

**OHLONE COLLEGE**  
**Ohlone Community College District**  
**OFFICIAL COURSE OUTLINE**

**I. Description of Course:**

1. **Department/Course:** ENVS - 106

2. **Title:** Wind Energy: Design and Development

3. **Cross Reference:**

4. **Units:** 3

**Lec Hrs:** 3

**Lab Hrs:**

**Tot Hrs:** 54.00

5. **Repeatability:** No

6. **Grade Options:** Grade Only (GR)

7. **Degree/Applicability:**

Credit, Degree Applicable, Transferable  
- CSU (T)

8. **General Education:**

9. **Field Trips:** May be Required

10. **Requisites:**

**12. Catalog Description:**

This course explores the role of wind as an energy source, as well as its social, economic, and political implications on the global energy supply. Surveys in historical wind energy application will be conducted, its reliability assessed, and environmental implications analyzed. Also studied will be wind energy applications and basic operating principles. The status of the industry's future and renewable energy as a whole will be analyzed.

**13. Class Schedule Description:**

The course introduces principles of wind power production, fundamentals of aerodynamics and land use and management.

**14. Counselor Information:**

This course is one of the electives for the certificate in alternative energies.

**II. Student Learning Outcomes**

The student will:

1. Recognize and discuss the economic, societal, and environmental impacts of wind energy production.
2. Summarize the history of the usage of wind energy resources by humans.
3. Compare and contrast current wind energy technologies and examine future trends.
4. Evaluate the economic and political factors affecting the growth of the wind energy industry.
5. Using current trends, measure the future usage of wind resources as a global renewable energy source.

**III. Course Outline:**

- A. Energy from an alternative source
- B. Wind as a fuel
- C. Wind turbine design
- D. Turbine siting
- E. Energy outputs

- F. Aerodynamics fundamentals
- G. Design and operation of wind farms
- H. Geo Engineering
- I. Innovation on wind energy production
- J. The future of the wind energy

**IV. Course Assignments:**

A. Reading Assignments

- 1. Reading assignments from textbook and other sources as referenced.

B. Projects, Activities, and other Assignments

- 1. One of the following: research paper or applications project.

C. Writing Assignments

- 1. Work notebook/journal spanning the whole semester.

**V. Methods of Evaluation/Assessment:**

- A. Examinations on assigned reading and referenced materials.
- B. Research paper.
- C. Work notebook/journal.

**VI. Methods of Instruction:**

- A. Lecture
- B. Laboratory
- C. Discussion
- D. Demonstration
- E. Audiovisual

**VII. Textbooks:**

Recommended

- 1. L. Freris and D. Infield *Renewable Energy in Power Systems* 1st Edition, John Wiley and Sons., 2008 ISBN: 978-0-470-01

Supplemental

**VIII. Supplies:**