

DEPARTMENT OF ASTRONOMY

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Bachelor of Arts in Astronomy

The BA in Astronomy requires 120 credit hours, including 20 hours in astronomy, 26 hours in physics, 14 hours in math, 3 hours in computer programming, and 6 hours in technical electives.

Astronomy Hours: 20, up to 23 with Astronomy capstone

ASTR 221 Stars and Planets (3)
 ASTR 222 Galaxies and Cosmology (3)
 ASTR 309 Astrophysics Seminar (1)
 ASTR 310 Astrophysics Seminar II (1)
 ^ASTR 351 Astronomy Capstone (3)

Four of the following:

ASTR 306 Astronomical Techniques (3)
 ASTR 311 Stellar Physics (3)
 ASTR 323 The Local Universe (3)
 ASTR 328 Cosmology & the Structure of the Universe (3)
 ASTR 333 Dark Matter (3)
 ^A SAGES Capstone Experience is required of all students. The Astronomy BA does not require the Astronomy Capstone but only that a Capstone be taken.

Physics Hours: 26

PHYS 121 General Physics I: Mechanics (4)
 PHYS 122 General Physics II: Electricity & Magnetism (4)
 PHYS 221 General Physics III: Modern Physics (3)
 PHYS 250 Mathematical Physics & Computing (3)
 PHYS 310 Classical Mechanics (3)
 PHYS 313 Thermodynamics & Statistical Mechanics (3)
 PHYS 324 Electricity & Magnetism I (3)
 PHYS 331 Quantum Mechanics I (3)

Math Hours: 14

MATH 121 Calculus for Science & Engineering I (4)
 MATH 122 Calculus for Science & Engineering II (4)
 or MATH 124 Calculus II (4)
 MATH 223 Calculus for Science & Engineering III (3)
 or MATH 227 Calculus III (3)
 MATH 224 Elementary Differential Equations (3)
 or MATH 228 Differential Equations (3)

ENGR/Computing Hours: 3

ENGR 131 Elementary Computer Programming (3)

Technical Electives Hours: 6

Technical Electives are additional courses which satisfy interests of the student but also fall within the scientific objectives of the major, and must be approved by your advisor. Example courses include:

DSCI 351 Exploratory Data Science
 EEPs 315 Structural Geology & Geodynamics
 EEPs 345 Planetary Materials
 MATH 201 Introduction to Linear Algebra for Applications
 PHYS 203 Analog and Digital Electronics
 PHYS 316 Introduction to Nuclear and Particle Physics
 PHYS 326 Physical Optics
 PHYS 349 Methods of Mathematical Physics I
 STAT 312R Statistics for Engineering and Physical Sciences

Sample Plan of Study: BA in Astronomy

This is a representative schedule for a student with a single major. Not all courses are offered in exactly the semester and year listed here. Please consult your advisor about course availability and sequencing. Open Electives should be added as appropriate to bring to the total number of credit hours to the required 120 for graduation with a BA.

First Year — Fall Semester (15 credits)	Units
MATH 121 Calculus for Science and Engineering I	4
PHYS 121 General Physics I - Mechanics	4
SAGES First Seminar	4
PHED (two half semester courses)	0
Social Science Breadth I	3

First Year — Spring Semester (14 credits)	Units
MATH 122 Calculus for Science and Engineering II	4
PHYS 122 General Physics II - E&M	4
ENGR 131 Elementary Computer Programming	3
PHED (two half semester courses)	0
Social Science Breadth II	3

Second Year — Fall Semester (12 credits)	Units
ASTR 221 Stars and Planets	3
MATH 223 Calculus for Science and Engineering III	3
PHYS 221 Introduction to Modern Physics	3
SAGES University Seminar	3

Second Year — Spring Semester (15 credits)	Units
ASTR 222 Galaxies and Cosmology	3
MATH 224 Elementary Differential Equations	3
PHYS 250 Computational Methods in Physics	3
PHYS 310 Classical Mechanics	3
SAGES University Seminar	3

Third Year — Fall Semester (15 credits)	Units
ASTR 328 Cosmology and the Structure of the Universe	3
PHYS 313 Thermodynamics and Statistical Mechanics	3
Arts & Humanities Breadth I	3
Arts & Humanities Breadth II	3
Technical Elective	3

Third Year — Spring Semester (9 credits)	Units
ASTR 311 Stellar Physics	3
PHYS 324 Electricity and Magnetism I	3
Technical Elective	3

Fourth Year — Fall Semester (11 credits)	Units
ASTR 323 Local Universe	3
ASTR 309 Astrophysics Seminar I	1
PHYS 331 Introduction to Quantum Mechanics I	3
ASTR 351 Astronomy Capstone Project	1
Global and Cultural Diversity Breadth	3

Fourth Year — Spring Semester (6 credits)	Units
ASTR 306 Astronomical Techniques	3
ASTR 310 Astrophysics Seminar II	1
ASTR 351 Astronomy Capstone Project	2

Open Electives 22
Total 120

Bachelor of Science in Astronomy

The BS in Astronomy requires 121 credit hours, including 20–23 hours in astronomy, 40 hours in physics, 14 hours in math, 3 hours in computer programming, and 15 hours in technical electives.

Astronomy Hours: 20, up to 23 with Astronomy capstone

ASTR 221 Stars and Planets (3)
 ASTR 222 Galaxies and Cosmology (3)
 ASTR 306 Astronomical Techniques (3)
 ASTR 309 Astrophysics Seminar (1)
 ASTR 310 Astrophysics Seminar II (1)
 ASTR 311 Stellar Physics (3)
 ASTR 323 The Local Universe (3)
 ASTR 328 Cosmology & the Structure of the Universe (3)
 *ASTR 351 Astronomy Capstone (3)
 ^A SAGES Capstone Experience is required of all students. The Astronomy BS does not require the Astronomy Capstone but only that a Capstone be taken.

Physics Hours: 40

PHYS 121 General Physics I: Mechanics (4)
 or PHYS 123 Physics and Frontiers I (4)
 PHYS 122 General Physics II: Electricity & Magnetism (4)
 or PHYS 124 Physics and Frontiers II (4)
 PHYS 203 Laboratory Physics (4)
 PHYS 204 Advanced Instrumentation Lab (4)
 PHYS 221 General Physics III: Modern Physics (3)
 PHYS 250 Mathematical Physics & Computing (3)
 PHYS 310 Classical Mechanics (3)
 PHYS 313 Thermodynamics & Statistical Mechanics (3)
 PHYS 324 Electricity & Magnetism I (3)
 PHYS 325 Electricity & Magnetism II (3)
 PHYS 331 Quantum Mechanics I (3)
 PHYS 332 Quantum Mechanics II (3)

Math Hours: 14

MATH 121 Calculus for Science & Engineering I (4)
 MATH 122 Calculus for Science & Engineering II (4)
 or MATH 124 Calculus II (4)
 MATH 223 Calculus for Science & Engineering III (3)
 or MATH 227 Calculus III (3)
 MATH 224 Elementary Differential Equations (3)
 or MATH 228 Differential Equations (3)

ENGR/Computing Hours: 3

ENGR 131 Elementary Computer Programming (3)

Technical Electives Hours: 15

Technical Electives are additional courses which satisfy interests of the student but also fall within the scientific objectives of the major, and must be approved by your advisor. Example courses include:

ASTR 333 Dark Matter (3)
 DSCI 351 Exploratory Data Science
 EEPS 315 Structural Geology & Geodynamics
 EEPS 345 Planetary Materials
 MATH 201 Introduction to Linear Algebra for Applications
 PHYS 301 Advanced Laboratory Physics I
 PHYS 316 Introduction to Nuclear and Particle Physics
 PHYS 326 Physical Optics
 PHYS 349 Methods of Mathematical Physics I
 STAT 312R Statistics for Engineering and Physical Sciences

Sample Plan of Study: BS in Astronomy

This is a representative schedule only. Not all courses are offered in exactly the semester and year listed here. Please consult your advisor about course availability and sequencing.

First Year — Fall Semester (15 credits)

	Units
MATH 121 Calculus for Science and Engineering I	4
PHYS 121 General Physics I - Mechanics	4
SAGES First Seminar	4
PHED (two half semester courses)	0
Social Science Breadth I	3

First Year — Spring Semester (14 credits)

	Units
MATH 122 Calculus for Science and Engineering II	4
PHYS 122 General Physics II - E&M	4
ENGR 131 Elementary Computer Programming	3
PHED (two half semester courses)	0
Social Science Breadth II	3

Second Year — Fall Semester (16 credits)

	Units
ASTR 221 Stars and Planets	3
MATH 223 Calculus for Science and Engineering III	3
PHYS 221 Introduction to Modern Physics	3
PHYS 203 Analog & Digital Electronics	4
SAGES University Seminar	3

Second Year — Spring Semester (16 credits)

	Units
ASTR 222 Galaxies and Cosmology	3
MATH 224 Elementary Differential Equations	3
PHYS 250 Computational Methods in Physics	3
PHYS 204 Advanced Instrumentation Lab	4
SAGES University Seminar	3

Third Year — Fall Semester (15 credits)

	Units
ASTR 328 Cosmology and the Structure of the Universe	3
PHYS 313 Thermodynamics and Statistical Mechanics	3
Arts & Humanities Breadth I	3
Arts & Humanities Breadth II	3
Technical Elective	3

Third Year — Spring Semester (15 credits)

	Units
ASTR 311 Stellar Physics	3
PHYS 324 Electricity and Magnetism I	3
PHYS 310 Classical Mechanics	3
Global and Cultural Diversity	3
Technical Elective	3

Fourth Year — Fall Semester (14 credits)

	Units
ASTR 309 Astrophysics Seminar I	1
ASTR 323 The Local Universe	3
PHYS 325 Electricity and Magnetism II	3
PHYS 331 Introduction to Quantum Mechanics I	3
ASTR 351 Astronomy Capstone Project	1
Technical Elective	3

Fourth Year — Spring Semester (15 credits)

	Units
ASTR 306 Astronomical Techniques	3
ASTR 310 Astrophysics Seminar II	1
ASTR 351 Astronomy Capstone Project	2
PHYS 332 Introduction to Quantum Mechanics II	3
Technical Elective	3
Technical Elective	3

Total 121