Course Notes for PHY 517 / AST 443

- Attend all lectures. These are tailored to introduce only relevant and essential material for the course!
- You will work in teams of up to 3 people. Every team member is expected to participate in taking the observations; failure to show up for observing will result in a 50% reduction in points for that lab. You are encouraged and expected to work together on the data analysis; however, every team member needs to write up their own lab report.
- For each observational lab, choose three dates on which to obtain your data. The second and third are rain dates.
- Do not miss an observing opportunity! Check the forecast in advance, and be ready to observe on all nights described as "partly cloudy" ($<$70% sky cover) or better. While $>$30% sky cover is generally inadequate for optical observations, the weather forecast itself is not 100% accurate, and the conditions may well be clearer! Cloud cover will not interfere with radio observations, but you need to be able to point to the Sun.
- Arrive at the telescope 2 hours before the intended start of your observations.
- Obtain all of your calibration observations on the night/day of observing.
- Use the provided log sheets to keep track of your data taking during observations. Keep additional notes in your logbook. Submit your log sheets and logbook along with your experiment write-up.
- Your lab write-up has to be written in LaTeX. Please use the AAS journal style[1]. Compile the final version as pdf and send it to the instructor and TAs before the deadline.
- The deadline for each lab is 4 weeks after you took the observations. Make sure to check in with the TAs at least once a week to make sure your progress is going in the right direction!
- Your experiment write-up must contain the following sections:
  - **Abstract**: a one-paragraph summary of your goals, execution, and results from your experiment.
  - **Introduction**: a contextual description of the goals and significance of your experiment.
  - **Observations**: a description of your apparatus, settings, objects, exposure times, weather conditions, calibrations, etc. Show figures with your raw data. Include a table summarizing all observations.

[1] `http://journals.aas.org/authors/aastex.html`

- **Data Reduction**: a description of how you reduced and calibrated your data, e.g., photometry, spectroscopic extractions, interferometric observations of point sources, etc. Include figures of your reduced data.
- **Data Analysis and Results**: a description of any analytical steps that you took, such as parameter estimation, error estimation and propagation, model-fitting, etc. Include relevant figures: models fits, etc.
- **Discussion**: a contextual interpretation of your results and a comparison with established results and practices; a discussion of why you may not be seeing the expected result, and so possible changes or improvement to your data taking.
- **Conclusion**: a recapitulation of the results from your experiment, and **what you learned from it**.
- **References**: a list of all cited material;
- **Appendix**: any computer code that you created for this experiment.
- Include as an integral part of your experiment write-up the appropriate figures and tables generated from your data.
- Indicate who contributed which part of the analysis.
- Follow the guidelines for PHY 445/515 (linked on course webpage).
- Do not quote insignificant digits. The format for quoting uncertainties used in astronomy is (123 ± 4); the format with parentheses is not used.

- Enjoy: this is astronomy!