Course Specifications

Program(s) on which this course is given:	**Aero Space Engineering**
Department offering the program:	Aero Space Department
Department offering the course:	Aero Space Department
Academic Level:	**4th year / Undergraduate**
Date	September 2014
Semester (based on final exam timing)	☑ Fall ☐ Spring

A- Basic Information

1. Title:	**Compressible Aerodynamics**		**Code:**		**AER- 401**			
2. Units/Credit hours per week:	Lectures	**3 Hrs**	Tutorial	**2 Hrs**	Practical		Total	**5**

B- Professional Information

1. Course description:	Computation of Aerodynamic Loading Parameters for Various Two- Dimensional and Three- Dimensional Bodies Subject to Subsonic Flows

2. Intended Learning Outcomes of Course (ILOs):	**a) Knowledge and Understanding**
	a1- Various concepts in high speed fluid flow
	a2- Differences between low speed and high speed flows
	b) Intellectual Skills
	b1- Analysis.
	b2- Problem Solving
	c) Professional and Practical Skills
	c1- Problem Identification
	c2- Problem Analysis
	c3- Computer Programming
	d) General and Transferable Skills
	d1- Analytical skills
	d2-.Computational Skills

3. Contents

Topic	Total hours	Lectures hours	Tutorial/ Practical hours
Introduction and Review Material on Compressible Flow.	12	6	6
Differential Conservation Equation for Inviscid Flows	6	6	0
Tow- Dimensional Potential Flow	14	10	4
Axially Symmetric flow	10	6	4
Finite Wings in Incompressible flow	10	6	4
Finite Wings in Supersonic Flow	12	8	4
Revision	4	2	2

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
5.1 Test (1)   to assess Review Problems.
5.2 Test (2)   to assess New Problem on Comp 2-D and Axi- Sym Flows.
5.3 Test (3)   to assess Problem Solving
5.4 -----------   to assess --------------------

• **Assessment Schedule**	**Week**
-Assessment 1; Class test	Week 5
-Assessment 2; Project Assignment	Week 10
-Assessment 3; Presentations	Week 15
-Assessment 3; Midterm Exam	Week
-Assessment 4; Final Exam	

• **Weighting of Assessments**		
-Mid-Term Examination	15	% (Test 1 + Test 2 + Test 3)
-Final-term Examination	70	%
-Project		%
-Class Test	15	%
-Presentation		%
-Total	100	%

6. List of References

6.1- Course Notes
 Black board notes + Various course handouts

6.2- Essential Books (Text Books)
 Anderson, J.D. Modern Compressible Flow With Historical Perspective, 2nd ED., Mc- Graw Hill, 1990.

6.3- Recommended Books
Saad, M., Compressible Fhid Flow, Prentice Hall, 1985.
 Bertin, J.J. Smith, M.L., Aerodynamics for Engineers, 3rd Ed., Prentice Hall, 1998.

6.4- Periodicals, Web Sites, … etc
 A number of journal articles

7. Facilities Required for Teaching and Learning

Data Show , Screen

Course Coordinator:	**Dr. Hesham M. ELBANNA**
Head of Department:	**Prof. Dr. Ayman Hamdy Kassem**