

Physics of Renewable Energy Sources
Phys 575, Winter 2022
Instructor: R. Jeffrey Wilkes

Audience:

This course is designed for professionals working in, or considering starting a business related to renewable or green energy, as well as students in physical sciences and engineering who wish to learn about the science of non-fossil energy sources.

Course content:

- Review of thermodynamics and applications to energy generation and transport.
- Review of fluid mechanics and applications to wind and wave energy sources.
- Electrical power generation and distribution, direct and indirect solar energy conversion.
- Review of nuclear physics and applications to new ideas in nuclear fission power systems, and nuclear fusion power.

The course will combine lectures with a seminar-discussion format. Specific topics covered may vary to reflect the interests of students. Students will be expected to make brief, informal presentations, reporting on topics they have chosen to investigate. Class will meet two nights per week as scheduled. All sessions will also be available via Zoom, with slides and audio recorded. Students may attend from home, work, or any other internet-connected site, using ordinary web browsers, and Zoom software provided by PCE.

Prerequisites:

Graduate standing, or permission of instructor. Students should have taken intermediate level undergraduate physics courses (E&M, QM, and thermodynamics), or equivalent engineering courses. The course will begin with a review of relevant physics topics, so students whose memory of their college physics courses is distant or imperfect will be able to catch up.

Open to:

- a) Students enrolled in the UW Physics Professional MS Degree Program register via the UW PCE website. For all questions regarding PCE registration or tuition payment, contact PCE Program Coordinator Brian Cox (bc26@uw.edu), 206-616-5104.
- b) Full or part time graduate students from any UW unit other than PCE, or UW undergrads with prior permission from instructor, may register via MyUW.