# Astronomy 5

Introduction to Stars, Galaxies, and the Universe

COURSE OVERVIEW,
GOALS & OBJECTIVES

## Course Overview

- Student Handbook (Current Academic Year's Edition)
  - "Syllabus" and "Syllabus Supplement"
  - "Schedule of Activities"
  - All Third-Hour Activities
  - Other Informative Documents
- Pick Up Handouts in Class
- Web Site: http://astronomy.sierracollege.edu/
  - Keys and Gradebooks and other materials

## Course Overview

- *Canvas* Enhancements (Some Instructors)
  - Discussions Area
  - Announcements
- Planetarium Hallway
  - Bulletin Boards
  - Computer Kiosk – Astronomy Students Have First Priority
- *MasteringAstronomy* Web Site
  - http://www.masteringastronomy.com
  - All Homework Assignments Done Here

## Course Overview: Some Facts

- Course consists of two hours of lecture and one "third-hour" (which does not count as lab credit)
- Lecture instructor and third-hour instructor may not be the same. Your lecture instructor is your instructor of record (responsible for your grade).
- Office hours and other forms of communication
- Adding, dropping, and important related deadlines



## Course Overview: Third-Hour

- Third-Hour is held in ST-2, which lies on the Dietrich Theatre side of Sewell Hall
- Go to the 3rd hour you signed up for starting the first week of classes




## Course Overview: Pink Card

- Attendance
  - While attendance in being taken, please complete the **Pink Card**
- **Your Astronomy 5 ID #**
  - Located in upper left corner of the Pink Card.
  - It is not your Student ID#, nor is it your SSN, nor is it the same as any other Astronomy ID# you may receive in another course.
  - **Use it on all** assignments and correspondence with instructor

# Course Overview: Materials

- Required Course Materials
  - Text: *The Cosmic Perspective – Stars, Galaxies, and Cosmology*, 8th Edition, by Bennett et al
  - "Student Access Kit" for *MasteringAstronomy*
  - *Astronomy 5 Student Handbook* (current academic year's edition)
  - Constellation Charts (SC-001, SC-002)

Recommended Course Materials

- *The Night Sky* planisphere for 30°-40°
- *Astronomy* Quick Study Guide



# Overview: Conduct and Safety

- General Instructor Expectations of Students
  - Behavior
  - Effort
- Student Expectations of Instructor
  - Quality of Presentation
  - Fairness
- Health and Safety

# Overview: Grades

- Grades – See "Grading and Attendance" and "Policies and Procedures" sections in *Syllabus* for details
  - Points
    - 500 "Assigned" Points:
      - Exams (100-point two-part midterm and 110-point three-part final
      - Quizzes (30-point Sky Quiz, 13 @ 5-points each CPS/in-class quiz)
      - Homework (13 @ 10 points each) and Third-Hours (13 @ 5 points each)
    - Extra Credit and Bonus Points
  - Grading follows standard 90% and above for an A, 80-89.9% for a B, etc.

## Overview – Schedule Details

- *General Schedule of Activities*
  - Consult daily to be sure you are on task
  - Pay particular attention to the deadlines
  - Note: First week there are no assignments due
  - Homework is done on the *MasteringAstronomy* web site – there is nothing to turn in
  - Third-Hour assignments are done and turned in within the section you are assigned
  - Extra credit is turned into the "White Box"



## Overview – The Secrets

- "Secrets" to Success (For a grade of B or A)
  - Pay attention to deadlines.
  - Do assigned reading (fast) before the first lecture of the week.
  - Read homework questions before the first lecture of the week.
  - Attend lectures with *PowerPoint* lecture notes from the *Astronomy 5 Student Handbook.*
  - Work in groups.
  - Do not wait to the last minute to prepare for exams.
  - Do some extra credit.
  - Ask questions.
- Read "Guide to the First Two Weeks of Class"



## Goals

- Acquire An Appreciation of Our Celestial Environment
- Develop the Needed Skills to Interpret the Observed Sky
- Gain an Understanding of Astronomers' Role in Acquiring Information and Formulating Theories About the Universe

## Objectives

- General Introductory Topics
  - The Celestial Sphere - Equator and Poles
  - Ecliptic and Zodiac
  - Seasons, Eclipses, and Moon Phases
- Contributions from Past Astronomers
- Kinematics and Dynamics
  - Laws of Motion
  - Motion Under Influence of Gravity
  - Precession and Tides

## Objectives

- Basic Principles of Light and Atoms
  - Nature of Light
  - Structure of the Atom and Nucleus
  - Spectra
  - Thermal Processes
  - Ionization
  - Doppler Shifts

## Objectives

- The Sun
  - Size and Structure
  - Physics
  - Surface Features
  - Atmospheric Layers
  - Solar Cycle

## Objectives

- Basic Stellar Concepts
  - Parallax
  - Motions of Stars
  - Magnitudes
  - Luminosity and Temperature
  - Stellar Spectra
  - The H-R Diagram
  - Mass



## Objectives

- Formation of Stars
  - Clues to Formation
  - Giant Molecular Clouds and Cores
  - Protostars, Rotation, Disks
  - T Tauri and Other Young Stars
  - Jets, Winds, and Disk Dispersal
  - Binary Star Systems
  - Planetary Systems



## Objectives

- Stellar Evolution
  - Nuclear Burning and Nucleosynthesis
  - Main Sequence Stars, Life Expectancy, Mass
  - Evolutionary Tracks and Star Clusters
  - Giants and Variable Stars
  - Planetary Nebulae and Supernova Explosions
  - White Dwarfs, Neutron Stars & Black Holes
  - Pulsars and X-Ray Binaries

## Objectives

- The Milky Way
  - Basic Characteristics and How We Know
  - Location of Our Solar System
  - Nebulae and the Interstellar Medium
  - Origin of the Galaxy



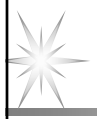
## Objectives

- The Large Scale Structure of the Universe
  - Basic Types of Galaxies
  - Theories of Galactic Formation
  - Properties of Active Galaxies
  - Hubble Law and Expansion
  - Dark Matter Problem
  - Galaxy Clusters and Superclusters



## Objectives

- The Universe
  - Big Bang Theory and the Hubble Constant
  - Microwave Background Radiation
  - Olbers' Paradox
  - The Early Universe and Anti-matter
  - Open vs Closed Universe
  - Cosmology and Grand Unified Theories
  - The Dark Energy Problem
  - The Fate of the Universe



# Any Questions?