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Curriculum Public View

Departments



Accounting*

Accreditation Committee

Adult Basic Education*

Adults with Special Needs*

American College English*

American Sign Language*

Anthropology*

Art*

Astronomy*

Athletics*

Biology*

Budget Committee

Business*

Carpentry -
Apprenticeship*

Chemistry*

Child Development*

Child Development/Early
Care Education - OECIE*

Child Development/Early
Care Education*

Chinese*

Cinema Studies*

Citizenship*

College Council

Selected Department

Astronomy*

Programs



Astronomy, AS

Courses



ASTR100L - Astronomy
Laboratory

ASTR102 - Introduction to
Stars and Galaxies

**ASTR103 - Introduction to
the Solar System**

ASTR112 - Introduction to
Cosmology

Selected Course

ASTR103 - Introduction to the
Solar System

Versions:

Spring 2020

Active in Spring 2020

[Course Outline Report](#)

Surveys the history of astronomy, recent research and space flight observations of the planets, moons, and other solar system objects. Explores light and gravity to understand formation, properties and motion of Solar System objects.

Course Hours Per Week

Lecture: 3

Lab: 0

Total Credit Hours: 3

ASTR103 - Introduction to the Solar System

General Information

Author(s):	Danielle Martino Barembaum, Morrie
Proposal Start:	Spring 2020
Distance Education Approved:	Yes
TOP Code:	1911.00
TOP Code Name:	Astronomy
CIP Code:	40.0201
CIP Code Name:	Astronomy
SAM Code:	E = Non-Occupational
Course Control Number:	CCC000149562
Curriculum Committee Approval Date :	November 19, 2019
Board of Trustees Approval Date :	December 9, 2019
External Review Approval Date:	January 23, 2020
Course Description:	Surveys the history of astronomy, recent research and space flight observations of the planets, moons, and other solar system objects. Explores light and gravity to understand formation, properties and motion of Solar System objects.
Submission Rationale:	Add Distance Education
Course Family:	No Value

Faculty Minimum Qualification Requirements

Master Discipline Preferred: Astronomy

Alternate Master Discipline Preferred : No value

Bachelors or Associates Discipline Preferred : No value

Additional Bachelors or Associates Discipline : No value

Course Development Options

Course Basic Skill Status	Allowed Number of Retakes	Grading Criteria
Course is not a basic skills course.	0	Letter Grade methods Other: Exams and Final Exam: no less than 50% Homework, Quizzes, Class assignments, Projects: up to 50% Recommended Standard Grading Scale: A: 90 - 100% B: 80 - 89% C: 70 - 79% D: 60 - 69% F: 59% or below

Allow Students to Gain Credit by Exam/Challenge

No

Rationale For Credit By Exam/Challenge	Retake Policy Description	Allow Students To Audit Course
No value	NR - Non-Repeatable	No

Course Support Course Status	Course Prior to College Level
No value	Not applicable.

Available for Non-Award Study	Estimated Enrollment
	No value

Associated Programs

Associated Program	Award Type	Active
Earth Sciences, AS	A.S. Degree Major	Spring 2019 to Spring 2020
Liberal Arts: Mathematics and Sciences, AA	A.A. Degree Major	Spring 2019 to Summer 2020
Astronomy, AS	A.S. Degree Major	Spring 2019
Liberal Arts: Mathematics and Sciences, AA	A.A. Degree Major	Summer 2020 to Fall 2020
Earth Sciences, AS	A.S. Degree Major	Spring 2020 to Summer 2020
Earth Sciences, AS	A.S. Degree Major	Summer 2020

Associated Program**Award Type****Active**

Liberal Arts: Mathematics and Sciences, AA

A.A. Degree Major

Fall 2020

Liberal Arts: Mathematics and Sciences, AA

A.A. Degree Major

Fall 2021

Transferability & Gen. Ed. Options**Course General Education Status**

No value

Request for Transferability

Transferable to both UC and CSU

Transferability Status

Approved

Local - Plan A**Categories****Transferability Status****Comparable Course or Shared SAC Course**

Area A: Natural Sciences

Natural Sciences

Approved

No Comparable Course or Shared SAC Course defined

CSU GE - Plan B**Categories****Transferability Status****Comparable Course or Shared SAC Course**

Area B1: Physical Sciences

Physical Sciences

Approved

No Comparable Course or Shared SAC Course defined

IGETC - Plan C**Categories****Transferability Status****Comparable Course or Shared SAC Course**

Area 5A: Physical Science

Physical Science

Approved

No Comparable Course or Shared SAC Course defined

CSU Comparable Transfer Courses**Categories****Transferability Status****Comparable Course or Shared SAC Course**

CSU Comparable Transfer Courses

CSU Comparable Transfer Courses

Approved

CSU Fullerton
ASTR 101 Intro to Astronomy**Units and Hours****Summary**

Minimum Units	3 Total Course In-Class (Contact) Hours	54 Total Student Learning Hours	162
Minimum Units	3 Total Course Out-of-Class Hours	108 Faculty Load	3

Detail

Weekly Student Hours

	In Class	Out of Class
Lecture Hours	3	6
Lab Hours	0	0
Activity Hours	0	0

Course Student Hours

Course Duration (Weeks)	18
Hours per unit divisor	54

Course In-Class (Contact) Hours

Lecture Hours	54
Lab Hours	0
Activity Hours	0
Total	54

Course Out-of-Class Hours

Lecture Hours	108
Lab Hours	0
Activity Hours	0
Total	108

Units and Hours - Weekly Specialty Hours

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

Requisites

No value

Entrance Skills

Skill	Rational (Optional)
No value	No value

Limitations on Enrollment

Limitation	Rationale (Optional)
No value	No value

Specifications

Methods of Instruction	Rationale (Optional)
Activity	

Cooperative Learning
 Discussion
 Guest Lecturers
 Handouts
 Instructor-Prepared Materials
 Lecture
 Mediated Learning
 Multimedia Presentations
 Projects
 Distance Education

Outside-of-Class Assignments Only

- Activities may include:
 - Reading assigned pages in textbook
 - Reviewing lecture tutorial activities
 - Written homework assignments
 - Appropriate internet research
 - Exam preparations
 - Quiz preparations
 - Lecture-tutorials
-

Methods of Evaluation

Exams/Tests
 Final Exam
 Group Projects
 Papers
 Projects
 Quizzes
 Research Papers/Projects
 Worksheets
 Class Participation
 Class Work
 Homework
 Computer Assignments

Rationale (Optional)

Textbook Rationale

No value

Textbooks

Author	Title	Publisher	Date	ISBN
Prather, E., Slater, T., Adams, J., Brissenden, G.	Lecture-Tutorials for Introductory Astronomy	Pearson	2013 (\$44.25)	9780321820464

Author	Title	Publisher	Date	ISBN
Seeds, M.	The Solar System	Cengage	2016 (\$95.50)	9780321820464

Learning Outcomes and Objectives

Course Objectives

- ✓ Explain how the electromagnetic spectrum and an object's spectrum are used to determine the motion and properties of celestial objects.
- ✓ Develop an understanding how the Earth's atmosphere affects the ability to view celestial objects and the effects it has on Earth's climate.
- ✓ Demonstrate an understanding of Newton's Laws and how they work in conjunction with gravity to allow for orbital dynamics.
- ✓ Explain how acceleration changes on an object based on forces applied.
- ✓ Recognize celestial motion as the result of Earth's rotation and/or revolution.
- ✓ Identify the contributing factors for seasons on Earth and other planets.
- ✓ Explain why the night sky changes throughout the year and what constellation the Sun is in as related to a horoscope.
- ✓ Describe how astronomy was conducted and how it's methods have changed from the Stone Age to the Modern Era.
- ✓ Demonstrate an understanding of Kepler's Laws.
- ✓ Identify the contributing factors to changes occurring on the Earth.
- ✓ Compare features and changes of Earth to other Solar System planets.
- ✓ Identify Moon phases.
- ✓ Explain the causes of Moon phases.
- ✓ Explain the timing of Moon phases.
- ✓ Describe lunar formation theories and verify the accepted theory.
- ✓ Identify other effects the Moon has on the Earth.
- ✓ Identify characteristics of the classes of planets.
- ✓ Discuss evidence to explain properties and features of these planets.
- ✓ Identify characteristics of this class of planets.
- ✓ Discuss evidence to explain properties and features of these planets.
- ✓ Identify characteristics of these types of objects.
- ✓ Explain how these smaller objects support theories of the Solar System origin.
- ✓ Identify how they affect the Solar System's present day structure.
- ✓ Describe of the structure, characteristics and formation theories of the Solar System.
- ✓ Identify major regions of the Solar System.
- ✓ Explain the relevance of regions to the overall Solar System structure.

CSLOs

Demonstrate an understanding that science is based upon observations of the universe and how that is used to understand some basic astronomy phenomena of our world.	Expected SLO Performance: 70
Demonstrate various methods of analyzing light to understand the formation, interaction, structure and evolution of the Solar System.	Expected SLO Performance: 70
Discuss how mass and gravity are related to the formation, interaction, properties and evolution of various objects in the the Solar System.	Expected SLO Performance: 70

Course Outline

Course Outline

Light and Spectroscopy (3 hours)

- The Electromagnetic Spectrum
- Telescopes and the Earth's Atmosphere
- The Greenhouse Effect
- Atoms
- Kirchhoff's Laws: Interaction of Light & Atoms
- Understanding Spectra

The Physical Laws of Motion (6 hours)

- Mass vs. Weight
- Acceleration
- Friction
- Newton's Laws
- The Universal Law of Gravitation
- Orbital Motion

The Sky and Celestial Motion (3 hours)

- Constellations
- Stellar Motion in the Night Sky
- Seasonal Stars
- Precession of Earth's Tilt
- Ecliptic and Zodiac
- Seasons

Historical Development of Astronomy (6 hours)

- Archeoastronomy
- Ancient Greek Astronomy
- Copernican Revolution
- Galileo Discoveries
- Modern Astronomy
- Kepler's laws

The Earth (3 hours)

- Stages of Planetary Development
- Contributing factors to changing Earth's surface
- Comparative Planetology

The Moon (3 hours)

- Phases of the Moon
- Rotation of the Moon
- Lunar Formation Theories
- Giant Impact Theory
- Tides

Characteristics & Features of Terrestrial Planets (6 hours)

- Mercury
- Venus
- Earth
- Mars

Characteristics & Features of Jovian Planets (6 hours)

- Jupiter
- Saturn
- Uranus
- Neptune
- Moon & Ring Systems

Characteristics & Features of the Minor Solar System Objects (3 hours)

- Dwarf Planets
- Comets
- Asteroids
- Meteors, Meteoroids, Meteorites

The Solar System as a Whole (3 hours)

- Solar System Formation
- Solar System Structure
- Various Regions of the Solar System

Distance Education Addendum

1. Is the method of delivery 100% online or hybrid? Please select one.

100% online

2. Title 5 (55204) states that “Any portion of a course conducted through distance education includes regular effective contact between instructor and students, through group or individual meetings, orientation and review sessions, supplemental seminar or study sessions, field trips, library workshops, telephone contact, correspondence, voice mail, e-mail, or other activities.” Describe/give examples of the methods of instruction which will be used in the hybrid/online course. Please include how the methods of instruction used in the traditional classroom will be modified and/or replaced in the hybrid/online classroom. How will these methods

When this course is offered as hybrid, in-class time will consist of 1.5 hour exams and 2 hour final. All other course work will be completed online. The course is optioned to be 100% online including midterm and final exams.

Lecture materials will be placed in a learning management system that Santiago Canyon College uses, which as of 2018 is Canvas. In order to maintain regular effective contact, several online methods of instruction may be employed which could include the following, but not limited to:

- Weekly emails and/or announcements will be sent by the instructor to direct the students to a weekly/monthly schedule of assignments. I.e. reading, homework assignments, discussion boards, quizzes, and/or exams.
- The instructor may post external links to online videos, animations and demonstrations of the material at the required level of understanding needed for the students.

ensure that you will maintain regular effective contact with the students?

- Instructors will correspond with students through emails, asynchronous discussion board and other various online components to keep the students apprised of their grade in the course and any other pertinent information.
- Faculty may require students to read certain chapters of the text for discussion during the onsite lecture period and the online discussion boards.
- Asynchronous discussion boards will be posted by the instructor. Students are required to respond to a question posted by the instructor on the discussion board. For example, students are required to answer a question that is posted about the different distance indicators used in astronomy. Students are given points for their discussion board participation and respond to a number of student posts. Instructors will monitor, respond to and record discussion board activity.
- Quizzes will be posted by the instructor. The quizzes are geared towards understanding terminology and concepts. Immediate feedback and faculty assessment will be given to the students.
- For hybrid delivery, exams will be given in the onsite portion of the course. Faculty will assess the exams and post grades online for timely student feedback.
- For 100% online, exams will be administered through the learning management system with the instructor grading and providing feedback to the student in a timely manner.
- Online homework assignments will be posted by the instructor. These will be geared towards student comprehension of the topic of the course. Faculty will assess these homework assignments and provide assessment feedback to the students either online or in class.
- Direct communication and availability with the instructor would be in the form of and in combination with: Regular office hours, phone contact, and Zoom online chat conversations.
- Instructors will respond to student emails throughout the semester in a timely manner.

3. Describe how you will promote and monitor effective student-to-student contact.

E-mail, chat-room study groups and discussion boards will allow students to communicate with each other and share ideas. Students will communicate through weekly online discussion topics. The discussion board will allow students to share ideas and answer various critical thinking problems. The instructor will monitor the discussion board and comment on student posts.

Assigned group work will allow students to have regular effective contact with each other. In the event that a group project is assigned, the students will be working together to submit one group assignment. The instructor will monitor online discussions of the group and deal with any issues that arise as the groups finish their assignment.

4. Describe and give examples of how student learning will be evaluated.

A combination of evaluation methods may be used by the faculty:

- Student participation in the discussion boards and chat room will be evaluated according to the grading methods of the course.

- Student participation in small group and/or peer-based activities will be assessed with established rubrics.
- Students will be graded and evaluated through various quizzes and exams
- Written assignments and projects such as treasure hunts and web quests will be assessed using rubrics that were distributed to the students before the project due date.
- Various online homework assignments will be graded and evaluated by the instructor.

5. List any special texts, equipment, or supplies needed for this course or sections of this course being offered through distance education.

- Students will need an up-to-date computer with access to the internet and a valid email account in order to be successful in this course.
- Students will also be required to have basic computer skills including the use of a web browser and software including Microsoft Word and PowerPoint or equivalent software.
- Students may also need access to a printer, a web camera and a computer microphone and speakers.

6. Describe the college resources that will be required by you and your students (facilities, technology, student support services) for this course.

Facilities: Because this is a hybrid class, a traditional classroom and/or a laboratory room will be required for the course.

Technology: Students must have access to email and a computer with internet access. The district provides online orientation for the course management system (Canvas) and a helpline is available for technical support and Canvas access if needed.

Student support services: Students will be able to access all college support services including tutoring, counseling and DSPTS either on campus or online.

7. Section 55200 of title 5 states “In addition, instruction provided as distance education is subject to the requirements that may be imposed by the Americans with Disabilities Act (42 U.S.C. §12100 et seq.) and section 508 of the Rehabilitation Act of 1973, as amended, (29 U.S.C. §794d).” What technologies will you be using for instruction (video, flash, images, etc)? How will you ensure that instruction using these technologies is accessible to students with disabilities?

Instructors will implement the current recommendations on the <http://www.section508.gov/index.cfm> website, such as the use of alternative tags for visual material, and close captioning or written transcripts for audio recordings. Instructors will work with college DSPTS personnel as needed for individual students. In order to ensure that the instruction is accessible, several online methods of instruction may be employed which could include some of the following, but not limited to:

- Transcripts for audio files
- Closed Captioning of multimedia files
- Appropriate text descriptions for pictures will be employed
- PDF and PowerPoint documents will be produced in an accessible format
- All word documents posted will have proper formatting for screen readers
- Instructor contact information will be available
- DSPTS students will have access to all the resources that DSPTS deem necessary

