A) COURSE

Course Id:	Course
5603	**Power plants technologies**

Class Hours per Week	Lab hours per week	Complementary practices	Credits	Total hour course
4	0	4	8	64

A) GENERAL COURSE INFORMATION:

	EE (IEA)	ME (IM)	MME (IMA)	EME (IME)	MTE (IMT)
Level:	V				
Course Type (Required/Elective)	REQUIRED				
Prerequisite Course:	THERMODINAMICS				
CACEI Classification:	IA				

C) Course Objective

At the end of the course, the student will be capable of:
Analyze principle systems, elements and auxiliary equipment that integrates power plants.

D) TOPICS (CONTENTS AND METHODOLOGY)

1.- Steam cycles producers of mechanic power		**16 Hours**
Specific Objective:	Identify principle characteristics of thermodynamic cycles involved in power generation processes.	
1.1 Rankine Cycle 1.2 Rankine Cycle with overheating 1.3 Rankine Cycle with regeneration 1.4 Cogeneration 1.5 Binary cycles 1.6 Yields of cycles		
Readings and other resources	Is recommended to read the topics of bibliography suggested	
Teaching Methodologies	Theoretical concepts are presented and application exercises.	
Learning Activities	Homework and projects are performed	

2.- Essential elements of a thermoelectric power plant		**12 Hours**
Specific Objective:	Evaluate main characteristics of some representative elements of a thermoelectric power plant and their interrelationship.	

2.1 Steam generator 2.2 Condensers 2.3 Turbines 2.4 Pumps	
Readings and other resources	Is recommended to read the topics of bibliography suggested
Teaching Methodologies	Theoretical concepts are presented and application exercises.
Learning Activities	Homework and projects are performed

3.- Auxiliary systems of a thermoelectric power plant.	**20 Hours**
Specific Objective:	Analyze indispensable support elements in different processes of the thermoelectric power plant
3.1 Fuel feeding system 3.2 Water feeding system. 3.3 Preheating and air circulation system. 3.4 Cooling water circulation system. 3.5 Ejectors system 3.6 Emergency generators system. 3.7 Services air system.	
Readings and other resources	Is recommended to read the topics of bibliography suggested
Teaching Methodologies	Theoretical concepts are presented and application exercises.
Learning Activities	Homework and projects are performed

4.- Hydroelectric power plants.	**8 Hours**
Specific Objective:	Evaluate importance of the hydraulic potential harnessing and its main components.
4.1 Hydraulic power 4.2 Dams and hydraulic infrastructure 4.3 Hydraulic turbines 4.4 Auxiliary equipment	
Readings and other resources	Is recommended to read the topics of bibliography suggested
Teaching Methodologies	Theoretical concepts are presented and application exercises.
Learning Activities	Homework and projects are performed

5.- Other forms of generation	**8 Hours**
Specific Objective:	That the student analyze other sources of power transformation and make awareness of using alternative resources.
5.1 Gas turbines 5.2 Combined cycle 5.3 Nuclear energy 5.4 Power generated by diesel and gasoline motors 5.5 Geotermic power generation 5.6 Wind power generation 5.7 Combustible cells	
Readings and other resources	Is recommended to read the topics of bibliography suggested
Teaching Methodologies	Theoretical concepts are presented and application exercises.
Learning Activities	Homework and projects are performed

E) TEACHING AND LEARNING METHODOLOGIES

Exhibitions by the teacher
Application examples
Implementation projects

F) EVALUATION CRITERIA:

La calificación de la asignatura es el promedio de 2 exámenes parciales y un examen final ordinario. Cada evaluación es ponderada con los lineamientos y requisitos del profesor que imparte el curso. Para poder aprobar la asignatura es necesario acreditar el laboratorio correspondiente.

Evaluation:	Schedule	Suggested Form of Evaluation and weighing	Topics
First Partial exam			
Second Partial exam			
Third Partial exam			
Fourth Partial exam			
Total			
Ordinary Exam			
Lab			
Extraordinary exam			
Title exam			
Regularization exam			

G) BIBLIOGRAPHY AND ELECTRONIC RESOURCES

Main Books

- FAIRES V.M..Termodinámica. Uteha. 1982
- KAO CHEN, ROBERT C. SWANEKAMP, THOMAS ELLIOTT., Estándar Handbook Of Powerplant Engineering. McGraw-Hill.1990
- EL WAKIL, M.M. Powerplant Technology. Mcgraw-Hill.1990.