Course Name: BACHELOR OF ENGINEERING (Civil, Construction)  
BACHELOR OF ENGINEERING (Civil and Environmental)  
BACHELOR OF ENGINEERING (Construction)  
BACHELOR OF ENGINEERING SCIENCE (OFFSHORE)

Subject No.: 48352
Subject Name: CONSTRUCTION MATERIALS
Credit Point: 6 (Six)
Mode of Presentation: Regular
Subject Co-ordinator: Dr. R Sri Ravindrarajah (Room B2/529; Phone: 9514 2625)  
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OBJECTIVES:
Civil engineering embodies professionals who design, construct, maintain, inspect and manage public work projects. The common materials used in civil engineering applications or in construction are timber, concrete, bitumen, masonry, bricks, glass, aluminium and steel. It is essential for the civil engineers to have a basic understanding of these construction materials, in relation to their production, properties, testing and performance. The main objectives of this subject are to help the students to:
• acquire the fundamental knowledge on the production and properties of the construction materials.
• understand the effects of environments on the properties and performance of these materials.
• familiarize with the relevant Australian standard specifications, in relation to the requirements and methods of testing.
• improve the analytical and communication skills by preparing the test reports.
• select the material to meet the performance specification.
• develop the awareness of the use of waste materials as the materials for construction.

CONTRIBUTION TO OVERALL COURSE AIMS:
This subject forms a link between the study of solid mechanics and structural design. The ideas of equilibrium and deformation from the course on solid mechanics are needed to describe materials behaviour and their properties, which form the foundation of structural design. The construction of a structure requires a thorough understanding of fabrication, application, field testing, and properties of materials. Therefore, knowledge on properties and performance of materials and construction practices are required to develop, design, and build safe, economical, and durable structures.

CONTENTS:
The contents of this subject are design to meet the objectives in relation to the following construction materials: (a) metals (steel and aluminium); (b) concrete making materials and concrete; (c) bituminous materials; (d) concrete masonry; and (e) bricks and other materials. The following description contributes to the content of this subject:
• Requirements, selection and standards of construction materials
• Steel - production, forms, grades, mechanical properties and testing
• Behaviour of reinforced concrete beams
• Aluminium and Aluminium alloys
• Cement and other binders - production, types, composition, properties and testing
• Aggregate: classification, properties and testing
• Admixtures: types and effects on concrete properties
• Concrete - uses, mix design, properties and testing of fresh and hardened concrete
• Road making materials - production, properties and testing
• Concrete masonry, Clay Masonry units, mortar, grout and plaster
• Degradation of construction materials and protection

TEACHING STRATEGIES:
Teaching and learning strategies will include:
• Lectures
• Tutorials
• Laboratory classes
• UTSOnline (Compulsory engagement is needed)
• Self-study

TEACHING:
• 6 hours contact per week

ASSESSMENT:
Students are assessed in the following ways:
• Lab Reports 25%
• Mid-semester Quiz 20%
• Final Examination 55%
  Total 100%

TEXT BOOK:
Lecture Notes; Study Guides, UTSonline resources and Handouts

REFERENCE BOOKS: