Regulation GRBT-20	Godavari Institute of Engineering & Technology (Autonomous)	I B.Tech. II Sem (2nd Semester)			
Course Code	**MATERIALS TECHNOLOGY**				
Teaching	Total contact hours- 60	L	T	P	C
Prerequisite(s): Basic Knowledge of Chemistry		3	0	0	3

Syllabus:

UNIT-I

Structure and properties of materials:

Types of materials, Classification of materials, Fundamentals of material structure, from atomic bonding to failure theories; structure-property relationships; general engineering properties of materials.

UNIT-II

Steel / Aluminium / Copper/ Wood / Glass:

Structure of iron and steel – phase diagrams; properties of reinforcing steel and structural steel; corrosion; properties and applications of Al and Cu; Structure of wood; processing of timber for construction; defects and deterioration of wood; properties and applications of glass

UNIT-III

Introduction to metals:

Introduction; Ferrous metals-Cast and Wrought Iron, Steel, Reinforcement bars, Corrosion, Light Gauge Steel; Non ferrous metals

UNIT-IV

Pavement materials :

Basic pavement materials such as WBM and WMM; structure and properties of asphalt; proportioning and application of bituminous concrete for flexible pavements; understanding of rigid pavements – jointed, doweled and continuously reinforced

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UNIT-V

Composite materials / FRP / Polymers and Plastics:

Particulate and fibre reinforced composites; structure and behaviour of polymers and plastics

Text Books:

1. P.C. Varghese, “Building Materials,” Prentice-Hall of India, New Delhi, 2008
2. Shan Somayaji, “Civil Engineering Materials,” 2nd Edition, Prentice Hall, New Jersey, 2008

Reference Books:

1. Michael S. Mamlouk and John P. Zaniewski, “Materials for Civil and Construction Engineers,” Addison Wesley Longman Inc., USA, 1999
2. William D. Callister, Jr., “Materials Science and Engineering – An Introduction,” 3rd Ed., John Wiley and Sons, New York, 1994.