



# Stars and Galaxies – PHYS 1303

## Course Syllabus: Spring 2021

“Northeast Texas Community College exists to provide responsible, exemplary learning opportunities.”

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Office Hours	Monday	Tuesday	Wednesday	Thursday	Friday	Online
	4:30 – 5:00	9:30 – 11:00, 4:30 – 6:00	4:30 – 5:30	1:30 – 5:30	By Appointment	

*The information contained in this syllabus is subject to change without notice. Students are expected to be aware of any additional course policies presented by the instructor during the course.*

### Catalog Course Description (include prerequisites):

3 credit hours

Lecture/Lab/Clinical: Three hours of lecture each week.

Prerequisite: None

This course focuses on the history, development, and modern use of astronomy. It covers solar, galactic, and universal aspects of astronomy including stellar evolution, black holes, and current cosmological concepts.

**Required Textbook(s):** Kay, Palen, and Blumenthal. *21<sup>st</sup> Century Astronomy: Stars and Galaxies*, 6<sup>th</sup> Ed. W.W. Norton & Company, New York, 2019.

**Publisher:** W. W. Norton & Company

**ISBN Number:** 978-0-393-67554-2

### Other Required Materials:

- A scientific calculator is necessary for this course. The TI-30XIIS or equivalent is recommended.

### Suggested Reading(s):

*A Briefer History of Time*, by Stephen Hawking

*The Black Hole War: My Battle with Stephen Hawking to Make the World Safe for Quantum Mechanics*,  
by Leonard Susskind  
*How it Began: A Time-Traveler's Guide to the Universe*, by Chris Impey

**\*\*These texts will not be covered in class, but can give a deeper understanding of topics covered.\*\***

**Student Learning Outcomes:** Upon successful completion of this course, students will be able to demonstrate understanding of qualitative concepts relating to the following learning outcomes:

- 1303.1) Recognize scientific and quantitative methods and the differences between these approaches and other methods of inquiry used in modern astrophysics.
- 1303.2) Communicate observations and interpretations clearly through written communication
- 1303.3) Use basic laws of astronomy to solve assigned tasks.
- 1303.4) The ability to translate, interpret, and extrapolate scientific theory governing the formation and evolution of stars.
- 1303.5) The ability to translate, interpret, and extrapolate scientific theory governing the formation and evolution of galaxies and the universe.

### **Core Curriculum Purpose and Objectives:**

Through the core curriculum, students will gain a foundation of knowledge of human cultures and the physical and natural world; develop principles of personal and social responsibility for living in a diverse world; and advance intellectual and practical skills that are essential for all learning.

Courses in the foundation area of mathematics focus on quantitative literacy in logic, patterns, and relationships. In addition, these courses involve the understanding of key mathematical concepts and the application of appropriate quantitative tools to everyday experience.

### **College Student Learning Outcomes:**

#### Critical Thinking Skills

**CT.1** Students will demonstrate the ability to 1) analyze complex issues, 2) synthesize information, and 3) evaluate the logic, validity, and relevance of data.

#### Communication Skills

**CS.1** Students will effectively develop, interpret and express ideas through written communication.

#### Empirical and Quantitative Skills

**EQS.1** Students will manipulate numerical data or observable facts by organizing and converting relevant information into mathematical or empirical form

**EQS.2** Students will analyze numerical data or observable facts by processing information with correct calculations, explicit notations, and appropriate technology.

**EQS.3** Students will draw informed conclusions from numerical data or observable facts that are accurate, complete, and relevant to the investigation.

Teamwork

**TW.2** Students will work with others to support and accomplish a shared goal.

**SCANS Skills:**

N/A

**Course Outline:**

Introduction Notes: Introduction to Astronomy

Chapter 13: Taking the Measure of the Stars

Chapter 14: Our Star – The Sun

Chapter 15: The Interstellar Medium and Star Formation

Chapter 16: Evolution of Low-Mass Stars

Chapter 17: Evolution of High-Mass Stars

Chapter 18: Relativity and Black Holes

Chapter 19: Galaxies

Chapter 20: The Milky Way – A Normal Spiral Galaxy

Chapter 21: The Expanding Universe

Chapter 22: Cosmology

**Evaluation/Grading Policy:**

Quizzes will represent 20% of your grade and class participation will count another 20%. There will be 4 tests and a Final Exam, as well as a group research paper (that will count as a test grade). The average of all tests will represent 60% of your grade. The letter grading system is:

A	(90% - 100%)
B	(80% - 89%)
C	(70% - 79%)
D	(60% - 69%)
F	(< 60%)

**Tests / Exams:**

TEST 1: Chapters 1 & 13

TEST 2: Chapters 14-15

TEST 3: Chapters 16-18

TEST 4: Chapters 19-20 FINAL

EXAM: Chapters 1, 13-22

- Assessment Policies** ○ This course will be based around a “flipped” model, meaning the student is expected to read the text before class, and all discussion and activities during the lecture will assume the student has basic knowledge of the material from the text.
- The lowest exam grade from the semester will be replaced by the score on the final exam, if it is higher.
  - One additional test grade will be assessed from a term research paper that will be assigned as a group project.

**Student Responsibilities/Expectations:**

Regular and punctual attendance at all scheduled classes is expected. There will be no make-up assignments. Accumulating more than 3 unexcused absences (not contacting instructor prior to absence, or not NTCC-related) will result in being dropped from the course.

**NTCC Academic Honesty Statement:**

"Students are expected to complete course work in an honest manner, using their intellects and resources designated as allowable by the course instructor. Students are responsible for addressing questions about allowable resources with the course instructor. NTCC upholds the highest standards of academic integrity. This course will follow the NTCC Academic Honesty policy stated in the Student Handbook."

**Academic Ethics**

The college expects all students to engage in academic pursuits in a manner that is beyond reproach. Students are expected to maintain complete honesty and integrity in their academic pursuit. Academic dishonesty such as cheating, plagiarism, and collusion is unacceptable and may result in disciplinary action. Refer to the student handbook for more information on this subject.

**ADA Statement:**

It is the policy of NTCC to provide reasonable accommodations for qualified individuals who are students with disabilities. This College will adhere to all applicable federal, state, and local laws, regulations, and guidelines with respect to providing reasonable accommodations as required to afford equal educational opportunity. It is the student’s responsibility to request accommodations. An appointment can be made with Shannin Garrett, Academic Advisor/Coordinator of Special Populations located in the College Connection. She can be reached at 903-434-8218. For more information and to obtain a copy of the Request for Accommodations, please refer to the [NTCC website – Special Populations](#).

**Family Educational Rights And Privacy Act (FERPA):**

The Family Educational Rights and Privacy Act (FERPA) is a federal law that protects the privacy of student education records. The law applies to all schools that receive funds under an applicable program of the U.S. Department of Education. FERPA gives parents certain rights with respect to their children’s educational records. These rights transfer to the student when he or she attends a school beyond the high school level. Students to whom the rights have transferred are considered “eligible students.” In essence,

a parent has no legal right to obtain information concerning the child's college records without the written consent of the student. In compliance with FERPA, information classified as "directory information" may be released to the general public without the written consent of the student unless the student makes a request in writing. Directory information is defined as: the student's name, permanent address and/or local address, telephone listing, dates of attendance, most recent previous education institution attended, other information including major, field of study, degrees, awards received, and participation in officially recognized activities/sports.

**6 Drop Rule:** "Students who enrolled in Texas public institutions of higher education as first-time college students during the Fall 2007 term or later are subject to section 51.907 of the Texas Education Code, which states that an institution of higher education may not permit a student to drop (withdraw with a grade of "W") from more than six courses. This six-course limit includes courses that a transfer student has previously dropped at other Texas public institutions of higher education if they fall under the law. Students should be sure they fully understand this drop limit before they drop a course. Please visit the admissions office or counseling/advising center for additional information and assistance."

**Other Course Policies:**

There will be no cell phone usage in the classroom. One warning for cell phone use will be issued, any further use will result in removal from class.

**Campus Safety:** Northeast Texas Community College (NTCC) is committed to maintaining the safety of the students, faculty, staff, and guests while visiting any of our campuses. See NTCC's website for details and to receive emergency notifications automatically by phone. In the event of an emergency contact NTCC Police at 903-434-8127.