

Required Course List for BS Astronomy - Data Science Specialization (Oct. 8, 2025)

Required Basic Astronomy Courses (14 credits):

ASTR 130	Astrophysics 1 - Foundations (3 cr)
ASTR 131	Astrophysics 2 - Planets and Stars (3 cr)
ASTR 232	Astrophysics 3 - Milky Way and Beyond (4 cr)
ASTR 310	Observational Astronomy (4 cr)

Advanced Astronomy Courses (9 credits; any three 400-level Astronomy courses):

ASTR 320	Theoretical Astrophysics (3 cr)
ASTR 406	Stellar Structure and Evolution (3 cr)
ASTR 410	Radio Astronomy (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	Astrophysics of Exoplanets (3 cr)
ASTR 450	Orbital Dynamics (3 cr)
ASTR 480	High Energy Astrophysics (3 cr)

Required Introductory Physics Courses (16 credits):

PHYS 171	Introductory Physics: Mechanics (3 cr)
PHYS 265	Introduction to Scientific Programming (3 cr) (<i>Students with significant 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.</i>)
PHYS 272	Introductory Physics: Fields (3 cr)
PHYS 273	Intermediate Oscillations and Waves (3 cr)
PHYS 275	Experimental Physics I: Mechanics and Waves (2 cr)
PHYS 276	Experimental Physics II: Electricity and Magnetism (2 cr)

Supporting Mathematics Courses (16 credits):

MATH 140	Calculus I (4 cr)
MATH 141	Calculus II (4 cr)
MATH 241	Calculus III (4 cr)
MATH 243	Introduction to Linear Algebra and Differential Equations (4 cr) (<i>MATH 246 and MATH 240/461 will be accepted for MATH 243.</i>)

Advanced Data Science Courses (15 credits):

DATA 320	Introduction to Data Science (3 cr)
DATA 350	Data Visualization and Presentation (3 cr)

Three of the following:

MATH 416	Applied Harmonic Analysis: An Introduction to Signal Processing (3 cr)
MATH 423	Linear Optimization (3 cr)
MATH 464	Transform Methods (3 cr)
STAT 401	Applied Probability and Statistics II (3 cr)
STAT 430	Introduction to Statistical Computing with SAS (3 cr)

Total credits required for the BS Astronomy - Data Science Specialization = 70 cr.

- All of the above courses must be completed with a C- or better.
- Astronomy majors may not minor in Physics. Astronomy majors who choose the BS Astrophysics Specialization may double-major in one of the Physics specializations.
- Astronomy majors who choose the BS Astrophysics or BS Astronomy - Physical Science Specializations may double-major in Computer Science.
- Once a student has begun the Astronomy major at the University of Maryland, no more than one course at the 300/400-level from a “study abroad” type program may be used in place of an ASTR-prefix course required for the major.
- Highlighted courses are required for all Astronomy major specializations.

Four-year Plan for BS Astronomy - Data Science Specialization + Data Science Minor

FIRST-YEAR

ASTR 130	3	ASTR 131 (DSNS)	3
ENGL 101 (FSAW)	3	MATH 141	4
MATH 140 (FSMA/AR)	4	PHYS 171	3
GenEd (SCIS/DSHU)	3	PHYS 275	2
GenEd (SCIS)	3	GenEd (DSHS)	3
	Total = 16 cr		Total = 15 cr

SECOND YEAR

ASTR 232 (DSNL)	4	PHYS 273	3
MATH 241	4	PHYS 276	2
PHYS 272	3	MATH 243	4
PHYS 265	3	STAT 100**	3
GenEd (FSOC)	3	GenEd (DVUP)	3
	Total = 17 cr		Total = 15 cr

THIRD YEAR

ASTR 310 (DSSP)	4	ASTR 3/4**	3
DATA 110/120*,**	2	DATA 250*,**	4
DATA 200	3	DATA 350	3
GenEd (DSHS)	3	MATH/STAT 4**	3
GenEd (DVUP)	3	ENGL 390 or 393 (FSPW)	3
	Total = 15 cr		Total = 16 cr

FOURTH-YEAR

ASTR 3/4**	3	ASTR 3/4**	3
DATA 320	3	MATH/STAT 4**	3
DATA 400*	3	GenEd (DSHS)	3
MATH/STAT 4**	3	GenEd (DSSP)	3
GenEd (DSHU)	3		
	Total = 15 cr		Total = 12 cr

Total: 121 cr

*: Course needed for the Data Science Minor

**: Prerequisite for DATA courses required for Astronomy - Data Science Specialization