Course Description:
PHYS 175. Descriptive Astronomy. 3 hours. The solar system, stellar astronomy, the galaxy, cosmology.

Prerequisite(s):
Corequisite: PHYS 176 Astronomy Laboratory

This on campus face-to-face course will provide a survey of the major areas of modern astronomy including solar, planetary, stellar, and galactic astronomy as well as cosmology. No background beyond high school algebra and general science is necessary. The course lectures may be supplemented by trips to the planetarium and videos.

This course is also intended for partial fulfillment of the Pitt State Pathway Curriculum.

Pitt State Pathway Mission Statement: The Pitt State Pathway curriculum serves as the heart of the university education by fostering interdisciplinary competencies that typify the educated person. It is designed to facilitate the development of key proficiencies including communication and information literacy. The Pitt State Pathway curriculum provides a transformational experience that challenges students to think creatively and critically, and to immerse themselves in the productive examination of humans in their global setting. By encouraging the development of skills that promote life-long learning, the Pitt State Pathway fosters a sense of personal responsibility, an appreciation of diversity, and an understanding of interconnectedness in our truly global society.

Essential Study to be covered in this course: Natural World within a Global Context
Biological, physical, and chemical systems form the context for life. Students need to understand how these systems work, how these change naturally, and how these can change as a result of human activities. The implications of these changes are essential for long-term decision-making. In this course we will:
- **Analyze** physical and chemical systems;
- **Evaluate** the implications of changes that result from interactions between natural and human systems.

Companion Element to be covered in this course: Scientific Inquiry
The scientific method is the systematic approach to understanding the world around us. Through experimentation and hypothesis testing, students will apply analytical skills and appropriate methods of scientific inquiry (i.e. qualitative and quantitative) to solve a variety of research questions. In this course we will:
- **Compose** appropriate research questions and hypothesis, drawing from experts, reliable sources, or previously collected data.
- **Collect, synthesize, and analyze** data from multiple sources;
- **Draw** logical conclusions, assessing for gaps and weaknesses, and addressing potential consequences and implications
- **Communicate** results using appropriate delivery methods or formats.
Course Objectives and learning outcomes:

The **Learning Outcome** for Natural World in a Global Context is:
Students will explore global systems conscientiously.

The **Learning Outcome** for Scientific Inquiry is:
Students will analyze data logically.

**Natural World within the Global Context:** Student *Explains* biological, physical and/or chemical processes and human activities that alter them. (Milestone I)  
**Scientific Inquiry:** Student *Applies* the scientific methods to a problem. (Milestone I)

This course uses the Kansa Board of Regents Core Outcomes (available at [https://www.kansasregents.org/resources/PDF/Academic_Affairs/TAAC/FY_2015/Descriptive_Astronomy_Lecture_08-2018.pdf](https://www.kansasregents.org/resources/PDF/Academic_Affairs/TAAC/FY_2015/Descriptive_Astronomy_Lecture_08-2018.pdf)) for Descriptive Astronomy.

Students should be able to:

1. Explain the scientific method  
2. Interpret astronomical observations, demonstrate critical thinking and basic problem solving  
3. Explain astronomical phenomena in terms of appropriate scientific models  
4. Explain and critique science as presented in the media

**Method(s) of Assessment:**  
To assess the chosen level of student learning for Natural World within a Global Context (Milestone I), students will complete homework, quizzes, and exams to describe and explain biological, physical, and/or chemical processes and how human activities alter them. To assess the chosen level of student learning for Scientific Inquiry (Milestone I), students will complete homework, quizzes, and exams to identify problems by using scientific methods and apply scientific methods to those problems. The final exam will be comprehensive.

Grades will be calculated from the scores of 3 unit tests, the final exam, online quizzes, and homework assignments. Some material over which you will be tested might not be discussed in class, but will be based upon material in the textbook, from the videos that we will watch, from homework assignments, and from the planetarium sessions.

**Homework:** There will be homework to be turned at the beginning of some class periods. **Homework submitted later than ten minutes after class begins on the due date will be considered late and will not be accepted.** If you are ill on a due date, then please submit your homework assignment via e-mail by the due time. **Illegible homework will not be graded.** **Homework problems and exams must be completed in pencil.** Numerical problems must include the equation(s) used to solve the problems, all steps/work toward obtaining solutions, proper units for all properties in the equations, and obvious solutions (circled or boxed in). **Homework solutions must not be identical to those of another student or to the text.**

**Quizzes submitted after the due time on the due date will be considered late and will not be accepted.** **There are no make-up quizzes.**

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
<th>Percentage</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tests (4)</td>
<td>80%</td>
<td>90 – 100 %</td>
<td>A</td>
</tr>
<tr>
<td>Online Quizzes &amp; Homework</td>
<td>20%</td>
<td>78 – 89</td>
<td>B</td>
</tr>
<tr>
<td></td>
<td></td>
<td>66 – 77</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td></td>
<td>54 – 65</td>
<td>D</td>
</tr>
<tr>
<td></td>
<td></td>
<td>below 54</td>
<td>F</td>
</tr>
</tbody>
</table>

**Attendance is mandatory and checks will be taken on a random basis. Three or more unexcused absences will result in your dismissal from the course.**

Students who know that they are going to be out of town on unit exam dates should make arrangements to take unit exams **prior** to those dates. **Excused missed unit exams must be made up within six calendar days.**
Do not make travel plans that will cause you to miss the final exam. You must take the final exam on the day, and at the time, scheduled by the Registrar. As it states in the University Catalog, “Final examinations will be given according to the schedule of examinations distributed by the Registrar each semester.” The only exception is “for students who have three or more final exams officially scheduled for a single day.”

You will need a calculator for this class. No cell phone calculators will be allowed. No devices other than a calculator, a pencil, and an eraser will be allowed during exams. Calculators will not be allowed during some exams. I will provide the Scantrons for all exams.

Laptops, tablets, and cell phones may not be used during class.

Read your text!

Below is the relative order of topic discussions.

Astronomy Basics
Chapter 1 Constellations, Earthly motions, Lunar cycles, Eclipses
Chapters 3 & 4 Visible Light, Telescopes, other Electromagnetic Radiation

Exam 1 (Chapters 1 - 4)

The Solar System
Chapter 5 Formation of the Solar System
Chapter 6 Earth and Moon
Chapter 7 Terrestrial Planets
Chapter 8 Outer Planets
Chapter 9 Solar System Vagabonds: Comets, Asteroids, Meteors

Exam 2 (Chapters 5 - 9)

The Stars
Chapter 10 Our Sun
Chapter 11 Characterizing Stars
Chapter 12 Stellar Evolution
Chapter 13 Deaths of Stars
Chapter 14 Black Holes

Exam 3 (Chapters 10 – 14)

The Universe
Chapter 15 Milky Way Galaxy
Chapter 16 Galaxies
Chapter 17 Quasars, Active Galaxies, other Ultrahigh Energy Sources
Chapter 18 Cosmology
Chapter 19 Searching for Extraterrestrial Life

Friday May 10th, 12:00-1:50 Final Exam (Chapters 15-19), plus some comprehensive material.

Office Hours
Tentative Office Schedule – Kyla Scarborough Spring 2019

<table>
<thead>
<tr>
<th>Time</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00-9:50</td>
<td>Lunch</td>
<td>Lunch</td>
<td>Lunch</td>
<td>Lunch</td>
<td>Lunch</td>
</tr>
<tr>
<td>10:00-10:50</td>
<td>Physical Science</td>
<td>Astro Lab Set-up</td>
<td>Physical Science</td>
<td>Office Hours</td>
<td>Physical Science</td>
</tr>
<tr>
<td>11:00-11:50</td>
<td>Office Hours</td>
<td>Office Hours</td>
<td>Office Hours</td>
<td>Office Hours</td>
<td>Office Hours</td>
</tr>
<tr>
<td>12:00-12:50</td>
<td>Descriptive Astrology</td>
<td>PS Lab</td>
<td>Descriptive Astrology</td>
<td>PS Lab</td>
<td>Descriptive Astrology</td>
</tr>
<tr>
<td>1:00-1:50</td>
<td>Astro Lab Set-up</td>
<td>PS Lab</td>
<td></td>
<td>PS Lab</td>
<td>Faculty Meeting</td>
</tr>
<tr>
<td>2:00-2:50</td>
<td>Astro. Lab</td>
<td>Astro. Lab</td>
<td>Astro. Lab</td>
<td>Astro. Lab</td>
<td>PS Lab Set-up</td>
</tr>
<tr>
<td>3:00-3:50</td>
<td>Astro. Lab</td>
<td>Astro. Lab</td>
<td>Astro. Lab</td>
<td>Astro. Lab</td>
<td>PS Lab Set-up</td>
</tr>
</tbody>
</table>
ACADEMIC INTEGRITY POLICY

Academic dishonesty by a student is defined as unethical activity associated with course work or grades. It includes, but is not limited to: (a) Giving or receiving unauthorized aid on examinations. (b) Giving or receiving unauthorized aid in the preparation of notebooks, themes, reports, papers or any other assignments. (c) Submitting the same work for more than one course without the instructor’s permission, and, (d) Plagiarism. Plagiarism is defined as using ideas or writings of another and claiming them as one’s own. Copying any material directly (be it the work of other students, professors, or colleagues) or copying information from print or electronic sources (including the internet) without explicitly acknowledging the true source of the material is plagiarism. Plagiarism also includes paraphrasing other individuals’ ideas or concepts without acknowledging their work, or contribution. To avoid charges of plagiarism, students should follow the citation directions provided by the instructor and/or department in which the class is offered. The above guidelines do not preclude group study for exams, sharing of sources for research projects, or students discussing their ideas with other members of the class unless explicitly prohibited by the instructor. Since the violation of academic honesty strikes at the heart of the education process, it is subject to the severest sanctions, up to and including receiving an “F” or “XF” (an “XF” indicates that “F” was the result of academic dishonest) for the entire class and dismissal from the university.

Learning Curve Quizzes: http://www.macmillanhighered.com/launchpad/du10e/9901949
<table>
<thead>
<tr>
<th>Chapter Number</th>
<th>Chapter Title</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Chapter 1. Discovering the Night Sky</td>
<td>Jan 28</td>
</tr>
<tr>
<td>2</td>
<td>Chapter 2. Gravitation and the Motion of the Planets</td>
<td>Feb 01</td>
</tr>
<tr>
<td>3</td>
<td>Chapter 3. Light and Telescopes</td>
<td>Feb 08</td>
</tr>
<tr>
<td>4</td>
<td>Chapter 4. Atomic Physics and Spectra</td>
<td>Feb 11</td>
</tr>
<tr>
<td>5</td>
<td>Chapter 5. Formation of the Solar System and Other Planetary Systems</td>
<td>Feb 15</td>
</tr>
<tr>
<td>6</td>
<td>Chapter 6. Earth and the Moon</td>
<td>Feb 20</td>
</tr>
<tr>
<td>7</td>
<td>Chapter 7. The Other Terrestrial Planets</td>
<td>Feb 25</td>
</tr>
<tr>
<td>8</td>
<td>Chapter 8. The Outer Planets</td>
<td>Mar 01</td>
</tr>
<tr>
<td>9</td>
<td>Chapter 9. Vagabonds of the Solar System</td>
<td>Mar 08</td>
</tr>
<tr>
<td>10</td>
<td>Chapter 10. The Sun: Our Extraordinary Ordinary Star</td>
<td>Mar 18</td>
</tr>
<tr>
<td>11</td>
<td>Chapter 11. Characterizing Stars</td>
<td>Mar 22</td>
</tr>
<tr>
<td>12</td>
<td>Chapter 12. The Lives of Stars from Birth Through Middle Age</td>
<td>Mar 26</td>
</tr>
<tr>
<td>13</td>
<td>Chapter 13. The Deaths of Stars</td>
<td>Mar 29</td>
</tr>
<tr>
<td>14</td>
<td>Chapter 14. Black Holes: Matters of Gravity</td>
<td>Apr 03</td>
</tr>
<tr>
<td>15</td>
<td>Chapter 15. The Milky Way Galaxy</td>
<td>Apr 08</td>
</tr>
<tr>
<td>16</td>
<td>Chapter 16. Galaxies</td>
<td>Apr 12</td>
</tr>
<tr>
<td>17</td>
<td>Chapter 17. Quasars and Other Active Galaxies</td>
<td>Apr 17</td>
</tr>
<tr>
<td>18</td>
<td>Chapter 18. Cosmology</td>
<td>Apr 22</td>
</tr>
<tr>
<td>19</td>
<td>Chapter 19. Astrobiology</td>
<td>Apr 26</td>
</tr>
</tbody>
</table>
DROPPING A COURSE OR WITHDRAWING FOR THE SEMESTER

Beginning the 12th week through the 16th week of fall term courses, individual courses cannot be dropped.

A student who does not officially withdraw from a course or from the university will be assigned an "F" grade in the course or courses concerned.

These "F" grades will be included in the computation of the GPA.

The dates for dropping courses that run fewer than sixteen weeks are proportionate to the length of the course (e.g., the last day to drop an eight-week course would be the end of the sixth week). Consult your instructor or the Registrar's Office for questions about a specific course. For students who wish to withdraw from all classes after the 12th week of the term, the instructor must assign a grade of "W" or "F".

To drop a course after the 6th day of class or for clarification on drop/add policies, contact the Registrar's Office, 103 Rues Hall, 920-235-4200 or register@psbstate.edu

IMPORTANT INFORMATION FOR STUDENTS RECEIVING FINANCIAL ASSISTANCE

Student aid is available based on financial need. Please contact the Office of Student Financial Assistance for any questions at 920-235-4200 or by email at finaid@psbstate.edu.

The Office of Student Financial Assistance is required to recalculate financial aid eligibility for students who withdraw, stop attending or are dismissed prior to completing 90 percent of a semester. This calculation applies to students receiving the following Title IV funds including:

- Federal Pell Grant
- Federal Parent PLUS Loan
- Federal Direct Loan
- Federal TEACH Grant for education majors

Federal financial aid is returned to the federal government based on the percent of unearned aid disbursed toward institutional charges for tuition, fees, and on-campus room and board. Students may be required to repay a portion of the aid funds received.

When aid is returned, the student may owe a balance to the University and/or Department of Education Title IV Programs. Please contact Student Financial Aid if you are considering dropping courses during the semester, to see how you will be affected.

IMPORTANT INFORMATION FOR INTERNATIONAL STUDENTS

International students studying on F or J visas must be in proper immigration status and required to be in full-time enrollment (minimum 12 hours undergraduate or 9 hours graduate). For additional information, visit the Pittsburg State University's International Immigration website.

CLASS ATTENDANCE POLICY

Students at Pittsburg State University are expected to attend classes regularly and participate fully in class activities. It is the responsibility of the course instructor to set the attendance policy for his or her courses and communicate that policy to students in the course syllabus. The syllabus should address whether and how attendance affects the course grade, the issue of excused absences, and whether students will be dropped for nonattendance or excessive absence.

Students who have not attended or who have been excessively absent from a class may be dropped from the course by the instructor. In such instances, this policy must be clearly stated in the syllabus and uniformly enforced.
GRADE APPEALS  
al course grades are to be awarded upon satisfactory completion of the work during the first term of the course. Any other grades shall be awarded upon satisfactory completion of the work during the second term of the course. Final grades shall be recorded on the permanent academic record of the student.

DEADLINE POLICY  
xam or major assignments will be presented during the week prior to examination week, unless identified in the course syllabus presented at the beginning of the semester.

FINAL EXAM SCHEDULE  
all examinations will be given according to the schedule of examinations set by the Registrar. Additional work may be submitted by the Registrar for the convenience of the student. Students must be present at the beginning of the exam.

FINAL EXAM OVERLOAD POLICY  
xam or final exam is scheduled for a single day and is to be taken by students within the time specified. Students must be present at the beginning of the exam. Final exams must be taken in the same room and at the same time as the last exam of the term. The faculty member has the right to make changes to the exam schedule, at their discretion.

FINANCIAL ASSISTANCE  
makes it easy to make the payments? See Student Financial Assistance.

STUDENT Success Programs  
are available to all students in Student Success Programs. These programs are designed to support students in achieving academic success. Programs include study groups, tutoring, and academic advising.

WEAPONS AND CONCEALED CARRY POLICY  
are Policy and Concealed Weapons Policy. All students who carry a concealed weapon must have a permit to carry and must carry the weapon at all times.

VERSITY SPONSORED STUDENT ACTIVITY POLICY  
are Universal Student Activity Policy. This policy governs all student activity organizations.

WHERE TO GO FOR ASSISTANCE  
are available to students who are experiencing academic difficulties.

Sexual Assault and Relationship Violence  
are prohibited at Pittsburg State University. This policy applies to all students, faculty, and staff. Victims of sexual assault and relationship violence can receive assistance through the Victim Assistance Center or the Women’s Resource Center.

Notice of Nondiscrimination  
are prohibited at Pittsburg State University. This policy applies to all students, faculty, and staff. Victims of sexual assault and relationship violence can receive assistance through the Victim Assistance Center or the Women’s Resource Center.

Library Services  
are available to all students at Pittsburg State University. This policy applies to all students, faculty, and staff. Victims of sexual assault and relationship violence can receive assistance through the Victim Assistance Center or the Women’s Resource Center.

Financial Assistance  
the financial aid website for more information.

Services for Students with Learning and Physical Disabilities  
are available to students who are experiencing academic difficulties.

University Counseling Services  
are available to students who are experiencing academic difficulties.

CAREER SERVICES  
are available to students who are experiencing academic difficulties.

NOTICE OF NONDISCRIMINATION  
are prohibited at Pittsburg State University. This policy applies to all students, faculty, and staff. Victims of sexual assault and relationship violence can receive assistance through the Victim Assistance Center or the Women’s Resource Center.

Notice of Nondiscrimination  
are prohibited at Pittsburg State University. This policy applies to all students, faculty, and staff. Victims of sexual assault and relationship violence can receive assistance through the Victim Assistance Center or the Women’s Resource Center.

Title IX  
are available to students who are experiencing academic difficulties.