

Course name: BUILDING MAREIALS

Course code: CE 260

Course hours: Credit hours 2, Contact hours 3

Course Pre-requisites: None

Course Description

This course aims to study engineering Materials which used in construction sites, as well as classification of engineering materials: properties and testing of reinforcing bars.

Cement: Manufacture, properties, types of cement, tests. Aggregate: Types, properties, grading, tests. Mixing water, concrete: proportions, mixing, handling, placing, fresh and hardened properties, tests, curing. Bricks. Timber. Glass. Ceramics. Testing machines. Measuring devices. Tests: Tension, compression, bending and hardness.

Course Main Objective

In this course, the students will be to:

- Understand of the mechanical properties of different structural materials for use in design and constructions, knowledge of experiments and testing procedures for controlling the quality of structural materials.
- understand the properties of concrete as needed in concrete construction, including strength.
- Understand the concrete ingredients including cement, water, aggregates, admixtures etc. for their optimal use in designing and proportioning concrete mixtures. Ability to use the relevant standards viz ASTM, AASHTO and ACI.
- Use the concrete from design to batch, mixing, transportation, placing, consolidating, finishing.
- Understand of properties, specification, and utilization of Bricks, Glass and Ceramics.

Course Learning Outcomes

After the completion of this course, the students will be able to;

- The knowledge of the mechanical properties of different structural materials.
- The knowledge of testing machines, measuring devices and the statistical evaluation of testing.
- The knowledge of the Properties and Tests of hardened concrete.
- The knowledge of properties, specification, and utilization of Bricks, Glass and Ceramics
- The ability to design and calculate the proportioning the different constituents of a concrete mix.
- How to conduct the testing of fresh concrete and hardened concrete.
- The ability of testing of the materials such as tensile test, compressive test, hardness test, and bending test.

Course evaluation

- Quizzes, practical assignments
- Weekly/biweekly reviews
- Midterm examination
- Attendance
- Final examination

Course recommended books

- “The Testing of Engineering Materials by H.E. Davis, G. E. Troxell and G.F.W. Hauk” Fourth Edition. “Materials” by Alan Everett, Mitchell Publishing Company Ltd.
- “Design and Control of Concrete Mixtures by” Fourth Edition. H.Kosmatk et al., USA

Course References

- Illustrated lectures and a scientific material prepared according to the PowerPoint program.