**OBSERVATIONAL ASTRONOMY**  
Astronomy 305 – Spring 2020 – 8:00-10:15PM WF – STEM 111

**Instructor:** Dr. Dan Bruton  
**Email:** astro@sfasu.edu  
**Office:** STEM 319 and/or 207Q  
**Phone:** 936-468-2360

**Office Hours for Students:** 2-4pm MTWRF or by appointment  
**Course Home Page:** D2L.sfasu.edu

**Purpose**  
This course will stress the fundamentals of practical sky observing including visual, imaging, and photometric techniques using the telescopes at the SFA Observatory. The course is designed to give you experience with observational astronomy in the visible part of the spectrum. In particular, you will be introduced to:

1. methods for finding and identifying celestial objects
2. technology: telescopes, cameras, detectors, computers
3. the process of making observations, including operation of an observatory, telescope and related equipment
4. the techniques for reducing observations, i.e. converting the raw observations into physical quantities which can be used to evaluate theoretical models

**Materials**  
The texts are *Stars and Planets* by Jay Pasachoff as well as *Practical Astronomy with Your Calculator or Spreadsheet* by Peter Duffett-Smith. The readings indicated in the course outline on the back of this page correspond to chapters from these texts. You will also need a flashlight, clipboard, calculator to use at the observatory.

**Exams**  
There will be four major exams, each covering a limited amount of lecture and text material. The final exam will not be comprehensive. The dates of these exams are listed in the course outline on the back of this page. No make-up exams will be given except in the case of an excused absence. A written notice is required for an excused absence. A written notice is required for an excused absence within three days of the exam. Students will have one week after each exam to review the exams and discuss the grades.

**Grading**  
Each major exam will be graded on a 100-point scale. The course grade will be computed as shown below.

\[
\text{Course Average} = 0.75E + 0.25H
\]

where $E = \text{Exam Average}$  
$H = \text{Average of Homework, In-Class Assignments, and Projects}$

Letter grades are based on the ranges below.

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<th>Grade</th>
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<td>C</td>
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**Attendance Policy**  
Attendance will be taken at the beginning of each class. If you have 3 unexcused absences then your final grade will be reduced one letter grade. If you have 4 unexcused absences, you will receive an "F" in the course. A written and signed notice is required for an excused absence within three class days of the absence. Authorized absences must be approved by your instructor in advance of the absence, unless you have an emergency or illness. Make-up work must be completed outside of normal class hours within one week following an excused absence. It is your responsibility to see your instructor and make arrangements for make-up work if you have an excused absence.
Exams
There will be four major exams, each covering a limited amount of lecture and text material. The dates of these exams are listed in the course outline attached to this page. Students will have one week after each exam to review the exams and discuss the grades. No make-up exams will be given except in the case of an excused absence. An official written notice is required for an excused absence within three days of the exam. Any makeup exam must be taken within three days of the missed exam.

In Class Assignments
All in class assignments must be completed by the end of the class period. It is the discretion of the instructor to grant additional time if deemed necessary.

Homework Assignments: All homework assignments are due at the beginning of the class on the assigned due date. No late homework will be accepted.

Observatory Policies
Telescopes, computers, and equipment must be returned to their original state after use. No food or drinks will be allowed during normal class time. No games, music, phone calls, chat sessions, text messaging or emailing will be allowed during class. Cell phones and pagers must be turned off during class. No sleeping or reading material other than that related to the course will be allowed. Classroom distractions should be avoided.

Safety
Working in the dark has lead to minor injuries in the past. Students should always carry a flashlight. Watch for snakes and black widow spiders. Students should obey the speed limit on the road to the observatory even if he or she is late for class. Beef farm workers have called about vehicles speeding to the observatory.

Email Communication
All official course communication will be made using your SFA titan account. You must use your SFA email account for all communications. You will be notified via your SFA titan email account about grades and attendance. You can look up your SFA email account or setup email forwarding using this link: https://apache.sfasu.edu/accountman/

It is important to practice good email communications in college courses. Use "Astronomy 305" as part of the subject of your email messages. Use complete sentences and capitalization when appropriate. The body of your email messages should begin with your instructor's name and end with your name.

Classroom Policies
For the benefit of your fellow students and your instructor, you are expected to practice common courtesy with regard to all course interactions. For example:

- Be considerate toward your classmates and instructor and arrive to class on time.
- Do not leave class early and do not rustle papers in preparation to leave before class is dismissed.
- Avoid classroom distractions. Be attentive in class: stay awake, do not read newspapers, etc.
- If you are late to class or must leave early please inform your instructor in advance (enter or leave quietly, don’t walk across the front of the classroom (use the side aisles) and don’t walk in front of the projector).
- Cell phones, pagers and other communication devices must be turned off during class.
- Play well with others. Be kind and respectful to your fellow students and your teachers.
**Academic Integrity (A-9.1)**
Collaboration on examinations, in class assignments, and homework assignments is forbidden except where specifically specified as "Team" activities. For example, homework assignments are not team activities. In general, one team may not collaborate with another team on "Team" activities. Students violating this policy will be subject to procedures described in the Stephen F. Austin State University Policies and Procedures Manual. Academic integrity is a responsibility of all university faculty and students. Faculty members promote academic integrity in multiple ways including instruction on the components of academic honesty, as well as abiding by university policy on penalties for cheating and plagiarism.

**Definition of Academic Dishonesty**
Academic dishonesty includes both cheating and plagiarism. Cheating includes but is not limited to (1) using or attempting to use unauthorized materials to aid in achieving a better grade on a component of a class; (2) the falsification or invention of any information, including citations, on an assigned exercise; and/or (3) helping or attempting to help another in an act of cheating or plagiarism. Plagiarism is presenting the words or ideas of another person as if they were your own. Examples of plagiarism are (1) submitting an assignment as if it were one's own work when, in fact, it is at least partly the work of another; (2) submitting a work that has been purchased or otherwise obtained from an Internet source or another source; and (3) incorporating the words or ideas of an author into one’s paper without giving the author due credit.

Please read the complete policy at [http://www.sfasu.edu/policies](http://www.sfasu.edu/policies)

Penalties may include no credit or failure in the course.

**Withheld Grades - Semester Grades Policy (A-54)**
Ordinarily, at the discretion of the instructor of record and with the approval of the academic chair/director, a grade of WH will be assigned only if the student cannot complete the course work because of unavoidable circumstances. Students must complete the work within one calendar year from the end of the semester in which they receive a WH, or the grade automatically becomes an F. If students register for the same course in future terms the WH will automatically become an F and will be counted as a repeated course for the purpose of computing the grade point average.

The circumstances precipitating the request must have occurred after the last day in which a student could withdraw from a course. Students requesting a WH must be passing the course with a minimum projected grade of C.

**Students with Disabilities**
To obtain disability related accommodations, alternate formats and/or auxiliary aids, students with disabilities must contact the Office of Disability Services (ODS), Human Services Building, and Room 325, 468-3004 / 468-1004 (TDD) as early as possible in the semester. Once verified, ODS will notify the course instructor and outline the accommodation and/or auxiliary aids to be provided. Failure to request services in a timely manner may delay your accommodations. For additional information, go to [http://www.sfasu.edu/disabilityservices](http://www.sfasu.edu/disabilityservices).
Student Counseling Center
Rusk Building 3rd Floor -- (936) 468-2401 -- Email: counseling@sfasu.edu
The Student Counseling Center is available free of charge to students and is staffed with professional therapists to meet a variety of needs. All interactions with the Student Counseling Center are guaranteed confidential. Licensed Counselors are available from 8:00am-5:00pm Monday-Friday. The department is closed on certain holidays, Spring Break and Winter Break when the university is closed. If you are in need of assistance after hours or on the weekend please call: University Police: (936) 468-2608 or MHMR Crisis Line: (800) 392-8343. If the situation is life threatening please dial 911. Counseling Services can assist SFA students in overcoming obstacles to their personal and academic goals. Counseling Services is located on the 3rd floor of the Rusk Building, which is located directly across the patio from the Baker Pattillo Student Center. You may also call them for an appointment at (936) 468-2401.

Acceptable Student Behavior
Classroom behavior should not interfere with the instructor’s ability to conduct the class or the ability of other students to learn from the instructional program (see the Student Conduct Code, policy D-34.1). Unacceptable or disruptive behavior will not be tolerated. Students who disrupt the learning environment may be asked to leave class and may be subject to judicial, academic or other penalties. This prohibition applies to all instructional forums, including electronic, classroom, labs, discussion groups, field trips, etc. The instructor shall have full discretion over what behavior is appropriate/inappropriate in the classroom. Students who do not attend class regularly or who perform poorly on class projects/exams may be referred to the Early Alert Program. This program provides students with recommendations for resources or other assistance that is available to help SFA students succeed. http://www.sfasu.edu/policies/student_conduct_code.asp

Program Learning Outcomes (PLO)
1. Knowledge: The student will demonstrate knowledge and comprehension of the basic and applied fields of physics.
2. Problem Solving: The student will develop independent problem solving skills.
3. Laboratory Work: The student will develop good experimental technique, including proper setup and care of equipment, conducting experiments and analyzing results in order to observe physical phenomena, assess experimental uncertainty, and make meaningful comparisons between experiment and theory.
4. Written Communications: The student will develop effective written communication skills by clear and concise problem solving, well-structured laboratory reports, and accepted formatting of research papers.
5. Oral Communications: The student will develop effective oral communication skills in oral presentations of problem solution, seminars, and oral presentations at scientific meetings.
6. Professional Development: The student will discover the protocols of the professional physicist by attending meetings and giving papers.

Student Learning Outcomes (SLO)
By the end of the course, a successful student will be able to:
- Demonstrate an understanding of how to find and identify celestial objects (PLO 1)
- Identify the different types of telescopes, cameras, and detectors used by astronomers. (PLO 1, 3)
- Independently repeat the process of making observations, including operation of an observatory, telescopes and related equipment. (PLO 3)
- Produce quality images and graphs using advanced techniques for reducing observations by converting raw observations into physical quantities which can be used to evaluate theoretical models (PLO 4)

General Education Core Curriculum Objectives/Outcomes (EEO)
This course is not included in the general education core curriculum. Therefore, please see the learning outcomes above rather than any Exemplary Educational Objectives (EEOs).
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**Exam I**
- Practical Astronomy: Sections 1-16
- Stars and Planets: Chapters 15, 1, 4, 8

**Exam II**
- Practical Astronomy: Sections 17-31
- Stars and Planets: Chapters 16, 2, 3

**Exam III**
- Practical Astronomy: Sections 32-48
- Stars and Planets: Chapters 6, 5, 14

**Exam IV**
- Practical Astronomy: Sections 49-71
- Stars and Planets: Chapters 9, 10, 11, 12, 13

○ = Full Moon Night
= Exam I
= Exam II
= Makeup Lab
= Spring Break
= Easter Holiday

Final Exam 7:00-9:30