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

Course Specifications

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

A- Basic Information

Title: Aerospace Guidance and Control Systems
Code: AER408
Credit Hours: 3
Weekly Hours: Lectures 3, Tutorials 1, Total 4

B-Professional Information

1-Overall Aims of Course

Analysis and design of automatic control systems for aircrafts

2-Intended Learning Outcomes

A-Knowledge and Understanding

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

- Understand automatic control and system dynamics
- Understand aircraft stability

B-Intellectual Skills

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

- Analysis of automatic control systems
- Creative thinking
- Solve and design automatic aircraft controls

C-Professional and Practical Skills

Upon completion of this course the student should be able to

- Implement engineering designs
- Implement sophisticated computer programs

D- General and Transferable Skills

Upon completion of this course the student should be able to

- Work in a group
- Have good computing skills

3-Course Contents

Topic	Number of hours	Lecture Hour	Tutorial Hour
Longitudinal and lateral dynamics	4	4	0
Longitudinal auto pilots	22	16	6
Lateral auto pilots	20	14	6
Inertial cross coupling	2	2	0

4-Teaching and Learning Methods

- Class activities
- Lecture
- Discussions
- Case study

5-Student Assessment Methods

- Class test (1) to assess understanding
- Class test (2) 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: 4,
Assessment 2	Week: 8
Assessment 3	Week 2,4,6,8
Assessment 4	Week 10
Assessment 5	At the end of the term

Weighting of Assessments

Mid-Term exam	20%
Semester work	20%
Final exam	60%

6-List of References

Essential Textbooks

J.H.Blackelok, “Automatic control of Aircraft and missiles”, John Wiley and Sons, 1990.

Recommended Books

R. C. Nelson, “Flight Stability and Automatic Control”, 1998

Periodicals, Web sites, etc …

www.dutchroll.com

7-Facilities Required for Teaching and Learning

- Small group of students
- Data show and screen

Course Coordinator: Dr. Gamal Bayoumy
Head of Department: Prof. Ayman H. Kassem
Date: March, 2015.