</i> (4) ² PHYS <i>Elective</i> (4) ³ Minor requirements as needed <i>Total Credits</i> _____

¹ AI-S and SI-S courses may be taken in any order.

² PHYS 3510 *Analytical Mechanics I* and PHYS 3611 *Electromagnetism I* are offered every other year. PHYS 3111 *Quantum Physics I* and PHYS 3841 *Thermal Physics* are offered in the alternating years. Either set of courses may be taken first.

³ Recommended electives include PHYS 2311 *Intermediate Lab I*, PHYS 3112 *Quantum Physics II*, PHYS 3520 *Analytical Mechanics II*, and PHYS 3612 *Electricity & Magnetism II*. BA students may also enroll in PHYS 3991 *Independent Study* or PHYS 3995 *Independent Research* as electives; credits for these courses are variable. Graduate-level courses in physics and biophysics (BIOP) may also count as physics electives.