**I. COURSE TITLE:** Power Generation

 **COURSE NUMBER:** 2268  **CATALOG PREFIX:** EENG

**II. PREREQUISITE(S):** EENG 1105

**CO-REQUSITE**: EENG 1115

**III. CREDIT HOURS:** 3 **LECTURE HOURS:** 3

 **LABORATORY HOURS:**  NA **OBSERVATION HOURS:** NA

**IV. COURSE DESCRIPTION:**

This course is designed to teach the aspects of power generation. It covers the different types of steam generation methods based on the various types of fuels used including coal, nuclear, hydro, fuel cell, solar, wind, and new fuel technologies. It also includes and in-depth study of the associated equipment such as: pumps, turbines, environmental and other associated systems.

**V. ADOPTED TEXT(S):**

Steam Plant Operation by Woodruff, H. Lammers and T. Lammers. Eight Ed.,

ISBN 0-07-141846-6

**VI. COURSE OBJECTIVES:**

1. Importance and advantages of steam generation

2. Fundamentals of steam Generation

3. Fundamentals of Boiler design

4. Physical construction of boilers

5. The combustion process and its controls

6. Boiler settings, combustion systems and auxiliary equipment

7. Boiler accessories

8. Operation & maintenance of Boilers

9. Operating Procedure for boilers, including idle, startup and maintenance

10. Study of pump systems, operation, installation and testing

11. Design, installation and maintenance of turbines

12. Construction of Generators

13. Physical construction of boilers

14. The combustion process and its controls

15. Design and construction of Condensers & cooling towers

16. Function of auxiliary systems, condensate, feed water, water treatment, Pipeline separators & strainers.

17. Environmental control systems

18. Waste energy systems

**VII. COURSE METHODOLOGY:**

Discretion of the instructor

**VIII. GRADING**

Grading will follow the policy in the catalog. The scale is as follows:

A: 90 – 100

 B: 80 – 89

 C: 70 – 79

 D: 60 – 69

 F: 0 - 59

**IX. COURSE OUTLINE: (Instructor discretion)**

 **WEEK TESTS**

1 Chapter 1 (Steam and its Importance)

 Chapter 2 (Boilers)

2 Chapter 2 (Cont.)

3 Chapter 3 (Design & Construction of Boilers)

4 Chapter 4 (Combustion of Fuels) Test 1

5 Chapter 5 (Boiler Setting, Combustion Systems, & Aux Equipment)

6 Chapter 6 (Boiler Accessories)

7 Chapter 7 ( Operation and Maintenance of Boilers)

8 Chapter 8 (Pumps) Test 2

9 Chapter 9 (Steam Turbines, condensers and Cooling Towers)

10. Chapter 9 (Cont.)

11. Chapter 10 (Maintaining steam turbines, condensers and Cooling Towers)

12. Chapter 10 (Cont.)

13. Chapter 11 (Auxiliary Steam plant Equipment)

14. Chapter12 (Environmental Control Systems) Test 3

15. Chapter13 (Waste to energy Plants)

16. Final Exam

**X. OTHER REQUIRED TEXTS, SOFTWARE, AND MATERIALS:**

Scientific Calculator

**XI. EVALUATION:**

Assignments 30%

Tests (3) 50%

Final Exam 20%

Or

Can be modified at the instructor’s discretion.

**XII. SPECIFIC MANAGEMENT REQUIREMENTS:**

**Cell phones:** Cell phones are to be turned off when you enter the class. The phones are a distraction even when set to vibrate. If your phone rings, vibrates or you are texting during class you are susceptible to being penalized 5% from your final grade for each offense**.**

**XIII. OTHER INFORMATION:**

**FERPA:** Students need to understand that your work may be seen by others. Others may see your work when being distributed, during group project work, or if it is chosen for demonstration purposes. Students also need to know that there is a strong possibility that your work may be submitted to other entities for the purpose of plagiarism checks.

**DISABILITIES:** Students with disabilities may contact the Disabilities Service Office, Central Campus, at 800-628-7722 or 937-393-3431.