University: **Cairo** **Faculty:** **Engineering** **Department: Aerospace Engineering**

Course Specifications

Program: Aerospace Engineering
Major Field:
Department: Aerospace Engineering Department
Academic Year/Level: Fourth Year Undergraduate
Term: Second Term
Year of Approval: March 2015.

A- Basic Information

Title: Analysis and Optimization Airplane Performance , Elective (3)
Code: AER450
Credit Hours: 3
Weekly Hours: Lectures 3, Tutorials 1, Total 4

B-Professional Information

1-Overall Aims of Course

Analysis and optimization of airplane performance

2-Intended Learning Outcomes

A-Knowledge and Understanding

Upon completion of this course the student should be able to:

- Basic knowledge of airplane performance
- Basic concepts

B-Intellectual Skills

Upon completion of this course the student should be able to:

- Analysis of different airplane performance characteristics
- Creative thinking
- Solve problems

C-Professional and Practical Skills

Upon completion of this course the student should be able to

- Analyze different airplane platforms
- Implement engineering designs to solve practical problems

D-General and Transferable Skills

Upon completion of this course the student should be able to

- Have different computing skills
- Working in groups

3-Course Contents

Topic	Number of hours	Lecture Hour	Tutorial Hour
Basic flight theory and drag polar	8	6	2
Review of power plant characteristics	7	5	2
Level flight performance	10	8	2
Climbing performance	8	6	2
Range and endurance studies	8	6	2
Turning performance	8	6	2
Takeoff and landing performance	11	8	3

4-Teaching and Learning Methods

- Lectures
- Class activities
- Research assignments
- Discussions

5-Student Assessment Methods

- Class (1) test to assess understanding
- Class (2) test to assess understanding
- Reports to assess problem solving
- Mid-term exam to assess gains of completed topics
- Final exam to assess overall material comprehension

Assessment Schedule

Assessment 1	Week: 2
Assessment 2	Week: 4
Assessment 3	Week 6
Assessment 4	Week 10
Assessment 5	At the end of the term

Weighting of Assessments

Mid-Term exam	20%
Oral exam	10%
Final exam	70%

6-List of References

Essential Textbooks

Aircraft Performance and Design, John Anderson, McGraw Hill, 1999.

6-3 Recommended Books

7-Facilities Required for Teaching and Learning

- Small group of students
- Computer laboratory connected to the internet
- Data show and screen
- Software codes for airplane performance and design

Course Coordinator: Prof. Galal B. Salem
Head of Department: Prof. Ayman H. Kassem
Date: March, 2015.