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 EQUIVALENET

LECTURES/LABORATORY SCHEDULE
LECTURE – 2 SESSIONS PER WEEK, 50 MINUTES PER SESSION
LABORATORY – 1 SESSION PER WEEK, 2 HOURS & 40 MINUTES PER SESSION

TEXTBOOKS

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%