Course No.	CEL209	Open Course (Y/N)	HM Course (Y/N)	Discontinued (Y/N)	
Course Title		**Construction Materials**			
Course Coordinator		Dr. A. D. Pofale			
Slot in which offered. If not offered write N		Odd		Even	
		N		E	
Structure		Lecture	Tutorial	Practical	Credits
		3	0	0	6
Prerequisite Course Codes As per proposed Course Numbers					
Prerequisite credits					
Equivalent Course Codes. As per proposed courses and old courses					
Overlap course codes As per proposed Course Numbers					
Text Book (Max. 2)		Title	Engineering Materials,		
		Author	Rangawala S.C.,		
		Publisher	Chortor Publications		
		Edition	1991		
		Title	Building Materials,		
		Author	S.K. Duggal		
		Publisher	New Age International Publications		
		Edition	2006		
Reference Books		Title	Engineering Materials,		
		Author	Rajput R.K		
		Publisher	S Chand & Co. New Delhi		
		Edition	2000		
		Title	Building Materials Technology Structural Performance & Environmental Impact		
		Author	Bruntley L.R		
		Publisher	McGraw Hill Inc		
		Edition	1995		
		Title	Construction Materials their nature & behaviour, E& FN span, -		
		Author	Illston J.M		
		Publisher	Chapman & Hall London		
		Edition	1996.		

	Title	Engineering Materials and applications,
	Author	Flinn R.A. Trojan
	Publisher	Jaico Publishing House
	Edition	1993
	Title	
	Author	
	Publisher	
	Edition	
Content	1. Classifications of Construction Materials. Consideration of physical, Mechanical, thermo-physical Properties, characteristics behaviour under stress, selection criteria for construction materials, green building materials, waste products, reuse and recycling. 2. Structural Clay Products- Bricks- Classification, Characteristics, Ingredients, Manufacturing, Forms of Bricks burnt clay, perforated, paving, soling bricks, hallow blocks, Fire clay/refractory bricks, Terracotta, Porcelain, Stoneware, Earthenware, /refractory bricks etc. 3. Rocks and Stones – Classification, quarrying, dressing, uses, characteristics, selection, types Common building stones, artificial building stones. Uses and applications of stones. 4. Wood and wood Products: Classification and growth of trees, Timber: Classification, Structure, Characteristics, Seasoning, defects, Diseases, decay and preservation. 5. Materials for making Mortar and concrete: Lime manufacture, properties, hardening of lime, types of lime, lime concrete uses, cement, aggregates, water, characteristics, properties and uses of Pozzolana materials, Types of mortars, special mortars, properties and applications, admixtures 6 Ferrous metals: Structure, Iron: Pig Iron, Cast Iron, Wrought Iron, Steel, Reinforcing steel Bars, Alloy steel, Non Ferrous metals: Aluminum, Copper, Zinc, Lead tin, Nickel Stainless steel .high tensile steel ,corrosion resistant steel. 2. Ceramic Materials: Classification, Refractories, glass, glass wool, mechanical, thermal and electrical properties Uses and application. 3. Polymeric Materials: Polymerisation mechanism and depolymerisation. Rubber and plastics, properties, effect of temperature on mechanical properties. Uses and application. 4. Paints, Enamels and varnishes, Tar, bitumen and asphalt, Gypsum and gypsum plaster boards, , adhesives and sealants ,waterproofing materials. Heat and sound insulating materials , geosynthetics, Damp prevention materials. 10. Lightweight heavy weight materials, natural and artificial, special cements and concrete.	
Course No.		

Course No.	CEL404	Open course (Y/N)	HM Course (Y/N)	Discontinued (Y/N)	
Course Title		Railways Airport and docks and harbour			
Course Coordinator		Dr. Vishrut Landge			
Slot in which offered. If not offered write N		Odd		Even	
				D	
Structure		Lecture	Tutorial	Practical	Credits
		3	0	0	6
Prerequisite Course Codes As per proposed Course Numbers		Transportation Engineering			
Prerequisite credits					
Equivalent Course Codes. As per proposed courses and old courses					
Overlap course codes As per proposed Course Numbers					
Text Book (Max. 2)		Title	Railway Engineering		
		Author	Saxena;		
		Publisher			
		Edition			
		Title	Airport System Planning, Design and Management		
		Author	Richard de Neufville & Amedeo Odoni		
		Publisher	McGraw Hill Book Company		
		Edition			
		Title	Dock and harbour Engineering		
		Author	Oza H.P., Oza G.H.		
		Publisher	Charotar		
		Edition			
Reference Books		Title	Railroad Engineering, 2nd Edition		
		Author	William W. Hay		
		Publisher	John Willey & Sons		
		Edition			
		Title	Docks harbour and tunnels engineering		
		Author	Srivastav R.		
		Publisher	Charoter		
		Title	**Airport Planning & Design**		
		Author	Goyal & Praveen Kumar		
		Publisher	Galgotia Publication		

	Title	
	Author	
	Publisher	
	Title	
	Author	
	Publisher	
	Title	
	Author	
	Publisher	
Content	**Railways** 1. Railway Transportation and its development, Long term operative plans for Indian Railways. Classification of Railway lines and their track standards, Railway terminology, Railway Administration and Management. Traction and tractive Resistance, Hauling capacity and tractive effort of locomotives, different Types of Tractions. Permanent Way: Alignment Surveys, Requirement, gauges, track section, Coning of wheels, Stresses in railway track, high speed track. 2. Rail types and functions, selection of rails, Test on rails wear & defects, corrugations and creep of rails. Rail joints short and long welded panels. Sleepers – functions, types, merits and demerits, sleeper density. Ballast cushion, Ballast section Rail fixtures and fasteners. Geometric design of railway track, Gauge, Gradient, speed, super elevation, cant deficiency, Negative super elevation, curves, length of transition curves, grade compensations. 3. Points & crossings : Left and right hand turnout, design calculation for turnout & Crossover, railway track Junctions. Stations and Yards : Types, functions facilities & equipment. Railway signaling and interlocking : Objects and principles of signaling classification and types of signals, control and movement of trains, track circuiting. Necessity of interlocking, methods and mechanical devices. Railway track construction, Inspection & modern, techniques of maintenance. RDSO standards. Modern Technology related to track & traction, Rolling Stock, Signaling and Controlling. **Airports** 4. Development of Air Transportation in India : Comparison with other transportation modes. Aircraft components and characteristics, Airport site election. Modern aircraft's. Airport obstructions: Zoning Laws, Imaginary surfaces, Approach and Turning zone, clear zone, vert. Clearance for Highway & Railway. 5. Runway and taxiway design : Windrose, cross wind component, Runway Orientation and confuguration. Basic runway length and corrections, runway geometric design standards. Taxiway Layout and geometric design standards. Exit Taxiways. Airport layout Airport classification: Terminal Area, Aircraft parking and parking system. Unit terminal concept, Gates space standards, Aprons, Hangers, International Airports layouts, phase development Helipads, and Heliports. Visual Aids: Airport marking and	

	Lighting for runway, Taxiway and other areas. Air traffic control : Need, Network, control aids, Instrumental landing systems, Advances in Air-traffic control. **Docks and Horbour**: Importance, Sea and tides, tidal theories, tide table, wind waves and Cyclones, harbour layout, break waters, jetties and moorings,
Course No.	

Department: Civil Engineering

Course No.:	**CEL403**	**Open Course (Y/N)**	**HM Course (Y/N)**	**Discontinued (Y/N)**

Course Title: Rural Water Supply and Sanitation				
Course Coordinator: Dr. Dilip H. Lataye				
Slot in which offered, if not offered write N		**Odd**	**Even**	
			G	
Structure		**Lecture**	**Tutorial**	**Practical**	**Credits**
		3	**0**	**0**	**6**
Prerequisite Course Codes As per proposed Course numbers					
Prerequisite Credits					
Equivalent Course Course Codes. As per proposed Courses & old courses					
Overlap Course Codes As per proposed Course numbers					

Text Book (Max. 2)	**Title**	**Excreta Disposal for Rural Areas and Small Communities**
	Author	E.G. Wagner and J.N. Lanoix
	Publisher	
	Edition	
	Title	**Environmental Engineering – II**
	Author	B.C.Punmia
	Publisher	Laxmi Publication
	Edition	2002
Reference Books	**Title**	Environmental Engineering – II
	Author	Garg S.K. ;
	Publisher	Standard Publication
	Edition	2002
	Title	
	Author	
	Publisher	
	Edition	
	Title	
	Author	
	Publisher	

	Edition	
Content	National Water Policy, Status of Rural water supply in India, National and State level programmes of RWS, Planning and implementation of rural water supply, problem village Source development, springs, dug wells, infiltration wells etc. Package water treatment plants, appropriate technology for removal of excess iron and manganese, fluoride, arsenic for drinking water, surface water treatment, slow sand filtration, disinfection in RWS. Guidelines for Design of RWS, Types of RWS systems and their components, types of pipes, pumps used in RWS, Community participation in planning, design, O &M of RWS Low Cost Sanitation Methods, Centralised and Decentralised Methods of Rural Sanitation, Pit Privy, Aqua Privy, Water Seal Latrine, Bore-hole Latrine, bucket Latrine Feuill'ees or Trench Latrine, Overhung Latrine, Compost Privy, Chemical Toilet, Double Pit Latrine, Pour Flush Latrine, Improved Double Pit Pour Flush Latrine, Septic Tank, design of Septic Tank, disposal of Septic tank effluent.Water Carried Methods of Excreta Disposal for Rural Areas, Excreta Disposal Programmes for Rural Areas Composting, Methods of Composting, Indore Method, Banglore Method, NADEP Method, Vermicomposting Method, biodung Vermicomposting, Gobar Gas Plant, Sulabh Sauchalaya. Role of NGO's and GO's in Rural Sanitation Community Participation in Rural Sanitation.	
Course No.		

Course Content Proforma							
Department: Civil Engineering							
Course No.:	**CEL(HM) 425**	**Open Course (Y/N)**	**HM Course (Y/N)**	**Discontinued (Y/N)**			
Course Title: Finance and Business Management							
Course Coordinator: Prof A.G.Tawalare							
Slot in which offered, if not offered write N			**Odd**	**Even**			
				E			
Structure			**Lecture**	**Tutorial**	**Practical**	**Credits**	
			3	**0**	**0**	**6**	
Prerequisite Course Codes As per proposed Course numbers							
Prerequisite Credits							
Equivalent Course Course Codes. As per proposed Courses & old courses							
Overlap Course Codes As per proposed Course numbers							
Text Book (Max. 2)	**Title**	**Essentials of Management**					
	Author	Harold Koontz, Heinz Weihrich					
	Publisher	Tata McGraw Hill					
	Edition	Sixth Edition					
	Title	**Cost Management**					
	Author	Hilton, Maher, Selto					
	Publisher	Tata McGraw Hill					
	Edition	Second Edition					
Reference Books	**Title**	**Managerial Economics**					
	Author	Yogesh Maheswari					
	Publisher	Prentice Hall India					
	Edition	Second Edition					
	Title	**Management**					
	Author	James A.F Stoner, R Edward Freeman, Daniel R Gilbert					
	Publisher	Prentice Hall India					
	Edition	Sixth Edition					
	Title	**Financial Management**					

	Author	Khan, Jain
	Publisher	Tata McGraw Hill
	Edition	Fourth Edition
	Title	**Human Resources and Personnel Management**
	Author	Werther and Davis
	Publisher	Tata McGraw Hill
	Edition	1996
Content	Principles of management and Personnel management: Economic environment of business, Introduction to managerial economics; Role of a Manager: Tasks and responsibilities of a professional manager, Human Resource development systems, organization structure, manpower planning, Managerial skills and Management Systems, SWOT Analysis. Business Policy and Strategic Management; Assessment of capital requirement and sources of capital, fixed and current assets, liquid resources, Forecasting of business, cash flow, sources of finance, cost of capital, capital structures. Quality assurance, marketing planning, marketing research & Marketing strategies, determinants & Models of consumer behavior, Pricing & promotion strategies, Business forecasting. Modern Control Systems, Total quality Management (TQM), DSS, ERP, Technological innovation & R &D. Financial Management; Meaning and Scope, Economics and Scope, Supply and Demand Mechanism, analysis and forecasting. Balance sheet, profit & loss account, financial statements; Production and Cost theory, Pricing; Financial analysis, Capital Budgeting, budgetary control, international finance. Accounting information and application, Financial versus economic evaluation, and project appraisal. Taxation and inflation, risk and uncertainty, bidding and awards, cost elements of contracts.	
Course No.		

Course No.	CEL 405	Open Course (Y/N)	HM Course (Y/N)	Discontinued (Y/N)	
Course Title		**INDUSTRIAL WASTE WATER TREATMENT, RECYCLING AND REUSE**			
Course Coordinator		Dr. A. R.Tembhurkar			
Slot in which offered. If not offered write N		Odd		Even	
		-		E	
Structure		Lecture	Tutorial	Practical	Credits
		3	0	0	6
Prerequisite Course Codes As per proposed Course Numbers		Environmental Engg - I			
Prerequisite credits					
Equivalent Course Codes. As per proposed courses and old courses		CEL454			
Overlap course codes As per proposed Course Numbers					
Text Book (Max. 2)		Title	Theories and Practices of Industrial Waste Treatment		
		Author	Nemerow N.L		
		Publisher	Addison Wesley Publishing CO. NY.		
		Edition	2nd		
		Title	Industrial Water Pollution Control		
		Author	W.W.Ecenfelder		
		Publisher	Mc-Graw Hill Book Co.		
		Edition	2nd		
Reference Books		Title	Industrial Pollution Prevention Handbook		
		Author	Freeman H. M.		
		Publisher	McGraw Hill		
		Edition	1st		
		Title	Comprehensive Industry Document Series		
		Author	Central Pollution Control Board, India		
		Publisher			
		Edition			
		Title	The Treatment of Industrial Waste		
		Author	E.B. Besselivievre		
		Publisher	Mc-Graw Hill Book Co.		

	Edition	1st
Content	Industrial pollution and its measurement; Generation of Industrial wastewater, Disposal standards; Quantification and characterization of wastewater and its variations; Environmental impacts due to discharge of wastewater on streams, land and sewerage system; Industrial waste survey; Stream sanitation, stream sampling, Stream survey; Principles and techniques for Industrial Pollution prevention and control; Waste minimization; recent trends in industrial waste management, Cleaner technologies; Reuse, Recycling and Resource recovery; Volume and strength reduction; Equalization and proportioning; Neutralization; Methods of Disposal and treatment for removal of organic, inorganic, solids, pathogens, heavy metals and other pollutants; Alternatives and Synthesizing industrial waste treatment system; Joint treatment of industrial waste; CETP; Pollution control measures and Treatment of wastes from various industries viz. Pulp and paper, tanning, Sugar, Dairy, Chemical, Cement, Petroleum, Fertilizers, Metal Finishing, Etc.	
Course No.	CEL 405	

Course No.	CEL368			
Course Title	Advanced Hydraulics			
Course Coordinator	Dr A D Ghare			
Slot in which offered. If not offered write N	Odd		Even	
	N		F	
Structure	Lecture	Tutorial	Practical	Credits
	3	1	0	8
Prerequisite Course Codes As per proposed Course Numbers	CEL 202 Hydraulic Engineering			
Prerequisite credits				
Equivalent Course Codes. As per proposed courses and old courses				
Overlap course codes As per proposed Course Numbers				
Text Books (Max. 2)	Title	Flow through Open Channels		
	Author	Ranga Raju		
	Publisher	Tata McGraw Hill Publication		
	Edition	2004		
	Title	Fluid Mechanics		
	Author	Streeter V.L. and Wyle E.B		
	Publisher	Tata McGraw Hill Publication		
	Edition	2005		
Reference Books	Title	Open Channel Hydraulics		
	Author	Ven Te. Chow		
	Publisher	Tata McGraw Hill Publication (International Students Edition)		
	Edition	2003		
	Title	Engineering Fluid Mechanics		
	Author	Narsimhan S.		
	Publisher	Orient Longman Publication		
	Edition	1981		

Contents	1. Equivalent roughness for channel surfaces, Computation of critical flow, Theory of gradually varied flow, Analysis of surface profiles of gradually varied flow, Channel transitions 2. Computation of gradually varied flow, Hydraulic exponents, Direct integration methods, Step methods, Graphical method, Numerical methods 3. Location of hydraulic jump, application of hydraulic jump in design of hydraulic jump type stilling basin with horizontal apron 4. Unsteady flow in a pipe line for incompressible fluid, Time of flow establishment, Rigid water column theory of water hammer and computation of water hammer pressures 5. Water hammer phenomena when compressibility of fluid and elasticity of pipe is considered, computation of water hammer pressure of frictionless flow in horizontal pipe - for sudden and slow closure of valve, Application of Allievi's method of charts for calculation of approximate pressures, Water hammer pressures in pumping systems, Method of characteristics 6. Computation of water hammer pressures in branched pipe system and in surge tank system, Devices used for protection from water hammer pressures, Function of surge tank and different type of surge tanks, Equations governing the flow in the simple surge tank system, Analysis of flow in a simple surge tank system, Computation of maximum surges in a simple surge tank, Case of hydraulic stability in a simple surge tank system
Course No.	CEL368

Course No.				
Course Title	**Advanced Traffic Engineering**			
Course Coordinator	Dr. V.S.Landge			
Slot in which offered. If not offered write N	**Odd**		**Even**	
Structure	**Lecture**	**Tutorial**	**Practical**	**Credits**
	3	**0**	**2**	**8**
Text Book (max. 2)	**Title**	Traffic Engineering – Theory & Practice		
	Author	Pignataro, L.J.,		
	Publisher	John Wiley, 1985		
	Edition			
	Title	Traffic Engineering and Transport Planning		
	Author	Kadiyali, L.R.,		
	Publisher	Khanna publishers, New Delhi, 2002		
	Edition			
Reference Books	**Title**	Highways- Traffic Planning & Engineering		
	Author	O'Flaherty C A		
	Publisher	Edward Arnold, UK		
	Edition	-		
Content	Traffic Engineering & Studies: Scope, traffic elements, characteristics-vehicle, road user and road; traffic studies-volume, O & D, parking, safety , study methodology, data collection & presentation, Traffic Analysis: Speed, volume, parking & accident data analysis, statistical approach, conflict points, traffic stream characteristics- relationship between speed, flow and density, LOS & capacity analysis, traffic forecasting. Traffic Design: Channelisation of islands, design of rotaries, intersections, pedestrian & bicycle ways, Traffic Control Devices: Traffic signs, markings and signals; Traffic Regulation & Management: Speed, vehicle, parking, enforcement regulations, mixed traffic regulation, management various techniques Geometric design provisions for various transportation facilities as per AASHTO, IRC design **Practical**: Field studies minimum 6 of the following Speed studies , OD studies, Design of traffic signals, Design of intersection, design of rotaries, Road safety studies, traffic volume studies. Perking studies			

Course No.	CEL 554			
Course Title	**Project Appraisal & Construction Finance**			
Course Coordinator	Prof S. P. Wanjari			
Slot in which offered. If not offered write N	Odd		Even	
Structure	Lecture	Tutorial	Practical	Credits
	3	0	0	6
Prerequisite Course Codes As per proposed Course Numbers	-	-	-	-
Prerequisite credits	-Nil -			
Equivalent Course Codes. As per proposed courses and old courses				
Overlap course codes As per proposed Course Numbers	-	-	-	-
Text Book (Max. 2)	Title	Modern Construction Management,		
	Author	Frank Harris & Ronald Mc Caffer		
	Publisher	Blackwell science, 4th Edition		
	Edition			
	Title	Principles of Construction Management		
	Author	Roy Pilcher		
	Publisher	Mc Graw Hill Landon		
	Edition			
Reference Books	Title	Guidelines for project Evaluation		
	Author			
	Publisher	Oxford & IBH Publishing Co.Pvt. Ltd		
	Edition			
	Title			
	Author			
	Publisher			
	Edition			
	Title			
	Author			
	Publisher			
	Edition			
	Title			
	Author			
	Publisher			
	Edition			
	Title			
	Author			

	Publisher	
	Edition	
Content	1. Project Appraisal : Project appraisal, government and private project evaluators, significance of social benefit – cost analysis, commercial profitability, national economic profitability, measurement of direct and indirect benefit and costs. Calculation of benefit cost ratio. 2. Engineering economics - Time value of money, discounted cash flow, decision making among the alternatives, replacement analysis, break even analysis. 3. Project capital: Cash flow of a project, estimation of minimum capital required, internal rate of return (IRR), Multiple IRR, estimation of annualized cost. 4. Depreciation : importance, classification, types – straight line, sum of year method, double rate declining balance method 5. Capital Budgeting: element of budgeting – men, materials, equipments, overhead, profits – preparation of capital budget. 6. Performance statement: capital gearing ratio, shares, debentures, PBT, PAT, PBIT, Earning per share, preparation of company's performance statement, Inflation.	
Course No.		

Course No.	AML 467	Open course (Y/N)	HM Course (Y/N)	Discontinued (Y/N)	
Course Title		Advance RCC			
Course Coordinator					
Slot in which offered. If not offered write N		Odd		Even	
				G	
Structure		Lecture	Tutorial	Practical	Credits
Prerequisite Course Codes As per proposed Course Numbers					
Prerequisite credits					
Equivalent Course Codes. As per proposed courses and old courses					
Overlap course codes As per proposed Course Numbers					
Text Book (Max. 2)		Title			
		Author			
		Publisher			
		Edition			
		Title			
		Author			
		Publisher			
		Edition			
Reference Books		Title	“Plain and Reinforced Concrete (Vol-I&II)”,		
		Author	Jain, O.P.; & Jaikrishna,		
		Publisher	Nem Chnand & Bros;		
		Edition			
		Title	“Advanced Reinforced Concrete Structures”		
		Author	Varghese, P. C.		
		Publisher	Prentice Hall of India		
		Edition	2000		
		Title	“Reinforced Concrete Design”		
		Author	Pillai, S.U.; & Menon, D.		
		Publisher	Tata McGraw Hill Publishing company ltd. India		
		Edition	1998		
		Title	“IS: 456; Code for Practice: Plain and Reinforced Concrete”, Bureau of Indian standards; New Delhi, 2000.		

	Author	
	Publisher	
	Edition	
	Title	
	Author	
	Publisher	
	Edition	
	Title	
	Author	
	Publisher	
	Edition	
Content	Approximate analysis and design of building frames, Calculation of loads due to Dead load, Live load, Wind load, Earthquake loads (Codal co-efficient method only) on multistoried frames as per relevant IS codes, Design of elements of multistoried frames such as beams, columns, foundations etc., detailing of structures as per IS: 456 & IS: 13920. Analysis and design of rectangular and circular tanks (Underground, on-ground and elevated) using coefficients given in IS: 3370, Analysis and design of staging for static, wind and earthquake forces, Design of foundations for ESRs. Analysis and design of slab type bridges subjected to various types of IRC loads, Analysis and design of T-beam bridges (limited to two girders, simply supported ends) with load distribution as per Courbon's method.	
Course No.		

Course No.	**AML 425**	Open course (Y/N)	HM Course (Y/N)	Discontinued (Y/N)	
Course Title		**ADVANCED DESIGN OF STEEL STRUCTURES**			
Course Coordinator					
Slot in which offered. If not offered write N		Odd		Even	
				C	
Structure		Lecture	Tutorial	Practical	Credits
		3	1	0	8
Prerequisite Course Codes As per proposed Course Numbers					
Prerequisite credits					
Equivalent Course Codes. As per proposed courses and old courses					
Overlap course codes As per proposed Course Numbers					
Text Book (Max. 2)		Title	“Steel Designers Manual”		
		Author	Owens, G.W. & Knowles,.		
		Publisher	P.R., Blackwell,		
		Edition	1994		
		Title	“Design of Steel Structures”		
		Author	Gaylords, E.H. & Gaylords, C. N.,		
		Publisher	McGraw Hill Publ,		
		Edition	1998.		
Reference Books		Title	“Steel Design Manual”		
		Author			
		Publisher	ELBS and Granada Publishers; London.		
		Edition			
		Title	“Composite Structures of Steel and Concrete; Vol-I”		
		Author	Johnson, R.P.		
		Publisher	Granado Publishing Ltd.; London		
		Edition	1975		
		Title	. “Steel Structures – Design and Behaviour”		
		Author	Salmon and Johnson,		
		Publisher	Harper and Collins Publishers.		
		Edition			
		Title			
		Author			

	Publisher	
	Edition	

	Title	
	Author	
	Publisher	
	Edition	
	Title	
	Author	
	Publisher	
	Edition	
Content	Introduction to Allowable Stress Design, Plastic design, Load and Resistance Factor Design (LFRD). Loadings as per IRC, IRS, IS (IS:800, IS:875 part 1-V, IS:1893) applicable to various steel structures. Design of Beams, Beam-column, Plate Girders, Open web structures and Space structures. Bridges, Industrial Buildings including crane girders. Welded and riveted connections. Composite structures.	
Course No.		

2. Properties of Engineering Materials. PHYSICAL PROPERTIES. Specific Gravity-defined as the weight of a given volume of a material as compared to the wt of an given volume of water it is measured at atemperature of 60 deg F(15.5 deg C). Specific Heat-heat required to raise the temperature of unit wt of material by one degree. Fusibility & Fluidity-the property of a material where it tends to melt and flows when heat is applied. Weldability-ability of uniting two pieces of metal by applying pressure or heat or both. Engineers have to know the best and most economical materials to use. Engineers must also understand the properties of these materials and how they can be worked. There are two kinds of materials used in engineering (1) â€“ metals and non-metals. Metals are distinguished from non-metals by their high conductivity for heat and electricity, by metalic lustre (2) and by their resistance to electric current. Their properties, such as strength (3) and hardness (4), can be greatly improved by.

Engineering materials refers to the group of materials that are used in the construction of manmade structures and components. The primary function of an engineering material is to withstand applied loading without breaking and without exhibiting excessive deflection. The major classifications of engineering materials include metals, polymers, ceramics, and composites. The important characteristics of the materials within each of these classes are discussed on this page, and tables of material properties are also provided. Contents. What is Materials Engineering? New materials have been among the greatest achievements of every age and they have been central to the growth, prosperity, security, and quality of life of humans since the beginning of history. It is always new materials that open the door to new technologies, whether they are in civil, chemical, construction, nuclear, aeronautical, agricultural, mechanical, biomedical or electrical engineering. Basic Classification of Engineering Materials Basically Engineering Materials Can be classified into two categories- MetalsNon-Metals Metals Metals are polycrystalline bodies which are having number of differentially oriented fine crystals. Normally major metals are in solid states at normal temperature.Â Classification of Engineering Materials. January 4, 2019February 24, 2012 by Electrical4U. Basic Classification of Engineering Materials. Basically Engineering Materials Can be classified into two categories-. Metals.