

Wednesday, May 15

Zoom Room: <https://evergreen.zoom.us/j/87873872814>

The Evergreen State College

Academic Fair Handout

Summer 2024



Astronomy compels the soul to look upwards & leads us from this world to another.
--Plato

ASTRONOMY & COSMOLOGY: STARS & STORIES PROGRAM

(8 Credits, CRN 40096) (4 Credits, CRN 40097) (12 Credits, CRN 40095)

Faculty

Rebecca Chamberlain, M.A. chambreb@evergreen.edu c. 360-970-9992

Mentors: Richard Miles, Alex Vasquez, Shannon Pangalos Scott, Miranda Angell, Ryan Geiser

InSTAR Astronomy Research Group-Contract

Rachel Freed, Ph.D. r.freed2010@gmail.com Russell Genet, Ph.D. russmgenet@aol.com

Schedule

Section 1: Astronomy and Cosmology: Stars and Stories

(8 credits, FIRST Session) Dates: June 25 – Aug. 9

Tuesdays. 6-10:00 PM: Zoom classes and virtual stargazing

Thursdays. 5:00-11:00 PM In-person classes and field studies on campus

FIELD TRIP: Oregon Star Party (July 30-Aug. 4)

Section 2: InSTAR Astronomy Research Contract

(4 credits, FULL session) Dates: June 28-Aug. 23

Wednesdays, 6-8 PM Remote Online learning, Canvas and Zoom

Sections 1 and 2: (12 Credits, Full Session)

Description

Section 1: Astronomy and Cosmology: Stars and Stories (8 credits)

Dates: June 25 - Aug. 9 (FIRST Session)

Tuesdays. 6-10:00 PM: Hybrid classes and virtual stargazing

Thursdays. 5-11:00 PM Classes and stargazing on campus

Join us for our fifteenth summer of astronomy adventures combined with a study of science, story, and sustainability. We will explore inquiry-based science education (STEAM), archeoastronomy, mythology, literature, philosophy, history, and the world's cosmological traditions. Activities include telling star stories, working with virtual planetarium programs, star-finding and fieldwork, and developing a substantial project. We will employ qualitative and quantitative methods of observation and

investigation, virtual and hands-on activities, and strategies that foster inquiry-based learning and engage the imagination. We will compare scientific and cultural cosmologies, and students will consider basic astrophysics and planetary sciences with guest lecturers. Through writing, reading, lectures, films, workshops, discussions, and presentations, we will cultivate an interdisciplinary study of science, story, and sustainability in the context of comparative mythology, literature, earth and sky sciences, indigenous sciences, and environmental ethics. Participants will deepen their understanding of the role that cosmology plays in our lives through the stories we tell, the observations we make, and the questions we ask.

Students will participate in hybrid studies that include virtual and “in-person” field studies as they develop observation skills online and in the field. On Tuesday nights, we will conduct class and star-finding sessions remotely. On Thursday nights, we will meet in person on campus and will follow astronomy field studies and COVID safety protocols. Students will learn to make naked-eye observations, use binoculars, star maps, and navigation guides, operate Dobsonian reflector telescopes, and use virtual programs to identify objects in the night sky. Students who want to maximize their proficiencies and learning are encouraged to check out binoculars or telescopes and to work on their own outside of class.

FIELD TRIP to the OREGON STAR PARTY: July 30-Aug 4

Students will attend the Oregon Star Party and participate in intensive astronomy field studies during the dark skies of the new moon. We will take vans and camp in the rugged high desert for a week. Students will develop their observation skills as they use binoculars, star maps, and navigation guides to identify objects in the night sky, and operate Dobsonian-mounted telescopes to find deep-space objects. Students must provide their own camping gear. We will organize and return college equipment and gear on Monday, Aug 5, from 10 AM-12:30 PM) If we are unable to attend OSP due to unexpected circumstances, students will organize an independent study project or field studies. Contact the Instructor for details (chambreb@evergreen.edu).

Astronomy Research - Group Contract (4 credits)

Dates: June 26-Aug. 21 (Full session)

Wednesdays, 6-8 PM Remote Online learning, InStARCanvas and Zoom

The Institute for Student Astronomical Research (InStAR) is hosting a 4-credit online contract for Evergreen students who want to participate in an astronomy research group-contract. Projects can include binary star research, exoplanets, or variable stars. To be successful, students must complete the InStAR online coursework and demonstrate their understanding of scientific and astronomical research methods, and basic concepts of astrophysics. All sessions and learning will be virtual on Zoom. Students must work as a team to select a binary star or another target, write a proposal, conduct observations with a remotely-located robotic telescope, analyze data, write a peer-reviewed scientific paper for publication in the Journal of Double Star Observations (JDSO), Astronomy, Theory, Observations, and Methods Journal (ATOM), or Robotic Telescope Student Research and Education Journal (RTSRE). Students must attend class, complete the InStAR Canvas Course Module, participate in group research meetings outside of class, give a public online presentation of their findings, and work to finalize their paper for publication. Students will work online and remotely with Rachel Freed, Ph.D., Astronomy Education, Russell Genet, Ph.D., Research Advisor. Students must be motivated to work independently, and in teams, and to carry a research project through in the tradition of Evergreen students, faculty, and mentors who have participated since 2009. Students who demonstrate advanced work can earn upper-division credit. Course Fee: \$400 (InStAR Registration and text.)

12 Credits: Combination of 8 and 4 credit sections

Students are encouraged to take both sections: Stars and Stories: Astronomy and Cosmology (8 credits), and Research Group Contract (4 credits). This gives students background, experience, and skills in astronomy education, fieldwork, research, writing, and publication, as well as a complex understanding of the relationship between the arts, sciences, humanities, and culture.

I. Course Fees

8 Credits = \$760 fee covers a Field trip to Oregon and related supplies (\$710), and required lab fee(\$50)

4 Credits = \$500 (charge to InStAR for binary star research module and texts)

12 Credits = \$1,260 fee covers a Field trip to Oregon and related supplies (\$710), a required lab fee(\$50) and a charge to InStAR for binary star research module and texts (\$500)

Special Expenses:

Students must bring their own camping gear, supplies, basic food, water, etc. for camping in the rugged high desert of Central Oregon for a week. Contact the instructor for a detailed supply list.

II. Upper Division Science Credit:

Astronomy Group Research Contract: Students that demonstrate advanced work in Binary Star Research Methods have the opportunity to earn 2-4 Upper Division Credits.

III. Internship Opportunities:

Students returning to the program can apply to become a program assistant or teaching assistant.

The cosmos is all that is or ever was or ever will be. Our feeblest contemplations of the Cosmos stir us—there is a tingling in the spine, a catch in the voice, a faint sensation, as if a distant memory, or falling from a height. We know we are approaching the greatest of mysteries.
— Carl Sagan

IV. Required Texts

- Chamberlain, Rebecca, ed. *Program Reader, Online*
- Dickerson, Terence. *NightWatch: A Practical Guide to Viewing the Universe* (newest Edition). Firefly Books, 1998. ISBN-10: 155407147X; ISBN-13: 978-1554071470
- Staal, Julius, *The New Patterns in the Sky: Myths and Legends of the Stars*. Ontario, Canada: McDonald and Woodward, 1996 ISBN: 0939923041
- Sagan, Carl. *Cosmos*. New York, N.Y.: Ballentine Books, 1980. Reprint, 2013.
- Swimme, Brian, *Journey of the Universe*, Yale University Press. ISBN: 0300171900
- An unlined journal, for making observations, drawings, and astronomy entries.

Optional Texts:

- Gibilisco, Stan. *Astronomy Demystified: A Self-Teaching Guide*. New York: McGraw Hill, 2003. ISBN: 0071384278
- Sinnott, Roger, *Sky & Telescope's Pocket Sky Atlas*. Sky Publishing Corporation. 2006. ISBN: 1931559317 (For those who go to OSP and hardcore stargazers who have dark skies.) Get it at Sky and Telescope's online store for \$24.99 (Used copies can sell for over \$100 on other sites and are unaffordable.) https://shopatsky.com/products/pocket-sky-atlas-second-edition?_pos=1&_sid=ed071df0e&_ss=r
- Additional texts recommended by instructor.

V. Special Equipment

- **Astronomy Kit:** Create a kit to organize your field-work supplies. Get a backpack, a zip-pouch, or a sturdy toolbox that you can sit on to organize your stargazing equipment. Include: a **red** flashlight

(you will be given a tiny one on the first night of class); your *Observation Journal*; pencils; eraser; sharpener; star-charts and notes; and texts such as Dickerson's *Night Watch*, or other texts.

- **Field Trip:** Students must bring their own camping gear, supplies, basic food, water, etc. for camping in the rugged high desert of Central Oregon. Contact the instructor for a detailed supply list.

VI. Fields of Study and Credits

Astronomy; Education; Field Studies; Literature; Philosophy of Science; Writing

Preparatory for studies or careers in:

astronomy, STEAM education, earth and sky sciences, Indigenous science, scientific research and writing, astronomy field studies; public programs, outdoor education, leadership, and interpretive work (museums, parks, observatories, schools, etc.); writing, literature, storytelling, narrative studies, ecocriticism, mythology, folklore, oral history, and the arts; history, philosophy, cultural studies, sustainability and justice studies, environmental policy, social and environmental ethics, and activism.

Upper Division Science Credit

Astronomy Group Research Contract: Students that demonstrate advanced work in Binary Star Research Methods have the opportunity to earn 2-4 Upper Division Credits.

Anticipated Credit Equivalencies:

4 Introduction to Astronomy with Field Studies

4 Comparative Cosmology: Literature, Cultural Studies, and the History and Philosophy of Science

*4 Astronomy and Binary Star Research Methods, quantitative analysis, and an introduction to scientific writing and communication

Fields of Study

- ⊕ [Climate and Environmental Justice](#)
- ⊕ [Education](#)
- ⊕ [Literature](#)
- ⊕ [Physics](#)

Internship Opportunities: Students returning to the program can apply to become a program assistant or teaching assistant.

VII. For More Information

Contact Professor Chamberlain, chambreb@evergreen.edu

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The history of astronomy is a history of receding horizons.

--Edwin Hubble

Full Description at:

<https://www.evergreen.edu/catalog/offering/astronomy-and-cosmology-stars-and-stories-43826>