MSE 2151: ASTRONOMY LABORATORY – STARS **Spring 2019 Syllabus**
Mendel Hall 241
Wed 3pm-5:40pm

Instructor: Dr Andrej Prša, assoc. prof.
Dept. of Astrophysics and Planetary Sciences
Mendel 458c (4th floor)
aprsa@villanova.edu
(610) 519-4822 – work
(484) 868-0813 – cell

OFFICE HOURS

Tue 2pm – 4pm
Wed 10am – noon
Thr 2pm – 4pm
other times by appointment

Course homepage: http://aprsa.villanova.edu/?q=MSE2151

Course description:

This astronomy lab accompanies the MSE course 2103, "How Old is the Universe". In the lab we will explore the basics of working with numbers, units, graphs and using the computer to get scientific results. We will touch upon energy transport in stars, telescope operation, the basics of spectroscopy and spectral classification, study the effects of our atmosphere on astronomical observations, discuss how we measure the temperature of a star, how we determine astronomical distances using the parallax method and H-R diagram fitting, how we measure the masses of other galaxies, and finally, focus on the expansion of the Universe. In parallel, we will use the Villanova Observatory to observe the night sky and write up our experience using modern astronomical instrumentation.

Course objectives:

Once you have successfully completed the *Astronomy Laboratory – Stars* course, you will be able to:

- understand and appreciate the process of scientific data acquisition;
- interpret scientific data – graphs, tables and equations – and highlight the importance of physical units;
- have the foundation for conducting your own scientific experiments and astronomical observations;
- gain proficiency with the basic astronomical vocabulary related to astronomical observations;
- gain independence and critical thinking when interpreting information encountered in the media.

Course material:

- MSE 2151 Lab Manual, Spring 2019 Edition

Course work and grading:

There are 13 labs that comprise this course. Each lab is graded on a 0–100 scale, each lab contributes equally to the final grade.

Note that one of the labs, "Observatory Lab", happens outside of normal meeting hours: you are required to visit the observatory on a clear night and write a 2 page report that describes your visit.

Include sky conditions, information on the telescope that you used, and celestial objects that you observed. There is no makeup for the Observatory Lab, so exercise due vigilance and do not postpone this to the end of the semester as weather might be unfavorable for observing. Bad weather is no excuse for missing this lab assignment.

The final grade is determined according to the following breakdown:

0-60%	F	70-73%	C-	83-87%	B
60-63%	D-	73-77%	C	87-90%	B+
63-67%	D	77-80%	C+	90-93%	A-
67-70%	D+	80-83%	B-	93-100%	A

Attendance:

Regular attendance is essential for completing all lab assignments. There will be a single make-up opportunity at the end of the semester, when you will be able to make up one lab. If you cannot attend the lab session for any justifiable reason, note that there are several sessions of this lab every week; reach out to the instructor for the lab session that you can make and ask to do the lab with them. If due to extenuating circumstances you miss more than a single lab, talk to me and we will figure something out.

Academic integrity:

Finally, here goes the standard blurb: any violation of the Code of ethics will be grounds for failing the course. Any cheating, copying, duplication of work, etc, will result in a 0 for that lab assignment. A repeated offense will cause you to fail the entire class. If you have any concerns about your performance, come talk to me in due time and we will figure it all out.

Special needs:

It is the policy of Villanova University to make reasonable academic accommodations for qualified individuals with special needs. If you are a person with a special need please contact me after class or during office hours and make arrangements to register with the Learning Support Office by contacting 610-519-5176 or at learning.support.services@villanova.edu as soon as possible. Registration is needed in order to receive accommodations.