Construction & Building Engineering Courses (CB)

Structural Analysis & Metallic Structures Courses Group

CB 242 – Strength of Materials

COURSE INFORMATION

Course Title: Strength of Materials

Code: CB 242

Hours: Lecture – 4 Hrs. Tutorial – 2 Hrs. Credit –3.

Prerequisite: CB 241 & CB 251

GRADING

Class Performance/Attendance:	10%
Midterm # 1/Assignments – (7^{th} Week):	30%
Midterm # 2/Assignments – (12^{th} Week):	20%
Final Exam:	40%

COURSE DESCRIPTION

Properties of Areas, Normal stresses: Axial stress, thermal stress and bending stresses. Shear stresses: Direct shear stress, Transverse loading and torsional stresses, Principal stresses and strains, Elastic deflection of beams, buckling of columns.

TEXT BOOK

Mechanics of Materials by BEER, F. and JOHNSTON, E.R., Publisher: McGraw-Hill, New York, USA, 1986.

REFERENCE BOOKS

Mechanics of Engineering Materials by BENHAM, P. and CRAWFORD,Z.R. Publisher: Longman Group, 1981.

Mechanics of Materials by POPOR, E.P. Publisher: Prentice-Hall Englewood cliffsdue to different condition loading.

Mechanics of Materials by R.C. HIBBELER , Publisher: McMillan, New York, 1991.

Strength of Materials by R.S.KHURMI, Publisher: S.Chand & Company, NewDelhi, 1986.

Mechanics of Materials by GERE & TIMOSHENKO, Publisher: PWS-KENT Publisher, 1990.

COURSE AIM

The course aims to give students the basic understanding of stress analysis of structural elements. It also covers the subjects of calculation of rotations and deflections of such elements and the stability of columns.

SPECIFIC OUTCOMES OF INSTRUCTION

The student should be able to calculate the stresses and its distribution on the cross sections of structural elements.

Calculate of their deflection and rotation, including stability of columns.

COURSE OUTLINE

Week Number 1-2: Properties of Areas.

Week Number 3-7: Normal stresses (Axial stresses, thermal stresses and bending stresses) & 7th week examination.

Week Number 8-10: Direct shear stresses, Shear stresses and torsional stresses.

Week Number 11-12: Principal stresses and strains & 12th week examination.

Week Number 13-14: Elastic deflection of beams.

Week Number 15: Buckling of columns.

Week Number 16: Final Exam.

COURSE COORDINATOR AND DEMAND

Course Coordinator: Dr. Mostafa Khalifa.

Course Demand: *Required*