Course Specifications (2010 - 2011)

A. Basic Information

Course Title	Properties & Testing of Materials (1-A)				Course Code:	CVE 112	
Lecture:	3	Tutorial:	2	Practical	1	Total	6
Programme (s) on which this course is given:				B.Sc. Civil Engineering (General)			
Major or minor element of program:				Major			
Department offering the program:				Civil Engineering			
Department offering the course:				Civil Engineering			
Academic Year of program:	First			Level of program:		First Semester	
Date of specifications approval:				16/3/2010			

B. Professional Information

1. Overall aims of course

By the end of the course the students will be able to:

Recognize the different loading and testing machines types.
Familiarize with the specifications and standards.
Recognize and differentiate between the main properties of different engineering materials.
Identify the testing methods to evaluate these properties.

2. Intended Learning outcomes of Course (ILOs)

a. Knowledge and Understanding:

a.3) Understand characteristics of engineering materials related to discipline.
a.4) Understand principles of design including elements design, process and/or a system related to specific disciplines.
a.5) Recognize methodologies of solving engineering problems, data collection interpretation.
a.6) define quality assurance systems, codes of practice and standards, health and safety requirements and environmental
a.10) Apply technical language and report writing.
a.14) Understand Properties, behavior and fabrication of building materials.

b. Intellectual Skills

b.6) Investigate the failure of components, systems, and processes.
b.9) Judge engineering decisions considering balanced costs, benefits, safety, quality, reliability, and environmental impact.
b.13) Select appropriate building materials from the perspective of strength, durability, suitability of use to location,

c. Professional and Practical Skills

c.2) Professionally merge the engineering knowledge, understanding, and feedback to improve design, product and/or services.
c.12) Prepare and present technical reports.
c.13) Use laboratory and field equipment competently and safely.
c.5) Use computational facilities and techniques, measuring instruments, workshops and laboratories equipment to design

d. General and Transferable Skills

d.1) Collaborate effectively within multidisciplinary team.
d.3) Communicate effectively.

3. Contents

Week #	Topics	No. of Hours	ILOS	Teaching / learning methods	Assessment method
1	Introduction to ingineering materials, specifications, type of	6	a3, a6	Lectures	Assignments
			b9	Class activity	Mid-term exam

1	testing machines and strain measurments	6	c2	Tutorial	Quiz
					Final exam
2	Mechanical properties of engineering materials under tensile test	6	a4, a5, a6, a10	Lectures	Assignments
			b6, b13	Practical training / laboratory	Mid-term exam
			c2, c12, c13	Class activity	Quiz
			d1	Tutorial	Final exam
3	Normal and true stress - strain curve	6	a4, a5	Lectures	Assignments
				Practical training / laboratory	Oral exam
			c2	Class activity	Final exam
				Tutorial	Mid-term exam
4	Mechanical properties of engineering materials under compression, bending and shear tests	6	a4, a5, a6, a10	Lectures	Assignments
			b6, b13	Practical training / laboratory	Oral exam
			c2, c12, c13	Class activity	Quiz
			d1	Tutorial	
5	Crystale structure of metals and strengthing and hardening methods of ductile material	6	a3, a14	Lectures	Assignments
			b13	Practical training / laboratory	Mid-term exam
			c2	Class activity	Oral exam
				Tutorial	Final exam
6	Fracture types and fracture mechanism in metals under different loading types	6	a3, a14	Lectures	Assignments
			b13	Class activity	Mid-term exam
			c2	Tutorial	Final exam
7	Reinforcing steel tests and Egyption standard specification	6	a4, a5, a6, a10, a14	Lectures	Assignments
			b6, b13	Practical training / laboratory	Quiz
			c2, c12, c13	Class activity	Mid-term exam
				Tutorial	Final exam
8	Midterm Exam				
9	Practical and theoretical strength	6	a3, a14	Lectures	Assignments
			b13	Class activity	Oral exam

9	and fast fracture	6	c2	Tutorial	Final exam
10	Hardness and impact tests	6	a4, a5, a6, a10	Lectures	Assignments
			b6, b13	Practical training / laboratory	Oral exam
			c2, c12, c13	Class activity	Final exam
			d1	Tutorial	
11	Fatigue and creep tests	6	a4, a5, a6, a10	Lectures	Assignments
			b6, b13	Practical training / laboratory	Oral exam
			c2, c12, c13	Tutorial	Final exam
			d1		
12	Corrosion of metals and reinforcement and ways to protect it	6	a6	Lectures	Assignments
			b6, b9, b13	Class activity	Final exam
			c2, c12	Tutorial	Oral exam
					Report
13	Polymers, fibers and fiber reinforced polymers	6	a4, a5, a6, a10, a14	Lectures	Assignments
			b6, b13	Class activity	Final exam
			c2, c12, c13	Tutorial	Oral exam
					Report
14	Timber as a structural material and its tests	6	a4, a5, a6, a10, a14	Lectures	Oral exam
			b6, b13	Class activity	Final exam
			c2, c12, c13	Tutorial	
15	Final Exam				
Total		**78**			

4- Teaching and Learning Methods:

Check using the symbol √

√	Lectures
√	Practical training / laboratory
	Seminar / workshop

√	Class activity
	Case study
	Project work
√	Tutorial
	Computer based work
	Other :

5- Student Assessment Methods:

Check using the symbol √

√	Assignments	to assess	a4, a5, a6, a10	b6, b13	c2, c12, c13	
√	Quiz	to assess	a4, a5, a6	b6	c2	
√	Mid-term exam	to assess	a4, a5, a6	b6	c2	
√	Oral exam	to assess	a3, a6, a13	b6, b9	c2	d3
√	Final exam	to assess	a4, a5, a6	b6	c2	
	Design Project	to assess				
√	Report	to assess	a3, a6, a13	b6, b9	c2	d3
	Experimental write up	to assess				
	Informally assessment	to assess				
	Other	to assess				

6. Assessment schedule

Assessment 1 Assignments on weeks	3, 5, 13
Assessment 2 Quizzes on weeks	4, 6, 10
Assessment 3 Mid-term exam on week	8
Assessment 4 Oral Exam on week	9, 12, 14
Assessment 5 Final exam on week	15
Assessment 6 Design Project on weeks	
Assessment 7 Report on weeks	14
Assessment 8 Experimental write up on weeks	
Assessment 9 Informally assessment	

7. Weighting of Assessments

Assignments	5%
Quiz	5%
Mid-term exam	10%
Oral exam	15%
Final exam	60%

Design Project	
Report	5%
Experimental write up	
Informally assessment	
Other	
Total	100%

8. List of References

8.1 Course Notes

PDF files supplied

8.2 Essential Books (Text Books)

Egyptian code for design and construction of reinforced concrete buildings
Egyptain code, third appendix, Laboratory testing of concrete materials
American Society for Testing and Materials (ASTM)

8.3 Recommended Books

Ilson, J.M , "Construction Materials, Their nature and behavior", ISBN 0-419-25860
Sonayaji , "Civil Engineering Materials", ISBN 0-13-177643-6.

8.4 Periodicals Web sites, etc

9. Facilities Required for Teaching and learning

Data show
QC laboratory
Liberary
Computer, microsoft office, and printing facilities

Course Coordinator:	Prof. Asim Mostafa Kamal AbdulAleem	
Course instructor:	Prof. Gamal AlSayed AbdulAziz	Dr. Mohamed Shehata AlSayed Ismail
Head of department:	Prof. Ahmed AdbulFattah Mahmoud Ahmed	

Signature:

Date:

D	M	Y
		2011