Cairo University
Faculty of Engineering

Department of Aerospace Engineering

Course Specifications

Program(s) on which this course is given:	Aircraft Structures
Department offering the program:	Aerospace Engineering
Department offering the course:	Aerospace Engineering
Academic Level:	M.Sc.
Date	2015
Semester (based on final exam timing)	☐ Fall ☐ Spring

A- Basic Information

1. Title:	Computer Aided Aircraft Structural Design				**Code:**		AER634	
2. Units/Credit hours per week:	Lectures	2	Tutorial	1	Practical		Total	3

B- Professional Information

1. Coursedescription:	
2. Intended Learning Outcomes of Course (ILOs):	**a) Knowledge and Understanding**
	Methods of analysis of aircraft structures by the finite element method
	b) Intellectual Skills
	How to use various finite element to analyze complex structures
	c) Professional and Practical Skills
	How to use standard computer finite element packages to design complex structures
	d) General and Transferable Skills
	Solve problems

3. Contents

Topic	**Total hours**	**Lectures hours**	**Tutorial/ Practical hours**
Concept of derivation of matrix finite element equations	2		
Elements mesh construction	2		
In plane and Bending plate elements	4		
Higher order elements	4		
Distortion of elements geometry	4		
Analysis of large displacements	4		
Analysis of structural stability	2		
Analysis of materials with nonlinear behavior	4		
Dynamical analysis of structures and elements mass matrices	6		
4. Teaching and Learning Methods	Lectures (✓)	Practical Training/ Laboratory ()	Seminar/Workshop ()
	Class Activity ()	Case Study ()	Projects ()

	E-learning ()	Assignments /Homework ()	Other:
5. Student Assessment Methods			
• **.Assessment Schedule**		**Week**	
-Assessment 1;Attendance			
-Assessment 2; Project Assignment		14	
-Assessment 3; Home work Assignment		3, 6, 10, 13	
-Assessment 4; Final Exam		15	
• **Weighting of Assessments**			
-Final-term Examination		70%	
-Project		10%	
- Home work Assignment		10%	
- Attendance		10%	
-Total		100%	
6. List of References			
1-Przemieniecki, “Theory of Matrix Structural Analysis”			
2-Zienkiewiez, “The Finite Element Method in Engineering Science”			
3-Segerlind, “Applied Finite Element Analysis”			
4-Martin and Carey, “Introduction to Finite Element Analysis”			
5-Ross, “Finite Element Methods in Structural Mechanics ”			
6-Negm, “Course Notes”			
7. Facilities Required for Teaching and Learning			
NASTRAN, Finite Element Package			
Course Coordinator:	**Prof. Hani M.Negm**		
Head of Department:	**Prof. Hani M.Negm**		