Engineering Program

Specialization	**Airports Electrical Engineering**
Course Number	**20303121**
Course Title	**Power Supply Systems in the Airports**
Credit Hours	**2**
Theoretical Hours	**2**
Practical Hours	**0**

Brief Course Description:

- The main purpose of this course is to introduce the student with various types of power supplies and how to maintain and operate each of them in order to assure the availability of the electrical Current for each load in the airport

Course Objectives:

By the completion of this course the student will be able to:

1. Explain and describe the operating principles, functions, constructions and characteristics of airport electrical systems.
2. Describe the main components of airport electrical systems.
3. Explain the main concepts of airport electrical systems.
4. Explain and describe the main parts of airport electrical systems.
5. Maintain and operate each of the power supplies in the airport

Detailed Course Description:

Unit Number	Unite name	Unite content	Time Needed
1.	**Power supply systems and their installations**	▪ Introduction ▪ Requirements of power supply reliability, current, ▪ Voltage, capital costs and electrical noise. ▪ Types and block diagrams of power installation. ▪ A.C permitted break with one standby supply, No break with two standby supply. ▪ D.C power installations, permitted break with one ▪ standby supply. No break with two standby supplies	
2.	**Standby power Generation Station**	▪ Diesel four stroke engine ▪ Generators, construction and principle of operation. ▪ Brushless alternator ▪ Load shedding system used at airport. ▪ Generator's protection (Mechanical and Electrical)	

			Time Needed

3.	**Uninterrupted Power Supply (UPS)**	▪ Construction ▪ Operating Principle ▪ Block Diagram	
4.	**Automatic transfer Switch (ATS)**	▪ Construction ▪ Operating principle ▪ Wiring diagram	
5.	**Batteries**	▪ Types ▪ Construction ▪ Principle of operation ▪ Chemical reaction and maintenance ▪ Series and parallel combination of batteries	
6.	**Invertors and Converters**	▪ Construction ▪ Operation ▪ Block diagram	
7.	**Airport Lighting Systems (Locations and function)**	▪ Approach lighting systems(ALS) ▪ Runway lighting systems (RLS) ▪ Taxiway Lighting systems(TLS) ▪ Precision Approach Path Indicator (PAPI)	
8.	**Terminal lighting systems**	▪ Lighting Types ▪ Distribution system ▪ Terminal lighting block diagrams	
		▪	
		▪	

Evaluation Strategies

Exams		Percentage	Date
Exams	First Exam	20%	--/--/----
	Second Exam	20%	--/--/----
	Final Exam	50%	--/--/----
Homework and Projects		10%	
Discussions and lecture Presentations			

Teaching Methodology:

- ❖ Lectures

Text Books & References:

Textbook:

1. ANWAR.J.I.EL-QUTAMI- **Airfield Lighting Systems- QNCATC** –2008 ..

References:

1. Diesel Plant operation hand book – MC GRAW HILL – 1991.
2. Basic Electrical Power Distribution – Rochelle Park, New Jersy , 1971.
3. Precision Approach Bath Indicator – PPL – 600
4. Electrical Instrumentation B.A.GREGORY THE MACMILAN PRESS LTD,LONDON.
5. EQUIPMENTS MANUAL.and diagrams sheet for Airport power stations.
6. Electrical technology B. L. Theraja , A. K. Theraja- RAM.