

Name(s): \_\_\_\_\_  
\_\_\_\_\_

Date: \_\_\_\_\_ Course/Section: \_\_\_\_\_

Grade: \_\_\_\_\_

## Introduction to Stellar Spectroscopy

### Objectives:

Students will learn how to identify both absorption lines and emission lines in a stellar spectrum. Students will then determine the temperatures of their stars and then work to as a class to examine the spectral differences between hot and cold stars.

### Checklist:

- Complete the pre-lab quiz with your team (if required).
- Compile a list of resources you expect to use in the lab.
- Work with your team to complete the lab exercises and activities.
- Record your results and mark which resources you used.
- Share and discuss your results with the rest of the class.
- Determine if your team's answers are reasonable.
- Submit an observation request for next week (if required).

## Pre-Lab Quiz

Record your group's answers to each question, along with your reasoning. These concepts will be relevant later in this lab exercise.

1.

2.

3.

4.

## Part 1: Absorption and Emission

1. Describe the spectrum of the low pressure sodium lamp as viewed through your spectral glasses.
2. What wavelength of light is emitted by the sodium lamp?
3. Describe the spectrum of the high pressure sodium lamp as viewed through your spectral glasses.
4. What kind of feature do you observe at the wavelength of the spectral line observed in Question 2?
5. Would you expect to see absorption lines or emission lines from stars? Explain your reasoning.

## Part 2: Hydrogen Lines

1. Observe the spectrum of the hydrogen samples in the spectrum tube carousel. Record the wavelength of each line

| Wavelength (nm) |  |  |  |  |
|-----------------|--|--|--|--|
|                 |  |  |  |  |



## Part 4: Spectral Sequence

1. Record the name and spectral type of your star.
2. Each group will now be given a star with a different spectral type. Are there any spectral lines in your star's spectrum? If so, can you identify any of them as hydrogen?
3. Are you easily able to identify the peak wavelength in your spectrum? If so, calculate the temperature using Wein's Law. If not, explain why you are unable to determine the peak wavelength.
4. Compare your spectra to the other groups in the class. Describe the differences between the spectra of hot stars and cool stars.