

# Astronomy (BSA)

Total Hours Required: 120

## Plan of Study

The Plan of Study is a suggested four-year course sequence to support academic planning and serves as a helpful guide. Currently enrolled students should meet with their academic advisor to tailor their course selections and timelines to their individual goals and circumstances.

| Course                                      | Title                                         | Hours     |
|---------------------------------------------|-----------------------------------------------|-----------|
| <b>Year 1</b>                               |                                               |           |
| <b>Semester 1</b>                           |                                               |           |
| M 408C                                      | Differential and Integral Calculus            | 4         |
| AST 307                                     | Introductory Astronomy                        | 3         |
| RHE 306                                     | Rhetoric and Writing                          | 3         |
| <u>First-Year Signature Course (090)</u>    |                                               |           |
| <u>Social and Behavioral Sciences (080)</u> |                                               |           |
| Free Elective                               |                                               | 3         |
| <b>Hours</b>                                |                                               | <b>16</b> |
| <b>Semester 2</b>                           |                                               |           |
| M 408D                                      | Sequences, Series, and Multivariable Calculus | 4         |
| PHY 301                                     | Mechanics                                     | 3         |
| PHY 101L                                    | Laboratory for Physics 301                    | 1         |
| Language, Arts, and Culture                 |                                               | 3         |
| GOV 310L                                    | American and Texas Government                 | 3         |
| <b>Hours</b>                                |                                               | <b>14</b> |
| <b>Year 2</b>                               |                                               |           |
| <b>Semester 1</b>                           |                                               |           |
| M 427J                                      | Differential Equations with Linear Algebra    | 4         |
| PHY 316                                     | Electricity and Magnetism                     | 3         |
| PHY 116L                                    | Laboratory for Physics 316                    | 1         |
| <u>American and Texas Government (070)</u>  |                                               | 3         |
| Minor/Certificate course                    |                                               | 3         |
| <b>Hours</b>                                |                                               | <b>14</b> |
| <b>Semester 2</b>                           |                                               |           |
| PHY 315                                     | Wave Motion and Optics                        | 3         |
| PHY 115L                                    | Laboratory for Physics 315                    | 1         |
| Upper-division Secondary Science course     |                                               | 3         |
| Language, Arts, and Culture                 |                                               | 3         |
| Minor/Certificate course                    |                                               | 3         |
| Free Elective                               |                                               | 3         |
| <b>Hours</b>                                |                                               | <b>16</b> |
| <b>Year 3</b>                               |                                               |           |
| <b>Semester 1</b>                           |                                               |           |
| Hours chosen from:                          |                                               | 3         |
| AST 351                                     | Astronomical Instrumentation                  |           |
| AST 352K                                    | Stellar Astronomy                             |           |
| AST 353                                     | Astrophysics                                  |           |
| AST 358                                     | Galaxies and the Universe                     |           |
| AST 364P                                    | Planetary Systems                             |           |
| AST 376                                     | Special Topics in Advanced Astronomy          |           |
| AST 376C                                    | Cosmology                                     |           |
| AST 376R                                    | A Practical Introduction to Research Methods  |           |
| Upper-division Secondary Science course     |                                               | 3         |
| Language, Arts, and Culture                 |                                               | 3         |
| <u>U.S. History (060)</u>                   |                                               | 3         |
| Minor/Certificate course                    |                                               | 3         |
| <b>Hours</b>                                |                                               | <b>15</b> |
| <b>Semester 2</b>                           |                                               |           |
| Hours chosen from:                          |                                               | 3         |
| AST 351                                     | Astronomical Instrumentation                  |           |
| AST 352K                                    | Stellar Astronomy                             |           |

|                                         |                                              |            |
|-----------------------------------------|----------------------------------------------|------------|
| AST 353                                 | Astrophysics                                 |            |
| AST 358                                 | Galaxies and the Universe                    |            |
| AST 364P                                | Planetary Systems                            |            |
| AST 376                                 | Special Topics in Advanced Astronomy         |            |
| AST 376C                                | Cosmology                                    |            |
| AST 376R                                | A Practical Introduction to Research Methods |            |
| Upper-division Secondary Science course |                                              | 3          |
| Language, Arts, and Culture             |                                              | 3          |
| Minor/Certificate course                |                                              | 3          |
| Free Elective                           |                                              | 3          |
| <b>Hours</b>                            |                                              | <b>15</b>  |
| <b>Year 4</b>                           |                                              |            |
| <b>Semester 1</b>                       |                                              |            |
| Hours chosen from:                      |                                              | 3          |
| AST 351                                 | Astronomical Instrumentation                 |            |
| AST 352K                                | Stellar Astronomy                            |            |
| AST 353                                 | Astrophysics                                 |            |
| AST 358                                 | Galaxies and the Universe                    |            |
| AST 364P                                | Planetary Systems                            |            |
| AST 376                                 | Special Topics in Advanced Astronomy         |            |
| AST 376C                                | Cosmology                                    |            |
| AST 376R                                | A Practical Introduction to Research Methods |            |
| Minor/Certificate course                |                                              | 3          |
| <u>U.S. History (060)</u>               |                                              | 3          |
| <u>Visual and Performing Arts (050)</u> |                                              | 3          |
| Free Elective                           |                                              | 3          |
| <b>Hours</b>                            |                                              | <b>15</b>  |
| <b>Semester 2</b>                       |                                              |            |
| Upper-division Secondary Science course |                                              | 3          |
| Hours chosen from:                      |                                              | 3          |
| E 316L                                  | British Literature                           |            |
| E 316M                                  | American Literature                          |            |
| E 316N                                  | World Literature                             |            |
| E 316P                                  | Masterworks of Literature                    |            |
| Free Elective                           |                                              | 3          |
| Free Elective                           |                                              | 3          |
| Free Elective                           |                                              | 3          |
| <b>Hours</b>                            |                                              | <b>15</b>  |
| <b>Total Hours</b>                      |                                              | <b>120</b> |

## Requirements

All requirements are listed below, starting with the most specialized moving to the most general. Additional requirements may follow the table, so be sure to read the entire page. Some required courses listed below may also satisfy General Education requirements, including Core Curriculum.

| Code                   | Title                                         | Hours |
|------------------------|-----------------------------------------------|-------|
| <b>Major</b>           |                                               |       |
| <i>Mathematics</i>     |                                               |       |
| M 408C                 | Differential and Integral Calculus            | 4     |
| M 408D                 | Sequences, Series, and Multivariable Calculus | 4     |
| M 427K                 | Advanced Calculus for Applications I          | 4     |
| or M 427J              | Differential Equations with Linear Algebra    |       |
| <i>Primary Science</i> |                                               |       |
| PHY 301                | Mechanics                                     | 3     |
| PHY 101L               | Laboratory for Physics 301                    | 1     |
| PHY 315                | Wave Motion and Optics                        | 3     |
| PHY 115L               | Laboratory for Physics 315                    | 1     |
| PHY 316                | Electricity and Magnetism                     | 3     |
| PHY 116L               | Laboratory for Physics 316                    | 1     |
| AST 307                | Introductory Astronomy                        | 3     |

|                                                                                               |     |
|-----------------------------------------------------------------------------------------------|-----|
| Hours chosen from:                                                                            | 9   |
| AST 351 Astronomical Instrumentation                                                          |     |
| AST 352K Stellar Astronomy                                                                    |     |
| AST 353 Astrophysics                                                                          |     |
| AST 358 Galaxies and the Universe                                                             |     |
| AST 364P Planetary Systems                                                                    |     |
| AST 376 Special Topics in Advanced Astronomy                                                  |     |
| AST 376C Cosmology                                                                            |     |
| AST 376R A Practical Introduction to Research Methods                                         |     |
| <i>Secondary Science</i>                                                                      |     |
| Additional hours of upper-division coursework chosen from one or more of the following areas: | 12  |
| Biology                                                                                       |     |
| Chemistry                                                                                     |     |
| Computer Science                                                                              |     |
| Geological Sciences                                                                           |     |
| Mathematics                                                                                   |     |
| Statistics and Data Sciences                                                                  |     |
| Physics                                                                                       |     |
| Astronomy                                                                                     |     |
| <i>Subtotal</i>                                                                               | 48  |
| <b>Degree (see details below)</b>                                                             | 27  |
| Free electives: Additional coursework to reach total hours required.                          | 3   |
| <i>Subtotal</i>                                                                               | 30  |
| <b>General Education</b>                                                                      |     |
| Core Curriculum                                                                               | 42  |
| Foreign Language other than English, Beginning Proficiency                                    |     |
| <i>Subtotal</i>                                                                               | 42  |
| <b>College Requirements - Natural Sciences</b>                                                |     |
| <b>General University Requirements</b>                                                        |     |
| <b>Total Hours</b>                                                                            | 120 |

## Degree-Bachelor of Science and Arts (BSA)

The requirements for the Bachelor of Science and Arts are designed to give each student flexibility in the selection of courses to meet individual needs.

| Code                                                                                                                                                                                                                                         | Title | Hours |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-------|
| <b>Language, Arts, and Culture</b>                                                                                                                                                                                                           |       |       |
| Hours selected from at least two of the following four areas:                                                                                                                                                                                |       | 12    |
| Fine arts: courses chosen from design, ensemble, fine arts, music, studio art, performance, visual art studies, art history, and theatre and dance                                                                                           |       |       |
| Humanities: courses chosen from American studies, ancient history and classical civilization, classical civilization, comparative literature, creative writing, English, humanities, philosophy, religious studies, and rhetoric and writing |       |       |
| Social and behavioral sciences: courses chosen from anthropology, economics, geography, government, history, linguistics, psychology, and sociology                                                                                          |       |       |

Foreign language and culture: foreign language courses or culture courses chosen from an approved list available in the college advising centers. Students who elect to pursue a foreign language must complete a beginning level competency. Students who complete intermediate or advanced level foreign language courses rather than courses equivalent to beginning level competency may count only one intermediate or advanced course toward the language, arts, and culture requirement (a maximum of six hours earned through credit by examination may count toward the language arts and culture requirement)

### Additional Requirements

Completion of one of the following: 15

Transcript-recognized minor or certificate (minor outside the College of Pharmacy, Cockrell School of Engineering, Jackson School of Geosciences, and School of Nursing)

Fifteen hours in a single field of study (outside the College of Natural Sciences, College of Pharmacy, Cockrell School of Engineering, Jackson School of Geosciences, and School of Nursing)

**Total Hours** 27

### Additional Requirements and Policies

- Students may not use a course counting toward one area of prescribed work to fulfill the requirements of another area of prescribed work unless expressly permitted as follows:
  - Courses counting toward the university core curriculum may also count toward the major requirements, the additional requirement, and electives.
  - Per university policy, a minimum of nine hours of the transcript-recognized minor may not be also used to satisfy the major.
  - Per university policy, a minimum of one course taken in a transcript-recognized certificate to satisfy the additional requirement may not also count toward the major.
- Students who seek a transcript-recognized minor or transcript-recognized certificate must meet the minimum grade requirements and grade point average requirements of the program.
- Students must earn a University grade point average of at least 2.00 in all courses taken at the University (including credit by examination, correspondence, and extension), a grade of at least C- in each mathematics and science course counted toward the major, and a grade point average of at least 2.00 in the courses fulfilling the major.
- Students must complete a minimum of 60 hours in residence at the University, including at least 18 hours of the major. The 18 hours of the major in residence must include at least nine hours of advanced coursework.

### Additional Requirements and Policy

- Students may not use a course counting toward one area of prescribed work to fulfill the requirements of another area of prescribed work unless expressly permitted as follows:
  - Courses counting toward the university core curriculum may also count toward the major requirements, the additional requirement, and electives
- Six hours maximum earned through credit by examination may count toward the language arts and culture requirement.
- Students who seek a transcript-recognized minor or transcript-recognized certificate must meet the minimum grade requirements and grade point average requirements of the program.
- Students must earn a University grade point average of at least 2.00 in all courses taken at the University (including credit by examination, correspondence, and extension), a grade of at least C- in each

mathematics and science course counted toward the major, and a grade point average of at least 2.00 in the courses fulfilling the major.

5. Students must complete a at least 18 hours of the major in residence at the University, and at least nine of these hours must be advanced coursework.
6. Unless the requirements of the major state otherwise, a BSA major consists of at least 36 but no more than 55 semester hours. The major consists of the mathematics, primary science, and secondary science requirements.

## Honors - BSA Majors

Students may earn an honors major in their fields of study upon graduation by completing the following.

### Requirements

| Code                                                                                    | Title                   | Hours     |
|-----------------------------------------------------------------------------------------|-------------------------|-----------|
| Good standing in the Health Science Scholars Program or the Polymathic Scholars Program |                         |           |
| <u>First-Year Signature Course (090)</u> ( approved by the departmental honors advisor) |                         | 3         |
| Major Hours chosen from: Honors-level                                                   |                         | 6         |
| NSC 371                                                                                 | Capstone Thesis Seminar | 3         |
| 3.50 minimum university grade point average                                             |                         |           |
| <b>Total Hours</b>                                                                      |                         | <b>12</b> |