

SYLLABUS

Course: Pulsar Search Collaboratory (ASTR 293), Spring 2018.

Instructor: Prof. Maura McLaughlin, G59 White Hall.
304-293-4812, Maura.McLaughlin@mail.wvu.edu.

The Pulsar Search Collaboratory (PSC): The PSC is a collaboration between the Green Bank Observatory (GBO) in Green Bank, WV and West Virginia University (WVU) aimed at increasing scientific and information technology literacy among high-school students within the state. All high-school students in any state participating in the program are eligible for course credit. Students should talk to their teachers about registering for this credit and can direct questions to either Sue Ann Heatherly (sheater@nrao.edu) or Maura McLaughlin.

Course Description: This course will consist of online data analysis of Green Bank Telescope (GBT) data as part of the PSC effort to discover pulsars. The aim of the course is to acquaint students with the scientific method, the power of information technology, and basic astronomical concepts. Students will learn about pulsars and how to search for them from their high-school teachers, or at a summer workshop at Green Bank. Throughout the year, they will then participate in online data analysis at their high schools. After the first year of participation in the PSC, students will be expected to serve as a mentor to new PSC students.

Requirements: In order to earn credits for PSC participation, students must participate in the project for at least two years and be approved by their high-school teacher before enrolling in the course. This requirement is only waived for students who join the PSC in their senior year*. To receive credit, students must participate in at least one observing session with the GBT (remotely or in person), all required online classes and two special online presentations, present a poster about their work at a Capstone event (if feasible), and write a final paper on the results of their data analysis. This paper is expected to include sections on introduction to the project, analysis details, and results. It is due by May 1st 2018.

Timeline:

Year 1: Join PSC by attending online workshop, attending at least two special topics online lectures, completing homework, passing online exam, and participating in the discussion board. Must examine a minimum of 150 pointings.

Year 2, 3, or 4 (non-terminal): (3 credit hours) Attend at least two special topics online lectures, mentor new PSC students and attend and/or lead group meetings if possible. Examine a minimum of 200 pointings. Participate in at least one GBT observing. Complete a paper on the research that was conducted.

***NB:** Students who join the PSC in their senior year must examine a minimum of 250 pointings to be eligible for credit.

Expected Learning Outcomes: On completion of this course, students will be able to:

1. Summarize basic astronomical concepts.
2. Describe how radio telescopes work and demonstrate how to take radio data.
3. Describe what a pulsar is and the physics underlying their properties.
4. Distinguish pulsars from other radio signals in radio data.
5. Communicate scientific results effectively.
6. Evaluate needs of younger PSC members and effectively mentor them.
7. Understand the nature of scientific inquiry and apply it in other situations.

Credit: This course may be taken for either 3 or 6 credit hours. If students start with the PSC in Freshman or Sophomore year, 6 credits are possible (3 in their Junior Year and 3 in their Senior year). If they start in their Junior or Senior year, only 3 credits are possible.

Grading:

Pointings Completed	20%
Observing session participation	20%
Online lecture participation	20%
Final paper	40%

<u>Grade Scale</u>	85% – 100%	A
	75% – 84%	B
	65% – 74%	C
	55% – 64%	D
	below 55%	F

Social Justice Statement:

“West Virginia University is committed to social justice. I concur with that commitment and expect to maintain a positive learning environment based upon open communication, mutual respect, and nondiscrimination. Our University does not discriminate on the basis of race, sex, age, disability, veteran status, religion, sexual orientation, color, or national origin. Any suggestions as to how to further such a positive and open environment in this class will be appreciated and given serious consideration.

“If you are a person with a disability and anticipate needing any type of accommodation in order to participate in this class, please advise me and make appropriate arrangement with Disability Services (293-6700).”