ASTRO120 : Astronomy Of Stars and Galaxies

General Information

Author:	• Jennifer Krestow
Course Code (CB01) :	ASTRO120
Course Title (CB02) :	Astronomy Of Stars and Galaxies
Department:	ASTRO
Proposal Start:	Spring 2025
TOP Code (CB03) :	(1911.00) Astronomy
CIP Code:	(40.0201) Astronomy.
SAM Code (CB09) :	Non-Occupational
Distance Education Approved:	No
Will this course be taught asynchronously?:	No
Course Control Number (CB00) :	CCC000165411
Curriculum Committee Approval Date:	06/12/2024
Board of Trustees Approval Date:	07/16/2024
Last Cyclical Review Date:	06/12/2024
Course Description and Course Note:	ASTRO 120 is a survey of the methods astronomers use and findings they have made in their studies of the stars and galaxies.
Justification:	Mandatory Revision
Academic Career:	• Credit
Mode of Delivery:	
Author:	• Jennifer Krestow
Course Family:	

Academic Senate Discipline

Primary Discipline:	• Physics/Astronomy
Alternate Discipline:	No value
Alternate Discipline:	No value

Course Development

Basic Skill Status (CB08)

Course is not a basic skills course.

☐ Allow Students to Gain Credit by Exam/Challenge

Course Special Class Status (CB13)

Course is not a special class.

Pre-Collegiate Level (CB21)

Not applicable.

Grading Basis

• Grade with Pass / No-Pass Option

Course Support Course Status (CB26)

Course is not a support course

General Education and C-ID

General Education Status (CB25)

Not Applicable

Transferability

Transferable to both UC and CSU

Transferability Status

Approved

IGETC Area	Area	Status	Approval Date	Comparable Course
5A-Physical Science	Physical Science	Approved	08/18/1997	No Comparable Course defined.

CSU GE-Breadth Area	Area	Status	Approval Date	Comparable Course
B1-Physical Science	Physical Science	Approved	08/18/1997	No Comparable Course defined.

Units and Hours

Summary

Minimum Credit Units (CB07)	3
Maximum Credit Units (CB06)	3
Total Course In-Class (Contact) Hours	54
Total Course Out-of-Class Hours	108
Total Student Learning Hours	162

Credit / Non-Credit Options

Course Type (CB04)

Credit - Degree Applicable

Noncredit Course Category (CB22)

Credit Course.

Noncredit Special Characteristics

No Value

Course Classification Code (CB11)

Credit Course.

Funding Agency Category (CB23)

Not Applicable.

☐ Cooperative Work Experience Education Status (CB10)

☐ Variable Credit Course

Weekly Student Hours

	In Class	Out of Class
Lecture Hours	3	6
Laboratory Hours	0	0
Studio Hours	0	0

Course Student Hours

Course Duration (Weeks)	18
Hours per unit divisor	54
Course In-Class (Contact) Hours	
Lecture	54
Laboratory	0
Studio	0
Total	54

Course Out-of-Class Hours	
Lecture	108
Laboratory	0
Studio	0
Total	108

Time Commitment Notes for Students

No value

Units and Hours - Weekly Specialty Hours

Activity Name	Type	In Class	Out of Class
No Value	No Value	No Value	No Value

Pre-requisites, Co-requisites, Anti-requisites and Advisories

Advisory

ENGL101 - Introduction to College Reading and Composition

Objectives

- Read, analyze, and evaluate a variety of primarily non-fiction readings for content, context, and rhetorical merit with consideration of tone, audience, and purpose.
- Apply a variety of rhetorical strategies in writing unified, well-organized essays directed by a well-reasoned thesis statement with persuasive support.
- Develop varied and flexible strategies for generating, drafting, and revising essays.
- Analyze stylistic choices in their own writing and the writing of others.
- Write timed, in-class essays exhibiting acceptable college-level control of mechanics, organization, development, and coherence.
- Integrate the ideas of others through paraphrasing, summarizing, and quoting without plagiarism.
- Find, evaluate, analyze, and interpret primary and secondary sources, incorporating them into written essays using appropriate documentation format.
- Proofread and edit essays for presentation so they exhibit no disruptive errors in English grammar, usage, or punctuation.

Entry Standards

Entry Standards

Course Limitations

Cross Listed or Equivalent Course

Specifications

Methods of Instruction

Methods of Instruction	Lecture
Methods of Instruction	Discussion
Methods of Instruction	Multimedia
Methods of Instruction	Demonstrations

Out of Class Assignments

- Research and writing assignments (e.g. using appropriate online resources, write a brief biography of Hubble, Humanson or another astronomer, or write a review of an exhibit visited while on a field trip at the Griffith Observatory)
- Problem sets and short response questions
- A written interpretation of astronomical data with respect to physical laws

Methods of Evaluation	Rationale
Exam/Quiz/Test	Quizzes
Exam/Quiz/Test	Two 1.5-hour examinations
Exam/Quiz/Test	One final exam

Textbook Rationale

No Value

Textbooks

Author	Title	Publisher	Date	ISBN
Comins, Neil	Discovering the Essential Universe, 6th edition,	W.H. Freeman Publishing	2012	978-1464124020
Andrew Fraknoi et al.	Astronomy 2e	OpenStax	Mar 09, 2022	ISBN-13: 978-1-951693-50-3

Other Instructional Materials (i.e. OER, handouts)

No Value

Materials Fee

No value

Learning Outcomes and Objectives

Course Objectives

Utilize spectroscopic data to identify characteristics of stars and galaxies.

Categorize and classify stars and galaxies as to type.

Describe the formation and evolution of stars and galaxies.

SLOs

Course Content

Lecture Content

Early Ideas About the Stars (3 hours)
- Constellation outlines and stories
- Star names
- Mapping the sky by right ascension and declination

Basic Physics Used in Studying Stars and Galaxies (10 hours)
- Newton's Laws of Motion and Gravity
- Properties of light
- Spectroscopy and Kirchhoff's laws

Telescopes (3 hours)
- Refracting vs. reflecting telescopes
- Instrumentation

The Sun (3 hours)
- Bulk properties
- Nuclear energy
- The solar atmosphere

- The solar interior

Properties of the Stars (7 hours)
- The distance to the stars The motions of the stars
- The sizes of the stars
- Stellar luminosities
- Stellar masses
- Hertzsprung-Russell diagrams

The Interstellar Medium (3 hours)
- Emission nebulae
- Dark nebulae

Stellar Evolution (11 hours)
- Protostars
- Main sequence stars
- Red giant stars
- The final stages of stellar evolution White dwarfs and planetary nebulae
- Neutron stars and pulsars
- Black holes and Einstein's General Theory of Relativity

The Milky Way Galaxy (3 hours)
- The structure of the Milky Way
- Motions of stars within the Milky Way
- The central region of the Milky Way Dark Matter

Galaxies & Galactic Evolution (5 hours)
- The Hubble classification scheme
- The Hubble Law
- Quasars

Cosmology (6 hours)
- The Big Bang model and the expanding universe
- Large-scale structures in the universe: voids, walls and bubbles
- The geometry of space-time
- Cosmic background radiation
- Dark Energy

Total hours: 54

Additional Information

Is this course proposed for GCC Major or General Education Graduation requirement? If yes, indicate which requirement in the two areas provided below.

Yes

GCC Major Requirements

No Value

GCC General Education Graduation Requirements

Natural Sciences

Repeatability

Not Repeatable

Justification (if repeatable was chosen above)

No Value

Resources

Did you contact your departmental library liaison?

No

If yes, who is your departmental library liason?

No Value

Did you contact the DEIA liaison?

No

Were there any DEIA changes made to this outline?

No

If yes, in what areas were these changes made:

No Value

Will any additional resources be needed for this course? (Click all that apply)

- No

If additional resources are needed, add a brief description and cost in the box provided.

No Value