COURSE: AST 101 | EFFECTIVE DATE: August 2016 | NEXT REVIEW DATE: August 2017

TITLE: Solar System Astronomy

CREDITS: 4 | CONTACTS: CLASS - LAB - TOTAL: 3 - 3 - 4

PREREQUISITES: MAT 102 with a grade of “C” or better

DESCRIPTION: This course is a descriptive survey of the universe with emphasis on basic physical concepts and the objects in the solar system. Related topics of current interest are included in the course.

TEXTBOOK(S) OR ALTERNATIVE: Astro, 2nd edition by Seeds/Backman, 2014

MATERIALS (specifying those to be purchased by student): calculator

COLLATERAL READING:

CLASS MANAGEMENT ACTIVITIES (Attendance, tardies, testing, etc.):

Academic dishonesty: As stated in the college catalog, any student that plagiarizes or is caught cheating on any assignment in a course will receive a zero for that assignment. The documentation will be collected and reported to the Dean of Student Services.

Attendance: Students are required to attend 80% of class meetings or participate weekly in an online class. A student who exceeds the absence limit may be administratively withdrawn. (see College Catalog)

Student ID: The College requires that students wear their Northeastern Technical College identification badge at all times while on campus. Student will also need his/her ID to take a test on the Cheraw, Bennettsville or Dillon campus.

Disabilities Statement: Students with disabilities are encouraged to contact the Dean of Student Services to discuss needs or concerns as they pursue an academic program and participate in campus life. The Dean of Student Services will provide guidance regarding official documentation of disabilities and/or accommodation of needs. (See College Catalog)

COURSE TOPICAL OUTLINE (List topics and sub-topics of course) and Calendar or approximate length of time devoted to topic.

TOPICAL OUTLINE

Chapter 1 Here and Now
Chapter 2 User’s Guide to the Sky: Patterns and Cycles
Chapter 3 The Origin of Modern Astronomy
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Chapter 4  Light and Telescopes

TEST #1 on Chapters 1- 4

Chapter 5  Sun Light and Sun Atoms
Chapter 8  Origin of the Solar System and Extrasolar Planets
Chapter 6  The Terrestrial Planets

TEST #2 on Chapters 5, 8, and 6

Chapter 7  The Outer Solar System
Chapter 15  Life on Other Worlds

TEST #3 on Chapters 7 and 15

LAB TOPICS

Lab 1  Scientific Notation and the Metric System of Units
Lab 2  Scale of the Universe
Lab 3  Moon Phases
Lab 4  Newton’s Laws
Lab 5  Telescopes
Lab 6  The Scientific Method
Lab 7  The Sun
Lab 8  Origin of the Solar System
Lab 9  Terrestrial Planets
Lab 10  Looking at Mars
Lab 11  The Jovian Planets
Lab 12  Space Debris
Lab 13  Anybody Else Out There?

Semester Project:  “Make Your Own Lab” assignment
COURSE OUTCOMES:
Upon successful completion of this course, students will be able to

1. discuss the nature of science and the scientific method
2. discuss the scale of the universe and our place in it
3. use the mathematical units and calculations required in large distances in astronomy including the concept of “a look back in time”
4. demonstrate knowledge of the contributions to the science of astronomy by Newton, Kepler and other scientists
5. apply the basic laws of physics to a study of the solar system
6. demonstrate knowledge of the current best scientific explanation of the origin and evolution of the solar system
7. describe the phases of the moon
8. demonstrate knowledge of the characteristics of the terrestrial planets
9. demonstrate knowledge of the characteristics of the Jovian planets
10. demonstrate knowledge of the characteristics of the sun
11. describe what is meant by the “earth-sun connection”
12. describe the properties of the smaller bodies of the solar system
13. explain the reasons for the seasons
14. discuss current speculations on the possibility of extraterrestrial life

INSTRUCTIONAL METHODS TO COMPLETE OBJECTIVES: Assigned textbook readings, online quizzes, lab activities, discussion boards, non-proctored tests, and proctored exams.

EVALUATIVE METHODS TO APPRAISE OBJECTIVES: The average will be based on several activities, with a total of 615 possible points:

A. Three (3) proctored exams, taken at an NETC campus (210 points)
B. Three (3) non-proctored exams (90 points)
C. Attendance/discussion activities (75 points)
D. Labs and projects (240 points)
GRADING SCALE:

93 - 100% (572 - 615 points) = A
85 - 92% (523 - 571 points) = B
77 - 84% (474 - 522 points) = C
70 - 76% (430 - 472 points) = D
Below 70 (0 - 429 points) = F

Labs and Projects: Lab exercises included in the course are designed to give students hands-on experience with concepts in astronomy. A lab will be required in most weeks of the term and will be available on the course website. The average time required to complete labs will be 3 hours. Once a lab has been completed, students will complete a 15 point quiz covering the lab material and their results. The lab quiz will consist of randomly generated questions from the lab and questions that assess students’ understanding of the lab material.

Semester Project: Instructions for 30 point semester project will be presented to the students following the second exam. This project will be due near the end of the term and will relate to materials studied throughout the term.

Late Work and Extra Credit: Students must meet the deadlines to get credit for the work. Discussion posts will have assigned dates, and if a student does not post, a zero will be assigned for that assignment. If all students in the class post in a given week, all students will receive one point extra credit. Lab quizzes will not be reopened once the deadline has passed. Students who do not take a lab quiz by the deadline will receive a zero for that lab quiz. Students will have access to all labs for the entire term but individual lab quizzes will only be available for a period of one week.

Prior to a scheduled exam, students will have the opportunity to “practice” the exam with a 30 point non-proctored exam. There will be no makeup allowed for these non-proctored exams. Students who do not take the 70 point proctored exams at an NETC campus by the given deadline must provide an approved excuse and may be given an opportunity to make up that exam. However, that is at the instructor’s discretion, and only one exam may be taken late. All quizzes and exams will have time limits, and any unanswered questions when time expires will count as missed questions, as the quiz will be submitted automatically when time expires.