

This assignment is to be used as **formative** coursework. Please return to the instructor by October 15, 2015.

Needed Tools: Diffraction Grating  
Light Sources

Instructions:

Obtain a diffraction grating from the instructor. At home, observe common light sources and describe your observations. For each observed light source you will need to answer the questions listed below. It will be easier to see the spectrum if you have few other light sources around you and the background is dark. Pick at least two sources to compare, you may want to look at more. Aim to fill one side of A4 paper with your responses.

Suggestions of possible light sources:

- Ordinary light bulb with a filament (glowing wire inside)
- Compact fluorescent light bulb
- Flame from a candle or fire
- Vehicle headlight
- Traffic light (please state colour)
- The Moon
- Neon sign (thin, brightly glowing tubes)
- Computer Screen or television
- Street lamp (Sodium vapor lamps are more of a yellow white colour, Mercury vapor lamps are more of a blue white colour)

Please turn in:

1. This sheet as your cover sheet.
2. Diffraction Grating
3. Your typed or neatly written answers to the following questions:
  - a) Which diffraction grating did you have? (500 lines/mm or 1000 lines/mm)
  - b) What sources did you observe?
  - c) What colour does the light source appear to be before you look through the diffraction grating?
  - d) Describe what you see through the diffraction grating. For example:
    - What colours do you see through the diffraction grating?
    - What colours are the brightest?
    - What colours if any are missing or very faint?
    - Is it necessary to change the orientation of the grating to observe higher order spectra?
  - e) Is this an example of a continuous light source or an emission light source?
  - f) Is it easier to distinguish any emission lines in the first order or higher orders?