



EAST TENNESSEE STATE  
UNIVERSITY

College of Arts and Sciences

Department of Physics and Astronomy

## ASTR 1020 - ASTRONOMY II

COURSE SYLLABUS – FALL 2019

Lecture meeting 2:15 - 3:35 pm on Tuesday and Thursday in Brown 261

Instructors:	Prof Richard Ignace Department of Physics & Astronomy
Email:	ignace at etsu dot edu
Web:	<a href="http://faculty.etsu.edu/ignace/astro/astroll.html">http://faculty.etsu.edu/ignace/astro/astroll.html</a>
Office:	274 Brown Hall
Office Hours:	11:00–12:00 am on T, W, Th, or by appointment
Office Phone:	(423) 439-6904 / 439-4231
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### Objectives:

To learn about the nature of stars, galaxies, and the universe as a whole. To learn about the physical principles operating in this context. To think critically about interpreting physical measurements and about testing physical theories. To develop an appreciation for the many wonders that astronomy offers.

### Grading:

The course is for 4 credit hours: 3 credit hours for lecture and 1 for lab. Grades will be assessed as follows

- 25% – Lab (must attend a minimum of 8 labs!)
- 10% – Five Multiple Choice Homeworks
- 50% – Four Multiple Choice Quizzes
- 15% – Comprehensive Multiple Choice Final Exam

*Homework Notes* – Students must provide their own scantrons for the homeworks. Please purchase the ones that are half sheets in width, and are white with green print.

*Quiz/Exam Notes* – Bring a pencil and calculator to all exams. Scantrons will be provided. There will be 5 quizzes, but the lowest will be dropped.

*Lab Notes* – There will be ten regularly-scheduled evening labs. **Students must submit their work for at least 8 of the labs to avoid an automatic “F”.** (Of course, if you attend only 8 labs, the best possible lab score that you can achieve will only be 80%.) Refer to the Lab Synopsis for more details about lab.

*Extra-Credit Opportunity* – An optional extra-credit assignment for up to 2 pts will be made available, as described in class.

### ETSU Syllabus Attachment:

A great deal of useful information can be found in the “Syllabus Attachment” provided by ETSU at:

www.etsu.edu/reg/academics/syllabus.aspx

## Required Materials:

The text for the course is *Astro4U: An Introduction to the Science of the Cosmos* by Ignace. Each student must have the ASTR-1020 Astronomy II Laboratory Manual for 2019/2020. A scientific calculator is needed.

## Schedule:

There are 16 weeks in the autumn session. The following is a fairly good schedule of material that will be covered in the course for each lecture. A given topic may overrun into the lecture following or begin in the lecture prior; to be safe, attend every lecture!

Week	Date	HW/Quiz	Topic	Chapter	Lab
1	08/27		Introduction	1	No Lab in Week 1
	08/29		The Sky	2	No Lab in Week 1
2	09/03		Early Astronomy	3	No Lab in Week 2
	09/05		The Remarkable Mr. Newton	4, 5	No Lab in Week 2
3	09/10		Properties of Light	5	Lab meets
	09/12	<b>HW #1</b>	Observational Astronomy	5	Lab meets
4	09/17	<b>Quiz #1</b>	Properties of Radiation	5	Lab meets
	09/19		Properties of Gases	5	Lab meets
5	09/24		The Sun, Our Nearest Star	7	Lab meets
	09/26		The Study of Stars	15	Lab meets
6	10/01	<b>HW #2</b>	Properties of Stars	15	Lab meets
	10/03	<b>Quiz #2</b>	The Treasure Trove of Binary Stars	15	Lab meets
7	10/08		Star Formation	16, 17	Lab meets
	10/10		Stellar Evolution		Lab meets
8	10/15		<b>Fall Break</b>		No Lab in Week 8
	10/17	<b>HW #3</b>	The Demise of Stars	17	No Lab in Week 8
9	10/22	<b>Quiz #3</b>	Stellar Corpses	18	Lab meets
	10/24		Stellar Corpses	18	Lab meets
10	10/29		The Interstellar Medium	19	Lab meets
	10/31		The Milky Way Galaxy, Part One	20	Lab meets
11	11/05		The Milky Way Galaxy, Part Dieu	20	Lab meets
	11/07	<b>HW #4</b>	Galaxies	21	Lab meets
12	11/12	<b>Quiz #4</b>	Active Galactic Nuclei	22	No Lab in Week 12
	11/14		Cosmology: The Nature of Spacetime	23	No Lab in Week 12
13	11/19		Cosmology: The Universe	23	Lab meets
	11/21		Exoplanets	24	Lab meets
14	11/26	<b>HW #5</b>	Life in the Universe	25	Lab meets
	11/28		<b>Thanksgiving Break</b>		Lab meets
15	12/03	<b>Quiz #5</b>	Life in the Universe	25	Lab meets
	12/05		Review for Final Exam		Lab meets
16	12/10		<b>Final Exam (10:30a-12:30p)</b>		No Lab in Week 16

**Students with Disabilities:** I need to hear from anyone who has a disability which may require some modification of seating, testing, or other class requirements so that appropriate arrangements may be made. Please see me after class or during my office hours.

**Complaint Procedures:** In the event of a "complaint", the first step would be to speak with the Instructor. Alternatively one could speak with the Chair of Physics and Astronomy in 277 Brown Hall.

## ASTR 1020 – Fall 2019 – Lab Synopsis

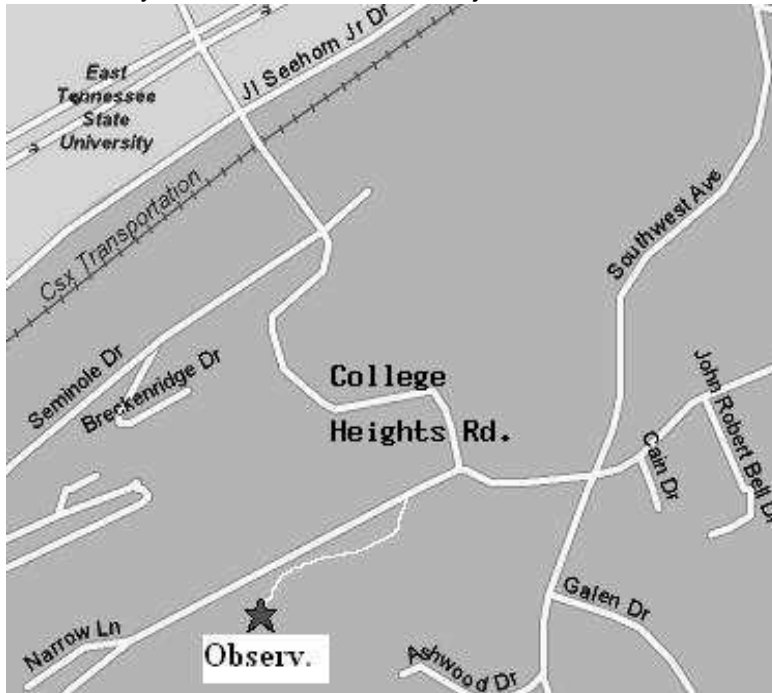
- There are 10 regularly scheduled labs. There are also 2 extra-credit labs available. Because this course is for lab credit, **you must attend a minimum of 8 of these 12 lab meetings or you will receive a grade of “F” for the entire course!** (Attending just the minimum 8 labs means that your maximum lab score cannot exceed 80%.)
- Lab sections are Monday and Tuesday evenings, from 7:30 to 9:30 pm. **Please attend only your registered lab section!** To switch lab nights, you must in fact drop the course and add the section that better suits your schedule. (We cannot guarantee that after dropping the course, your slot will be reserved for adding a different section. Neither the Instructor nor the Department can be responsible for reserving or otherwise ensuring you a space in the course if you choose to attempt drop-and-add.)
- A Lab Manual (for Astronomy II) is required. You will also need a scientific calculator.
- Labs are to be completed and write-ups returned by the end of the lab sessions. Lab results must be recorded on the lab sheets. Only proper lab sheets will be scored. No late labs will be accepted. You cannot make-up a missed lab.
- One of the optional labs (#26) is take-home. This lab involves observing the Milky Way from a dark site. The lab will be due at the beginning of the last lecture of the semester, Thursday, Dec 5.
- Outdoor labs will be held at the observatory, regardless of weather. Remember to dress **WARMLY** (coat, hat, gloves) as needed, because night temperatures can be quite cold.
- Maps to find the Planetarium and Observatory are provided overleaf. The address for the Observatory is 1101 Narrow Lane.
- Below is the Lab Schedule, indicating the meeting place and labs for the different weeks. For outdoor labs, alternate indoor labs are indicated in the event of bad weather.

Week	Dates	Meeting Location	Outdoor Lab	Indoor Lab
1	Aug 26, 27	No Lab	—	—
2	Sep 2, 3	No Lab	—	—
3	Sep 9, 10	Observatory	Lab #1: Constellations	(Lab #16: Galactic Survey)
4	Sep 16, 17	Brown 264	—	Lab #4: Planetarium
5	Sep 23, 24	Observatory	Lab #6: Parallax	(Lab #14: Mass-Loss)
6	Sep 30, Oct 1	Brown 264	—	Lab #8: Local Stars
7	Oct 7, 8	Observatory	Lab #13: Deep Sky	(Lab #17: Nebulae and Galaxies)
8	Oct 14, 15	No Lab	—	—
9	Oct 21, 22	Brown 264	—	Lab #11: Photometry
10	Oct 28, 29	Observatory	Lab #15: Distances	(Lab #9: Distance Modulus)
11	Nov 4, 5	Brown 264	—	Lab #10: Spectra
12	Nov 11, 12	No Lab	—	—
13	Nov 18, 19	Observatory	Lab #27: Exoplanet Host Stars	(Lab #20: Legacy Survey)
14	Nov 25, 26	Brown 264	—	Lab #19: Galaxy Zoo
15	Dec 2, 3	Brown 264	—	Lab #22: Expansion of the Universe
16	Dec 9, 10	No Lab	—	—

\* Lab #26 (Milky Way) is an extra-credit take-home lab due last lecture of semester.

## Observatory Directions

The observatory is located off Narrow Lane just south of the main campus.



## Planetarium Directions

The planetarium is located on the 3rd floor of Hutcheson Hall.

