ASTR 3010: Observational Astronomy

The University of Georgia

Fall Semester of 2022

Professor	Inseok Song
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Office Hours	30min after each class and/or by an email appointment

Course Description:

This course handles various concepts and techniques in modern observational astronomy including telescopes, astronomical observations, uncertainties in measurements, data analysis, photometry, spectroscopy, python programming, virtual observatory, etc.

Credits: 3 hours

Textbooks:

- Primary Textbook: Observational astronomy techniques and instrumentation by E. Sutton (e-version is available from the UGA library)
- Secondary Textbook: **"Observational Astronomy" 3rd Ed. by Lena et al., you can access the free online version (ObservationalAstrophysics.pdf)**
- Some personally prepared notes

Grading:

Letter (A-F) grades will be assigned at the end of the semester based on two exams (50% total, 25% each), homework (40%), and participation (10%). **The exact distribution of grading weights can be changed and such changes will be announced in the class (and via eLC)**. The final score will be rounded up (i.e., 89.4 --> 89 and 89.5 --> 90) and a letter grade will be assigned based on the following scale.

	87 <= B+ < 90	77 <= C+ < 80	60 <= D < 70	F < 60
A >= 93	83 <= B0 < 87	73 <= C0 < 77		
90 <= A- < 93	80 <= B- < 83	70 <= C- < 73		

Attendance policy: Random attendance checks will be performed throughout the semester.

Homework:

This "homework" is a very inclusive description in this course that contains traditional homework, data analysis mini-projects, an observing project, etc. Submissions need to be done through eLC (Click Tools-->Assignments from the top menu bar). Some homework that requires your handwritten responses needs to be submitted as a scanned PDF file through eLC.

Programming component:

Developing good programming skills is critically important in a modern science/engineering career. I will incorporate various degrees of python programming assignments throughout the semester.

Course Topics (Tentative): (can be changed without notice)

Week	Regular Topics	Programming Topics
1	Modern Astronomy	Astropy, FITS, and array arithmetics
2	Atmosphere	Simple plots, array arithmetics
3	Detectors	
4	Preprocessing	Preprocessing
5	Digital photometry	
6	Photometric standardization	Digital photometric data reduction
7	Photometric System	
8	**Mid-Term Exam**	Uncertainty
9	Spectrograph	
10	Digital spectroscopic data	Digital spectroscopic data reduction
11	Coordinate systems & Time	
12	Telescope and AO	
13	Infrared Astronomy (NIR + mid-IR)	
14	UV, X-ray, & Radio	
15	CR, GravWave, and Polarimetry	
	Final Exam	

Disability Statement

UGA is committed to the success of all learners, and we strive to create an inclusive and accessible online environment. In collaboration with the Disability Resource Center (http://drc.uga.edu/), we work with students to access reasonable accommodations and academic support.

For more information or to speak with a Disability coordinator, please call the Disability Resource Center at (706)542-8719, TTY only phone (706) 542-8778.

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Technical Issues

For TECHNICAL PROBLEMS with eLC or other issues, contact: UGA's Enterprise Information Technology Services (EITS) Help Desk at 706-542-3106, oremail at helpdesk@uga.edu. You can also submit at a helpdesk request online at https://eits.uga.edu/support/request.

Additionally, there will be a forum in the online course for students to post any issues or concerns. (*Including a forum for technical issues can be a great way to help your students and encourage them to help each other.)*