University: Cairo Faculty: Engineering Department: Aerospace Engineering

Course Specifications

Programme on which the course is given: B.Sc. in Aerospace Engineering

Major or minor element of programme: Elective

Department offering the programme: Aerospace Department

Department offering the course: Aerospace Department

Academic year / Level: 4th year

Date of specification approval: March 2015.

A- Basic Information

Title:	Principles of Airplane Engine Maintenance	**Code:**	AER 481
Credit Hours:	2	**Lectures:**	3
Tutorials:	1	**Practical:**	*

* Shared with tutorials

B- Professional Information

1- Overall Aims of Course

- To value the maintenance process as a main engineering activity.
- To apply relevant theoretical analyses to enhance maintenance effectiveness.

2- Intended Learning Outcomes of Course

a- Knowledge and Understanding

a-1 Engine construction.
a-2 Engine systems.
a-3Maintenance schemes.
a-4Health monitoring techniques.

b- Intellectual Skills

b-1 Synthesizing the trouble-shooting process.
b-2 Presentation skills.
b-3 Analyzing results and drawing conclusions.

c-Professional and Practical Skills

c-1 Emphasize the value of intellectual skills for the maintenance engineer.
c-2 Main part of without type license.

d- General and Transferable Skills

The operational and maintenance aspects of engineering systems.

3- Contents

Topic	No. of hours	Lectures	Tutorial
Engine components construction	10	8	2
Engine systems	14	10	4
Maintenance schemes	2	2	
Overview of health monitoring	2	2	
Gas path analysis technique	2	2	
Engine parameters inter-relationships	6	4	2
Types of engine sensors and health monitoring	4	2	2
Parameters selection	2	2	
Basics of rotor dynamics	5	3	2
Spectrum analysis	5	3	2
Balancing and trimming	2	2	
oil spectrometry	1	1	
Types of seals	2	2	
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4- Teaching and learning Methods

4-1 Lecturing.
4-2 Assignments and problems.
4-3 Visiting maintenance facilities.

5- Student Assessment Methods

Quizzes	to asses	Analytical tools
Reports	to asses	Ability to tackle some problems
Exams	to asses	Ability to apply techniques

Assessment Schedule

Assessment 1	Quiz 1	Week 3
Assessment 2	Report 1	Week 5
Assessment 3	Quiz 2	Week 6
Assessment 4	Report 2	Week 7
Assessment 5	Midterm	Week 9
Assessment 6	Report 3	Week 11
Assessment 7	Quiz 3	Week 12
Assessment 8	Report 4	Week 14
Assessment 9	Final Exam	Week 16

Weighting of Assessments

Mid-term Examination	10 %
Final-term Examination	68 %
Semester work	22 %

6- List of References

6-1 Course Notes

Not available

6-2 Essential Books (Text Books)

Aircraft Gas Turbine Technology, by Treager, I.E.
Many papers

6-3 Recommended books

Gas Turbine Engineering Handbook, Third Edition**,** by Boyce, M.P.
Engine manufacturer manuals

6-4 Periodicals, Web sites, …. etc

7- Facilities Required for Teaching and Learning

- Lecture rooms
- Projector and overhead projectors
- PC computer and internet connection
- Data show

Course Coordinator: Prof. A.A. Hashem
Head of Department: Prof. Ayman H. Kassem
Date: March, 2015.