



COURSE SYLLABUS

COURSE NUMBER: CONE 479
COURSE TITLE: CONSTRUCTION MATERIALS

COURSE DESIGNATION

REQUIRED FOR CONSTRUCTION ENGINEERING MAJORS AND TECHNICAL ELECTIVE FOR CIVIL ENGINEERING MAJORS.

COURSE DESCRIPTION

PROPERTIES AND CHARACTERISTICS AND MIX/BLEND DESIGN OF AGGREGATE AND PORTLAND CEMENT AND ASPHALT CONCRETES.

INTRODUCTION TO OTHER CONSTRUCTION MATERIALS.

PRE-REQUISITE

CREDIT IN CHEM 200 AND CIVE 301 OR EQUIVALENT

LECTURES/LABORATORY SCHEDULE

LECTURE – 2 SESSIONS PER WEEK, 50 MINUTES PER SESSION

LABORATORY – 1 SESSION PER WEEK, 2 HOURS & 40 MINUTES PER SESSION

TEXTBOOKS

MAMLOUK, M. AND ZANIEWSKI, J., "MATERIALS FOR CIVIL AND CONSTRUCTION ENGINEERING," FOURTH EDITION, 2014.

BAYASI, M.Z., "EXPERIMENTAL STUDY IN CONCRETE MATERIALS," FIRST EDITION, 2009.

COURSE LEARNING OUTCOMES

TO DEVELOP A FUNDAMENTAL UNDERSTANDING OF THE BEHAVIOR, ANALYSIS AND MIX/BLEND DESIGN OF AGGREGATE AND PORTLAND CEMENT AND ASPHALT CONCRETES BASED ON THE PRINCIPLES OF PHYSICS, MATHEMATICS AND STRUCTURAL MECHANICS PER CODE PROVISIONS.

INTRODUCTION TO OTHER CONSTRUCTION MATERIALS.

TOPICS COVERED

- INTRODUCTION TO PAVEMENT MATERIALS

CONCRETE

- COMPONENTS OF CONCRETE
- PORTLAND CEMENT
- CONCRETE AGGREGATE
- CONCRETE ADDITIVES
- FRESH AND HARDENED MATERIAL PROPERTIES OF CONCRETE
- CONCRETE MIX DESIGN
- CONCRETE MICROSTRUCTURE
- INTRODUCTION TO CONCRETE PAVEMENT

ASPHALT

- INTRODUCTION TO ASPHALT CEMENT
- ASPHALT CONCRETE AGGREGATE
- FLEXIBLE PAVEMENT DISTRESS
- ASPHALT CONCRETE MIX DESIGN
- ASPHALT CONCRETE MIXING PLANTS

OTHER CONSTRUCTION MATERIALS

- MASONRY AND WOOD
- STEEL AND ALUMINUM

LABORATORY TOPICS

- INTRODUCTION TO CONCRETE.
- CONCRETE COARSE AGGREGATE.
- CONCRETE FINE AGGREGATE.
- CONCRETE MIX DESIGN & QUALITY CONTROL OF FRESH CONCRETE.
- SETTING TIME OF MORTAR.
- COMPRESSION BEHAVIOR OF CONCRETE.
- TENSILE STRENGTH OF CONCRETE.
- SITE VISIT TO CONCRETE MIXING PLANT.
- FINISHING OF CONCRETE FLATWORK.
- ASPHALT CEMENT PROPERTIES.
- ASPHALT EMULSION.
- SITE VISIT TO ASPHALT CONCRETE MIXING PLANT.
- ASPHALT CONCRETE MIX DESIGN.

GRADING

HOMEWORK ASSIGNMENTS AND QUIZZES	15%	
LABORATORY REPORTS		20%
EXAMS		40%
FINAL		25%