



JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY ANANTAPUR
(Established by Govt. of A.P., ACT No.30 of 2008)
ANANTHAPURAMU – 515 002 (A.P) INDIA

CIVIL ENGINEERING

II B.TECH.

SEMESTER - III							
S.No.	Course Code	Course Name	Category	Hours per week			Credits
				L	T	P	
1.	20A54301	Probability and Statistics for Civil Engineering	BS	3	0	0	3
2.	20A01301	Advanced Strength of Materials	PC	3	0	0	3
3.	20A01302T	Fluid Mechanics and Hydraulic Machines	PC	3	0	0	3
4.	20A01303T	Surveying	PC	3	0	0	3
5.	20A52301	Humanities Elective– I Managerial Economics & Financial Analysis	HS	3	0	0	3
	20A52302	Organizational Behavior					
	20A52303	Business Environment					
6.	20A01304	Basic Civil Engineering Laboratory	PC	0	0	3	1.5
7.	20A01302P	Fluid Mechanics and Hydraulic Machines Lab	PC	0	0	3	1.5
8.	20A01303P	Surveying Lab	PC	0	0	3	1.5
9.	20A05305	Skill oriented course - I Application development with Python	SC	1	0	2	2
10.	20A52201	Mandatory noncredit course – II Universal Human Values	MC	3	0	0	0
11.	20A99301	NSS/NCC/NSO Activities	-	-	-	2	0
Total							21.5

SEMESTER - IV							
S.No.	Course Code	Course Name	Category	Hours per week			Credits
				L	T	P	
1.	20A54401	Mathematical Modeling & Optimization Techniques	BS	3	0	0	3
2.	20A01401T	Engineering Geology	ES	3	0	0	3
3.	20A01402	Structural Analysis – I	PC	3	0	0	3
4.	20A01403T	Concrete Technology	PC	3	0	0	3
5.	20A01404T	Environmental Engineering - I	PC	3	0	0	3
6.	20A01401P	Engineering Geology Lab	ES	0	0	3	1.5
7.	20A01405	Concrete Materials Lab	PC	0	0	3	1.5
8.	20A01404P	Environmental Engineering Lab	PC	0	0	3	1.5
9.	20A52401	Skill oriented course – II Soft Skills	SC	1	0	2	2
10.	20A99401	Mandatory non-credit course - III Design Thinking for Innovation	MC	2	1	0	0
Total							21.5
Mandatory Community Service Internship for 6 weeks duration during Summer Vacation							



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Note:

1. Eligible and interested students can register either for Honors or for a Minor in IV Semester as per the guidelines issued by the University
2. Students shall register for NCC/NSS/NSO activities and will be required to participate in an activity for two hours in a week during third semester.
3. Lateral entry students shall undergo a bridge course in Mathematics during third semester



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Course Code	Probability and Statistics for Civil Engineering		L	T	P	C
20A54301			3	0	0	3
Pre-requisite	NIL	Semester	III			
Course Objectives:						
This course aims at providing the student with the knowledge on <ul style="list-style-type: none"> • The theory of Probability and random variables. • Usage of statistical techniques like testing of hypothesis, testing of significance, chi-square test and basic concepts of Least square methods 						
Course Outcomes (CO):						
At the end of the course, student will be able to <ul style="list-style-type: none"> • Understand the concepts of probability, sampling distributions, test of hypothesis and Curve fitting. • Explain the characteristics through correlation and regression tools. • Apply Probability theory to find the chances of happening of events. • Understand various probability distributions and calculate their statistical moments. • Solve the problems on testing of hypothesis on large samples and small samples and fitting of the curves. 						
UNIT - II	Elementary Statistics		9 Hrs			
Introduction to statistics- definition-advantages-limitations-frequency distribution tables-Arithmetic mean, median, mode for grouped and ungrouped data-variance, standard deviation, co-efficient of variation. Correlation –properties, correlation co-efficient-Regression-properties-Regression co-efficient- relation between correlation co-efficient and Regression co-efficient.						
UNIT - I	Probability Theory		8 Hrs			
Probability, probability axioms, addition law and multiplicative law of probability, conditional probability, Baye’s theorem, random variables (discrete and continuous), probability density functions, properties, mathematical expectation.						
UNIT - III	Random variables & Distributions		8 Hrs			
Probability distribution - Binomial, Poisson approximation to the binomial distribution and normal distribution-their properties-Uniform distribution-exponential distribution						
UNIT - IV	Testing of Hypothesis		9 Hrs			
Estimation-parameters, statistics, sampling distribution, point estimation, Formulation of null hypothesis, alternative hypothesis, the critical and acceptance regions, level of significance, two types of errors and power of the test. Large Sample Tests: Test for single proportion, difference of proportions, test for single mean and difference of means. Confidence interval for parameters in one sample and two sample problems						
UNIT - V	Testing of significance & Curve fitting		9 Hrs			
Student t-distribution (test for single mean, two means and paired t-test), testing of equality of variances (F-test), χ^2 - test for goodness of fit, χ^2 - test for independence of attributes . Curve Fitting: Fitting of Linear, Quadratic, Exponential curves, Least squares method						
Textbooks:						
1. S.C.Gupta and V.K.Kapoor, Fundamentals of Mathematical Statistics, 11th Edition, Sultan Chand & Sons.						



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2. Vijay K Rohatgi, Statistical Inference, Aug 2003, Dover Publications Inc.

Reference Books:

1. S.P.Gupta, Statistical Methods, 33rd Edition, Sultan Chand & Sons. 2. M.K.Jain, S.R.K.Iyengar and R.K.Jain,
2. Numerical Methods for Science and Engineering Computation, 6th Edition, New Age International Publishers.

Online Learning Resources:

<http://nptel.ac.in/courses/111105090/>
<http://nptel.ac.in/courses/111106112>



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CIVIL ENGINEERING

Course Code	Advanced Strength of Materials		L	T	P	C
20A01301			3	0	0	3
Pre-requisite	Engineering Mechanics	Semester	III			
Course Objectives:						
<ul style="list-style-type: none"> • To demonstrate analytical methods for determining strength & stiffness and assess stability of structural members. • To enable the student analyze indeterminate trusses • To make the student to understand the analysis procedures for analyzing fixed and Continuous beams. • To enable the student to undergo analysis procedure using slope deflection method and moment distribution method. • To enable the student to analyze the two hinged and three hinged arches 						
Course Outcomes (CO):						
<ul style="list-style-type: none"> • Determine deflection at any point on a beam under simple and combined loads • Apply energy theorems for analysis of indeterminate structures • Analyze indeterminate structures with yielding of supports • Analyze beams and portal frames using slope deflection and moment distribution methods • Analyze bending moment, normal thrust and radial shear in the arches 						
UNIT - I	Deflection of Beams					
Uniform bending – slope, deflection and radius of curvature – Differential equation for elastic line of a beam – Double integration and Macaulay’s methods. Determination of slope and deflection for cantilever and simply supported beams under point loads, U.D.L. uniformly varying load-Mohr’s theorems – Moment area method – application to simply supported and overhanging beams- analysis of propped cantilever beams under UDL and point loads.						
UNIT - II	Torsion					
Torsion: Theory of pure torsion – Assumptions and Derivation of Torsion formula for circular shaft – Torsional moment of resistance – Polar section modulus – power transmission through shafts – Combined bending and torsion –. Springs -Types of springs – deflection of close coiled helical springs under axial pull and axial couple – Carriage or leaf springs.						
UNIT – III	Columns and Struts					
Introduction – classification of columns – Axially loaded compression members – Euler’s crippling load theory – derivation of Euler’s critical load formulae for various end conditions – Equivalent length – Slenderness ratio – Euler’s critical stress – Limitations of Euler’s theory – Rankine – Gordon formula – eccentric loading and Secant formula – Prof. Perry’s formula.						
UNIT - IV	Springs					
Axial load and torque on helical springs - stresses and deformations - strain energy - compound springs - leaf springs.						
UNIT - V	Thin and Thick Cylinders					
Introduction - Thin Cylindrical shells - hoop stress - longitudinal stresses - Lamé’s theory - Design of thin & thick cylindrical shells- Wire wound thin cylinders - Compound cylinders - Shrink fit - compound cylinders						



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Textbooks:

1. Bansal R. K, "Strength of Materials", Laxmi Publications, 2010.
2. B. C. Punmia Strength of Materials by.- Laxmi publications.

Reference Books:

1. Schaum's outline series Strength of Materials, Mc Graw hill International Editions.
2. L.S. Srinath, Strength of Materials, Macmillan India Ltd., New Delhi
3. Gere J.M. and Goodno B.J. "Strength of Materials" Indian Edition (4th reprint), Cengage Learning India Private Ltd., 2009.
4. R.S.Khurmi and N.Khurmi, "Strength of Materials (Mechanics of Solids)", S Chand And Company Limited, Ramnagar, New Delhi-110 055
5. B. S. Basavarajaiah and P. Mahadevappa, "Strength of Materials" 3rd Edition 2010, in SI UNITS, Universities Press Pvt Ltd, Hyderabad.



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CIVIL ENGINEERING

Course Code	Fluid Mechanics and Hydraulic Machines (Common to Civil & Mechanical)		L	T	P	C
20A01302T			3	0	0	3
Pre-requisite	Physics, Chemistry	Semester	III			
Course Objectives:						
<ul style="list-style-type: none"> • To impart ability to solve engineering problems in fluid mechanics • To explain basics of statics, kinematics and dynamics of fluids and various measuring techniques of hydrostatic forces on objects. • To enable the students measure quantities of fluid flowing in pipes, tanks and channels • To Introduce concepts of uniform and non-uniform flows through open channel. • To impart knowledge on design of turbines and pumps. 						
Course Outcomes (CO):						
<ul style="list-style-type: none"> • Familiarize basic terms used in fluid mechanics • Understand the principles of fluid statics, kinematics and dynamics • Understand flow characteristics and classify the flows and estimate various losses in flow through channels • Analyze characteristics for uniform and non-uniform flows in open channels. • Design different types of turbines, centrifugal and multistage pumps. 						
UNIT - I	Introduction to Fluid Statics					
Distinction between a fluid and a solid - characteristics of fluids - Fluid Pressure: Pressure at a point, Pascal's law, pressure variation with temperature, density and altitude. Piezometer, U-Tube Manometer, Single Column Manometer, U Tube Differential Manometer. pressure gauges, Hydrostatic pressure and force: horizontal, vertical and inclined surfaces. Buoyancy and stability of floating bodies.						
UNIT - II	Fluid kinematics and Dynamics					
Classification of fluid flow - Stream line, path line, streak line and stream tube; stream function, velocity potential function. One, two and three - dimensional continuity equations in Cartesian coordinates. Fluid Dynamics: Surface and body forces; Equations of motion - Euler's equation; Bernoulli's equation – derivation; Energy Principle; Practical applications of Bernoulli's equation :Venturimeter, orifice meter and Pitot tube; Momentum principle; Forces exerted by fluid flow on pipe bend; Vortex Flow – Free and Forced; Definitions of Reynolds Number, Froude Number, Mach Number, Weber Number and Euler Number;						
UNIT - III	Analysis Of Pipe Flow					
Energy losses in pipelines; Darcy – Weisbach equation; Minor losses in pipelines; Hydraulic Grade Line and Total Energy Line; Concept of equivalent length – Pipes in Parallel and Series. Laminar Flow- Laminar flow through: circular pipes, annulus and parallel plates. Stoke's law, Measurement of viscosity. Reynolds experiment, Transition from laminar to turbulent flow. Resistance to flow of fluid in smooth and rough pipes-Moody's diagram – Introduction to boundary layer theory.						
UNIT - IV	Flow in Open Channels					
Open Channel Flow-Comparison between open channel flow and pipe flow, geometrical parameters of a channel, classification of open channels, classification of open channel flow, Velocity Distribution of channel section. Uniform Flow-Continuity Equation, Energy Equation and Momentum Equation, Characteristics of uniform flow, Chezy's formula, Manning's formula. Computation of Uniform flow. Specific energy, critical flow, discharge curve, Specific force, Specific depth, and Critical depth. Measurement of Discharge and Velocity – Broad Crested Weir. Gradually						



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Varied Flow Dynamic Equation of Gradually Varied Flow. Hydraulic Jump and classification - Elements and characteristics- Energy dissipation.	
UNIT - V	Hydraulic Machines
Impact of Jets- Hydrodynamic force of jets on stationary and moving flat, inclined and curved vanes - velocity triangles at inlet and outlet - Work done and efficiency - Hydraulic Turbines: Classification of turbines; pelton wheel and its design. Francis turbine and its design - efficiency - Draft tube: theory - characteristic curves of hydraulic turbines - Cavitation - Working principles of a centrifugal pump, work done by impeller; heads, losses and efficiencies; minimum starting speed; Priming; specific speed; limitation of suction lift, net positive suction head (NPSH); Performance and characteristic curves; Cavitation effects; Multistage centrifugal pumps; troubles and remedies – Introduction to Reciprocating Pump.	
Textbooks:	
<ol style="list-style-type: none"> 1. P. M. Modi and S. M. Seth, “Hydraulics and Fluid Mechanics”, Standard Book House 2. K. Subrahmanya, “Theory and Applications of Fluid Mechanics”, Tata McGraw Hill 	
Reference Books:	
<ol style="list-style-type: none"> 1. R. K. Bansal, A text of “Fluid Mechanics and Hydraulic Machines”, Laxmi Publications (P) Ltd., New Delhi. 2. K. Subramanya, Open channel Flow, Tata McGraw Hill. 3. N. Narayana Pillai, Principles of “Fluid Mechanics and Fluid Machines”, Universities Press Pvt Ltd, Hyderabad. 3rd Edition 2009. 4. C. S. P. Ojha, R. Berndtsson and P. N. Chadramouli, “Fluid Mechanics and Machinery”, Oxford University Press, 2010. 5. Banga & Sharma, “Hydraulic Machines”, Khanna Publishers. 	
Online Learning Resources:	
<ol style="list-style-type: none"> 1. https://www.coursera.org/courses?query=fluid%20mechanics 2. https://www.udemy.com/topic/fluid-mechanics/ 3. https://onlinecourses.nptel.ac.in/noc21_ce31/preview 4. https://ocw.mit.edu/courses/aeronautics-and-astronautics/16-01-unified-engineering-i-ii-iii-iv-fall-2005-spring-2006/fluid-mechanics/ 5. http://lms.msionline.org/mod/folder/view.php?id=138 	



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Course Code	SURVEYING		L	T	P	C
20A01303T			3	0	0	3
Pre-requisite	NIL	Semester	III			
Course Objectives:						
<ul style="list-style-type: none"> To make the student to get well conversant with the fundamentals of various basic methods and instruments of surveying. To introduce to the students in identifying reduced level of the ground and its profile for finding areas and volumes of embankments and cuttings. To make the student to use angular measuring instruments for horizontal and vertical control. To enable the student to set simple horizontal curves. To introduce the knowledge construction surveys and usage of modern instrument such as total station. 						
Course Outcomes (CO):						
At the end of the course, the student will be able to: <ul style="list-style-type: none"> Calculate angles, distances and levels Identify data collection methods and prepare field notes Understand the working principles of survey instruments Estimate the volumes of earth work Able to use modern survey instruments. 						
UNIT - I	Introduction and Basic Concepts of surveying					
Introduction, Objectives, classification and principles of surveying, Scales, Shrinkage of Map, Conventional symbols and Code of Signals, Surveying accessories, phases of surveying. Measurement of Distances and Directions Linear distances Approximate methods, Direct Methods- Chains- Tapes, ranging, Tape corrections, indirect methods- optical methods- E.D.M. method. Prismatic Compass- Bearings, included angles, Local Attraction, Magnetic Declination, and dip. Plane table surveying: Introduction, accessories, setting up of plane table, techniques, testing, adjustments, errors, advantages and disadvantages						
UNIT - II	Levelling, Contouring and Computation of Areas & Volumes					
Levelling - Basics definitions, types of levels and levelling staves, temporary adjustments, methods of levelling, booking and Determination of levels- HI Method-Rise and Fall method, Effect of Curvature of Earth and Refraction. Contouring- Characteristics and uses of Contours, Direct & Indirect methods of contour surveying, interpolation and sketching of Contours. Computation of Areas and Volumes: Areas - Determination of areas consisting of irregular boundary and regular boundary, Planimeter. Volumes - Computation of areas for level section and two level sections with and without transverse slopes, determination of volume of earth work in cutting and embankments, volume of borrow pits, capacity of reservoirs.						
UNIT - III	Theodolite Surveying					
Types of Theodolites, Fundamental Lines, temporary adjustments, measurement of horizontal angle by repetition method and reiteration method, measurement of vertical Angle, Trigonometrical levelling when base is accessible and inaccessible. Traversing: Methods of traversing, traverse computations and adjustments, Gale's traverse table, Omitted measurements.						
UNIT - IV	Tacheometric Surveying					
Principles of Tacheometry, stadia and tangential methods of Tacheometry. Curves: Types of curves and their necessity, elements of simple circular curve, setting out of simple horizontal circular curves – Basics of Total Station and GPS.						



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UNIT - V	Construction surveys
Introduction-staking out buildings-pipelines and sewers-highwaysculverts. Bridge surveys-determining the length of a bridge-locating centres of piers- surface surveys and tunnel alignment-underground surveys-connection of surface and underground surveys-levelling in tunnels.	
Textbooks:	
<ol style="list-style-type: none"> 1. C.Venkatramaiah, “Text book of surveying”, 2nd edition, Universities press, 2018. 2. Arora K R “Surveying” Vol 1, 2 & 3, Standard Book House, Delhi, 2004. 	
Reference Books:	
<ol style="list-style-type: none"> 1. S K Duggal, “Surveying” (Vol – 1 & 2), Tata McGraw Hill Publishing Co. Ltd. New Delhi, 2004. 2. R. Subramanian, “Surveying and leveling” Oxford university press, New Delhi. 3. B. C. Punmia, Ashok Kumar Jain and Arun Kumar Jain, “Surveying” (Vol – 1, 2 & 3), - Laxmi Publications (P) ltd., New Delhi. 4. R. Agor Khanna Publishers 2015 “Surveying and leveling”. 5. Arthur R Benton and Philip J Taety, “Elements of Plane Surveying”, McGraw Hill – 2000. 	
Online Learning Resources:	
<ol style="list-style-type: none"> 1. https://www.udemy.com/course/surveying/ 2. https://onlinecourses.nptel.ac.in/noc20_ce18/preview 3. https://freevideolectures.com/course/98/surveying 	

Course Code	MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS	L	T	P	C
20A52301		3	0	0	3



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	(Common to All branches of Engineering)		
Pre-requisite	NIL	Semester	III
Course Objectives:			
<ul style="list-style-type: none"> • To inculcate the basic knowledge of micro economics and financial accounting • To make the students learn how demand is estimated for different products, input-output relationship for optimizing production and cost • To Know the Various types of market structure and pricing methods and strategy • To give an overview on investment appraisal methods to promote the students to learn how to plan long-term investment decisions. • To provide fundamental skills on accounting and to explain the process of preparing financial statements 			
Course Outcomes (CO):			
<ul style="list-style-type: none"> • Define the concepts related to Managerial Economics, financial accounting and management. • Understand the fundamentals of Economics viz., Demand, Production, cost, revenue and markets • Apply the Concept of Production cost and revenues for effective Business decision • Analyze how to invest their capital and maximize returns • Evaluate the capital budgeting techniques • Develop the accounting statements and evaluate the financial performance of business entity. 			
UNIT - I	Managerial Economics		
Introduction – Nature, meaning, significance, functions, and advantages. Demand-Concept, Function, Law of Demand - Demand Elasticity- Types – Measurement. Demand Forecasting- Factors governing Forecasting, Methods. Managerial Economics and Financial Accounting and Management.			
UNIT - II	Production and Cost Analysis		
Introduction – Nature, meaning, significance, functions and advantages. Production Function– Least-cost combination– Short run and Long run Production Function- Isoquants and Isocosts, MRTS - Cobb-Douglas Production Function - Laws of Returns - Internal and External Economies of scale. Cost & Break-Even Analysis - Cost concepts and Cost behavior- Break-Even Analysis (BEA) - Determination of Break-Even Point (Simple Problems)-Managerial significance and limitations of Break-Even Analysis.			
UNIT - III	Business Organizations and Markets		
Introduction – Nature, meaning, significance, functions and advantages. Forms of Business Organizations- Sole Proprietary - Partnership - Joint Stock Companies - Public Sector Enterprises. Types of Markets - Perfect and Imperfect Competition - Features of Perfect Competition Monopoly- Monopolistic Competition–Oligopoly-Price-Output Determination - Pricing Methods and Strategies			
UNIT - IV	Capital Budgeting		
Introduction – Nature, meaning, significance, functions and advantages. Types of Working Capital, Components, Sources of Short-term and Long-term Capital, Estimating Working capital requirements. Capital Budgeting– Features, Proposals, Methods and Evaluation. Projects – Pay Back Method, Accounting Rate of Return (ARR) Net Present Value (NPV) Internal Rate Return (IRR) Method (sample problems)			
UNIT - V	Financial Accounting and Analysis		



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Introduction – Nature, meaning, significance, functions and advantages. Concepts and Conventions- Double-Entry Book Keeping, Journal, Ledger, Trial Balance- Final Accounts (Trading Account, Profit and Loss Account and Balance Sheet with simple adjustments). *Financial Analysis* - Analysis and Interpretation of Liquidity Ratios, Activity Ratios, and Capital structure Ratios and Profitability.

Textbooks:

1. Varshney&Maheswari: Managerial Economics, Sultan Chand, 2013.
2. Aryasri: Business Economics and Financial Analysis, 4/e, MGH, 2019

Reference Books:

1. Ahuja HI Managerial economics Schand,3/e,2013
2. S.A. Siddiqui and A.S. Siddiqui: Managerial Economics and Financial Analysis, New Age International, 2013.
3. Joseph G. Nellis and David Parker: Principles of Business Economics, Pearson, 2/e, New Delhi.
4. Domnick Salvatore: Managerial Economics in a Global Economy, Cengage, 2013.

Online Learning Resources:

<https://www.slideshare.net/123ps/managerial-economics-ppt>
<https://www.slideshare.net/rossanz/production-and-cost-45827016>
<https://www.slideshare.net/darkyla/business-organizations-19917607>
<https://www.slideshare.net/balarajbl/market-and-classification-of-market>
<https://www.slideshare.net/ruchi101/capital-budgeting-ppt-59565396>
<https://www.slideshare.net/ashu1983/financial-accounting>



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Course Code	ORGANISATIONAL BEHAVIOUR (Common to All branches of Engineering)		L	T	P	C
20A52302			3	0	0	3
Pre-requisite	NIL	Semester	III			
Course Objectives:						
<ul style="list-style-type: none"> • To enable student's comprehension of organizational behavior • To offer knowledge to students on self-motivation, leadership and management • To facilitate them to become powerful leaders • To Impart knowledge about group dynamics • To make them understand the importance of change and development 						
Course Outcomes (CO):						
<ul style="list-style-type: none"> • Define the Organizational Behaviour, its nature and scope. • Understand the nature and concept of Organizational behaviour • Apply theories of motivation to analyse the performance problems • Analyse the different theories of leadership • Evaluate group dynamics • Develop as powerful leader 						
UNIT - I	Introduction to Organizational Behavior					
Meaning, definition, nature, scope and functions - Organizing Process – Making organizing effective -Understanding Individual Behaviour –Attitude -Perception - Learning – Personality.						
UNIT - II	Motivation and Leading					
Theories of Motivation- Maslow's Hierarchy of Needs - Herzberg's Two Factor Theory - Vroom's theory of expectancy – Mc Clelland's theory of needs–Mc Gregor's theory X and theory Y– Adam's equity theory – Locke's goal setting theory– Alderfer's ERG theory .						
UNIT - III	Organizational Culture					
Introduction – Meaning, scope, definition, Nature - Organizational Climate - Leadership - Traits Theory–Managerial Grid - Transactional Vs Transformational Leadership - Qualities of good Leader - Conflict Management -Evaluating Leader- Women and Corporate leadership.						
UNIT - IV	Group Dynamics					
Introduction – Meaning, scope, definition, Nature- Types of groups - Determinants of group behavior - Group process – Group Development - Group norms - Group cohesiveness - Small Groups - Group decision making - Team building - Conflict in the organization– Conflict resolution						
UNIT - V	Organizational Change and Development					
Introduction –Nature, Meaning, scope, definition and functions- Organizational Culture - Changing the Culture – Change Management – Work Stress Management - Organizational management – Managerial implications of organization's change and development						
Textbooks:						
1. Luthans, Fred, Organisational Behaviour, McGraw-Hill, 12 Th edition 2011 2. P Subba Ran, Organisational Behaviour, Himalya Publishing House 2017						
Reference Books:						
<ul style="list-style-type: none"> ▪ McShane, Organizational Behaviour, TMH 2009 ▪ Nelson, Organisational Behaviour, Thomson, 2009. ▪ Robbins, P. Stephen, Timothy A. Judge, Organisational Behaviour, Pearson 2009. ▪ Aswathappa, Organisational Behaviour, Himalaya, 2009 						
Online Learning Resources:						
httphttps://www.slideshare.net/Knight1040/organizational-culture-9608857s://www.slideshare.net/AbhayRajpoot3/motivation-165556714 https://www.slideshare.net/harshrastogi1/group-dynamics-159412405 https://www.slideshare.net/vanyasingla1/organizational-change-development-26565951						



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Course Code	Business Environment		L	T	P	C
20A52303	(Common to All branches of Engineering)		3	0	0	3
Pre-requisite	NIL	Semester	III			
Course Objectives:						
<ul style="list-style-type: none"> • To make the student to understand about the business environment • To enable them in knowing the importance of fiscal and monetary policy • To facilitate them in understanding the export policy of the country • To Impart knowledge about the functioning and role of WTO • To Encourage the student in knowing the structure of stock markets 						
Course Outcomes (CO):						
<ul style="list-style-type: none"> • Define Business Environment and its Importance. • Understand various types of business environment. • Apply the knowledge of Money markets in future investment • Analyse India's Trade Policy • Evaluate fiscal and monetary policy • Develop a personal synthesis and approach for identifying business opportunities 						
UNIT - I	Overview of Business Environment					
Introduction – meaning Nature, Scope, significance, functions and advantages. Types-Internal & External, Micro and Macro. Competitive structure of industries -Environmental analysis- advantages & limitations of environmental analysis& Characteristics of business.						
UNIT - II	Fiscal & Monetary Policy					
Introduction – Nature, meaning, significance, functions and advantages. Public Revenues - Public Expenditure - Evaluation of recent fiscal policy of GOI. Highlights of Budget- Monetary Policy - Demand and Supply of Money –RBI -Objectives of monetary and credit policy - Recent trends- Role of Finance Commission.						
UNIT - III	India's Trade Policy					
Introduction – Nature, meaning, significance, functions and advantages. Magnitude and direction of Indian International Trade - Bilateral and Multilateral Trade Agreements - EXIM policy and role of EXIM bank -Balance of Payments– Structure & Major components - Causes for Disequilibrium in Balance of Payments - Correction measures.						
UNIT - IV	World Trade Organization					
Introduction – Nature, significance, functions and advantages. Organization and Structure - Role and functions of WTO in promoting world trade - GATT -Agreements in the Uruguay Round –TRIPS, TRIMS - Disputes Settlement Mechanism - Dumping and Anti-dumping Measures.						
UNIT - V	Money Markets and Capital Markets					
Introduction – Nature, meaning, significance, functions and advantages. Features and components of Indian financial systems - Objectives, features and structure of money markets and capital markets - Reforms and recent development – SEBI – Stock Exchanges - Investor protection and role of SEBI, Introduction to international finance.						
Textbooks:						
<ol style="list-style-type: none"> 1. Francis Cherunilam (2009), International Business: Text and Cases, Prentice Hall of India. 2. K. Aswathappa, Essentials of Business Environment: Texts and Cases & Exercises 13th Revised Edition.HPH2016 						



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Reference Books:

- 1.K. V. Sivayya, V. B. M Das (2009), Indian Industrial Economy, Sultan Chand Publishers, New Delhi, India.
2. Sundaram, Black (2009), International Business Environment Text and Cases, Prentice Hall of India, New Delhi, India.
3. Chari. S. N (2009), International Business, Wiley India.
- 4.E. Bhattacharya (2009), International Business, Excel Publications, New Delhi.

Online Learning Resources:

- <https://www.slideshare.net/ShompaDhali/business-environment-53111245>
- <https://www.slideshare.net/rbalsells/fiscal-policy-ppt>
- <https://www.slideshare.net/aguness/monetary-policy-presentationppt>
- <https://www.slideshare.net/DaudRizwan/monetary-policy-of-india-69561982>
- <https://www.slideshare.net/ShikhaGupta31/indias-trade-policyppt>
- <https://www.slideshare.net/viking2690/wto-ppt-60260883>
- <https://www.slideshare.net/prateeknepal3/ppt-mo>



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CIVIL ENGINEERING

Course Code	Basic Civil Engineering Laboratory		L	T	P	C
20A01304			0	0	3	1.5
Pre-requisite	NIL	Semester	III			
Course Objectives:						
<ul style="list-style-type: none"> • developing general manual and machining skills in the students • understand the basic properties of materials • development of dignity of labor • safety at work place and selection of tools • team working 						
Course Outcomes (CO):						
<ul style="list-style-type: none"> • Identify tools and equipment used and their respective functions. • Identify different types of materials and their basic properties. • Use and take measurements with the help of basic measuring tools/equipment. • Select proper tools for a particular operation. • Select materials and tools to make a job as per given specification/drawing. 						
List of Experiments:						
<ol style="list-style-type: none"> 1. Setting out of a building: The student should set out a building (single room only) as per the given building plan using tape only. 2. Setting out of a building: The student should set out a building (single room only) as per the given building plan using tape and cross staff. 3. Construct a wall of height 50 cm and wall thickness 1½ bricks using English bond (No mortar required) - corner portion – length of side walls 60 cm. 4. Construct a wall of height 50 cm and wall thickness 2 bricks using English bond (No mortar required) - corner portion – length of side walls 60 cm. 5. Computation of Centre of gravity and Moment of inertia of a given rolled steel section by actual measurements. 6. Installation of plumbing and fixtures like Tap, T-Joint, Elbow, Bend, Threading etc; 7. Plastering and Finishing of wall 8. Application of wall putty and painting a wall 9. Application of base coat and laying of Tile flooring of one square meter 10. Preparation of soil cement blocks for masonry and testing for compressive strength 11. Casting and testing of Fly ash Blocks 12. Preparation of cover blocks for providing cover to reinforcement 						
References:						
<ol style="list-style-type: none"> 1. Workshop Technology Vol. I, II, III by Manchanda; India Publishing House, Jalandhar. 2. Workshop Training Manual Vol. I, II by S.S. Ubhi; Katson Publishers, Ludhiana. 3. Manual on Workshop Practice by K Venkata Reddy; MacMillan India Ltd., New Delhi 4. Basic Workshop Practice Manual by T Jeyapovan; Vikas Publishing House (P) Ltd., New Delhi 5. Workshop Technology by B.S. Raghuwanshi; Dhanpat Rai and Co., New Delhi 6. Workshop Technology by HS Bawa; Tata McGraw Hill Publishers, New Delhi. 						



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CIVIL ENGINEERING

Course Code	FLUID MECHANICS AND HYDRAULIC MACHINES LAB (Common to Civil & Mechanical)		L	T	P	C
20A01302P			0	0	3	1.5
Pre-requisite	NIL	Semester	III			
Course Objectives:						
By performing this laboratory, the student will be able to know the fluid flow measurements by considering different types flow measurement devices and working principles of various pumps and motors.						
Course Outcomes (CO):						
By performing the various tests in this laboratory the student will be able to know the principles of discharge measuring devices and head loss due to sudden contraction and expansion in pipes and working principles of various pumps and motors.						
List of Experiments:						
<ol style="list-style-type: none"> 1. Verification of Bernoulli's equation. 2. Calibration of Venturi meter. 3. Calibration of Orifice meter 4. Determination of Coefficient of discharge for a small orifice by constant head method. 5. Determination of Coefficient of discharge for a small orifice by variable head method. 6. Determination of Coefficient of discharge for an external mouth piece by Constant head method. 7. Determination of Coefficient of discharge for an external mouth piece by variable head method. 8. Calibration of contracted Rectangular Notch. 9. Calibration of contracted Triangular Notch. Determination of friction factor 10. Determination of loss of head in a sudden contraction. 11. Determination of loss of head in a sudden Expansion. 12. Performance test on Impulse turbines 13. Performance test on reaction turbines (Francis and Kaplan Turbines) 14. Impact of jet 15. Performance test on centrifugal pumps, determination of operating point and efficiency 						
References:						
<ol style="list-style-type: none"> 1. Fluid Mechanics & Hydraulic Machines A Lab Manual by <u>Ts Desmukh</u> (Author), <u>Laxmi Publications (P) Ltd</u> 2. Fluid Mechanics & Machinery Laboratory Manual by <u>N Kumara Swamy</u> (Author), <u>Charotar Books Distributors</u> 3. Lab. Manual of Fluid Mechanics & Machines by <u>Gupta, Chandra</u> (Author), <u>cbspd</u> (Publisher) 						
Online Learning Resources/Virtual Labs:						
1. http://eerc03-iiith.vlabs.ac.in/						



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CIVIL ENGINEERING

Course Code	SURVEYING LAB		L	T	P	C
20A01303P			0	0	3	1.5
Pre-requisite	NIL	Semester	III			
Course Objectives:						
By performing this laboratory, the student will be able to know the usage of various surveying equipment's and their practical applicability						
Course Outcomes (CO):						
By performing the various tests in this laboratory the student will be able to know the principles of surveying in chain surveying, compass surveying, plane table surveying, levelling, theodolite surveying and total station						
List of Experiments:						
<ol style="list-style-type: none"> 1. Setting up of Right angles using cross staff 2. Plane table survey; finding the area of a given boundary 3. Two Point Problem by the plane table survey. 4. Fly levelling: Height of the instrument method and rise and fall method. 5. Fly levelling; Longitudinal Section and Cross sections of a given road profile. 6. Theodolite Survey: Determining the Horizontal and Vertical Angles 7. Finding the distance between two inaccessible points using Theodolite 8. Tachometric survey: Heights and distance problems using tachometric principles. 9. One Exercise on Curve setting. 10. Developing a Contour map 						
References:						
<ol style="list-style-type: none"> 1. Engineering Surveying Laboratory Manual by Robert Hamilton, George Murgel of Kendall/Hunt Publishing Co 						
Online Learning Resources/Virtual Labs:						
<ol style="list-style-type: none"> 1. http://sl-iitr.vlabs.ac.in/ 						



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CIVIL ENGINEERING

Course Code	Application Development with Python		L	T	P	C
20A05305			1	0	2	2
Pre-requisite	NIL	Semester	III			
Course Objectives:						
<ul style="list-style-type: none"> • To learn the basic concepts of software engineering and life cycle models • To explore the importance of Databases in application Development • Acquire programming skills in core Python • To understand the importance of Object-oriented Programming 						
Course Outcomes (CO):						
Students should be able to <ul style="list-style-type: none"> • Identify the issues in software requirements specification and enable to write SRS documents for software development problems • Explore the use of Object oriented concepts to solve Real-life problems • Design database for any real-world problem • Solve mathematical problems using Python programming language • 						
Module 1. Basic concepts in software engineering and software project management						
Basic concepts: abstraction versus decomposition, the evolution of software engineering techniques, Software development life cycle Software project management: project planning and project scheduling Task: 1. Identifying the Requirements from Problem Statements						
Module 2. Basic Concepts of Databases						
Database systems applications, Purpose of Database Systems, view of Data, Database Languages, Relational Databases, <u>Data Definition Language(DDL) Statements: (Create table, Alter table, Drop table)</u> , <u>Data Manipulation Language(DML) Statements</u> Task: 1. Implement Data Definition Language(DDL) Statements: (Create table, Alter table, Drop table) 2. Implement Data Manipulation Language(DML) Statements						
Module 3. Python Programming:						
Introduction to Python: Features of Python, Data types, Operators, Input and output, Control Statements, Looping statements						
Python Data Structures: Lists, Dictionaries, Tuples.						
Strings: Creating strings and basic operations on strings, string testing methods.						
Functions: Defining a function- Calling a function- Types of functions-Function Arguments- Anonymous functions- Global and local variables						
OOPS Concepts; Classes and objects- Attributes- Inheritance- Overloading- Overriding- Data hiding						



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Modules and Packages: Standard modules-Importing own module as well as external modules
 Understanding Packages Powerful Lamda function in python Programming using functions, modules and external packages

Working with Data in Python: Printing on screen- Reading data from keyboard- Opening and closing file- Reading and writing files- Functions-Loading Data with Pandas-Numpy

Tasks:

1. OPERATORS

- a. Read a list of numbers and write a program to check whether a particular element is present or not using membership operators.
- b. Read your name and age and write a program to display the year in which you will turn 100 years old.
- c. Read radius and height of a cone and write a program to find the volume of a cone.
- d. Write a program to compute distance between two points taking input from the user (Hint: use Pythagorean theorem)

2. CONTROL STRUCTURES

- a. Read your email id and write a program to display the no of vowels, consonants, digits and white spaces in it using if...elif...else statement.
- b. Write a program to create and display a dictionary by storing the antonyms of words. Find the antonym of a particular word given by the user from the dictionary using while loop.
- c. Write a Program to find the sum of a Series $1/1! + 2/2! + 3/3! + 4/4! + \dots + n/n!$. (Input :n = 5, Output : 2.70833)
- d. In number theory, an abundant number or excessive number is a number for which the sum of its proper divisors is greater than the number itself. Write a program to find out, if the given number is abundant. (Input: 12, Sum of divisors of 12 = 1 + 2 + 3 + 4 + 6 = 16, sum of divisors 16 > original number 12)

3: LIST

- a. Read a list of numbers and print the numbers divisible by x but not by y (Assume x = 4 and y = 5).
- b. Read a list of numbers and print the sum of odd integers and even integers from the list.(Ex: [23, 10, 15, 14, 63], odd numbers sum = 101, even numbers sum = 24)
- c. Read a list of numbers and print numbers present in odd index position. (Ex: [10, 25, 30, 47, 56, 84, 96], The numbers in odd index position: 25 47 84).
- d. Read a list of numbers and remove the duplicate numbers from it. (Ex: Enter a list with duplicate elements: 10 20 40 10 50 30 20 10 80, The unique list is: [10, 20, 30, 40, 50, 80])

4: TUPLE

- a. Given a list of tuples. Write a program to find tuples which have all elements divisible by K from a list of tuples. test_list = [(6, 24, 12), (60, 12, 6), (12, 18, 21)], K = 6, Output : [(6, 24, 12), (60, 12, 6)]
- b. Given a list of tuples. Write a program to filter all uppercase characters tuples from given list of tuples. (Input: test_list = [(“GFG”, “IS”, “BEST”), (“GFg”, “AVERAGE”), (“GfG”,), (“Gfg”, “CS”)], Output : [(,“GFG”, „IS”, „BEST“)]).
- c. Given a tuple and a list as input, write a program to count the occurrences of all items of the list in the tuple. (Input : tuple = ('a', 'a', 'c', 'b', 'd'), list = ['a', 'b'], Output : 3)

5: SET

- a. Write a program to generate and print a dictionary that contains a number (between 1 and n) in the form (x, x*x).
- b. Write a program to perform union, intersection and difference using Set A and Set B.



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- c. Write a program to count number of vowels using sets in given string (Input : "Hello World", Output: No. of vowels : 3)
- d. Write a program to form concatenated string by taking uncommon characters from two strings using set concept (Input : S1 = "aacdb", S2 = "gafd", Output : "cbgf").

6: DICTIONARY

- a. Write a program to do the following operations:
- i. Create a empty dictionary with dict() method
 - ii. Add elements one at a time
 - iii. Update existing key's value
 - iv. Access an element using a key and also get() method
 - v. Deleting a key value using del() method
- b. Write a program to create a dictionary and apply the following methods:
- i. pop() method
 - ii. popitem() method
 - iii. clear() method
- c. Given a dictionary, write a program to find the sum of all items in the dictionary.
- d. Write a program to merge two dictionaries using update() method.

7: STRINGS

- a. Given a string, write a program to check if the string is symmetrical and palindrome or not. A string is said to be symmetrical if both the halves of the string are the same and a string is said to be a palindrome string if one half of the string is the reverse of the other half or if a string appears same when read forward or backward.
- b. Write a program to read a string and count the number of vowel letters and print all letters except 'e' and 's'.
- c. Write a program to read a line of text and remove the initial word from given text. (Hint: Use split() method, Input : India is my country. Output : is my country)
- d. Write a program to read a string and count how many times each letter appears. (Histogram).

8: USER DEFINED FUNCTIONS

- a. A generator is a function that produces a sequence of results instead of a single value. Write a generator function for Fibonacci numbers up to n.
- b. Write a function merge_dict(dict1, dict2) to merge two Python dictionaries.
- c. Write a fact() function to compute the factorial of a given positive number.
- d. Given a list of n elements, write a linear_search() function to search a given element x in a list.

9: BUILT-IN FUNCTIONS

- a. Write a program to demonstrate the working of built-in statistical functions mean(), mode(), median() by importing statistics library.
- b. Write a program to demonstrate the working of built-in trigonometric functions sin(), cos(), tan(), hypot(), degrees(), radians() by importing math module.
- c. Write a program to demonstrate the working of built-in Logarithmic and Power functions exp(), log(), log2(), log10(), pow() by importing math module.
- d. Write a program to demonstrate the working of built-in numeric functions ceil(), floor(), fabs(), factorial(), gcd() by importing math module.

10. CLASS AND OBJECTS

- a. Write a program to create a BankAccount class. Your class should support the following methods for
- i) Deposit
 - ii) Withdraw



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iii) GetBalance

iv) PinChange

b. Create a SavingsAccount class that behaves just like a BankAccount, but also has an interest rate and a method that increases the balance by the appropriate amount of interest (Hint:use Inheritance).

c. Write a program to create an employee class and store the employee name, id, age, and salary using the constructor. Display the employee details by invoking employee_info() method and also using dictionary (__dict__).

d. Access modifiers in Python are used to modify the default scope of variables. Write a program to demonstrate the 3 types of access modifiers: public, private and protected.

11. FILE HANDLING

a. . Write a program to read a filename from the user, open the file (say firstFile.txt) and then perform the following operations:

- i. Count the sentences in the file.
- ii. Count the words in the file.
- iii. Count the characters in the file.

b. . Create a new file (Hello.txt) and copy the text to other file called target.txt. The target.txt file should store only lower case alphabets and display the number of lines copied.

c. Write a Python program to store N student"s records containing name, roll number and branch. Print the given branch student"s details only.

References:

1. Rajib Mall, "Fundamentals of Software Engineering", 5th Edition, PHI, 2018.
2. RamezElmasri, Shamkant, B. Navathe, "Database Systems", Pearson Education, 6th Edition, 2013.
3. Reema Thareja, "Python Programming - Using Problem Solving Approach", Oxford Press, 1st Edition, 2017.
4. Larry Lutz, "Python for Beginners: Step-By-Step Guide to Learning Python Programming", CreateSpace Independent Publishing Platform, First edition, 2018

Online Learning Resources/Virtual Labs:

1. <http://vlabs.iitkgp.ernet.in/se/>
2. <http://vlabs.iitb.ac.in/vlabs-dev/labs/dblab/index.php>
3. <https://python-iitk.vlabs.ac.in>



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CIVIL ENGINEERING

Course Code	Universal Human Values (Common to all branches)		L	T	P	C
20A52201			3	0	0	0
Pre-requisite	NIL	Semester	III			
Course Objectives:						
<ul style="list-style-type: none"> • Development of a holistic perspective based on self-exploration about themselves (human being), family, society and nature/existence. • Understanding (or developing clarity) of the harmony in the human being, family, society and nature/existence • Strengthening of self-reflection. • Development of commitment and courage to act. 						
Course Outcomes (CO):						
<p>By the end of the course,</p> <ul style="list-style-type: none"> • Students are expected to become more aware of themselves, and their surroundings (family, society, nature) • They would become more responsible in life, and in handling problems with sustainable solutions, while keeping human relationships and human nature in mind. • They would have better critical ability. • They would also become sensitive to their commitment towards what they have understood (human values, human relationship and human society). • It is hoped that they would be able to apply what they have learnt to their own self in different day-to-day settings in real life, at least a beginning would be made in this direction. 						
UNIT - I						8 Hrs
Need, Basic Guidelines, Content and Process for Value Education						
<ul style="list-style-type: none"> • Purpose and motivation for the course, recapitulation from Universal Human Values-I • Self-Exploration—what is it? - Its content and process; ‘Natural Acceptance’ and Experiential Validation- as the process for self-exploration • Continuous Happiness and Prosperity- A look at basic Human Aspirations • Right understanding, Relationship and Physical Facility- the basic requirements for fulfilment of aspirations of every human being with their correct priority • Understanding Happiness and Prosperity correctly- A critical appraisal of the current scenario • Method to fulfil the above human aspirations: understanding and living in harmony at various levels. <p>Include practice sessions to discuss natural acceptance in human being as the innate acceptance for living with responsibility (living in relationship, harmony and co-existence) rather than as arbitrariness in choice based on liking-disliking</p>						
UNIT - II						8 Hrs
Understanding Harmony in the Human Being - Harmony in Myself!						
<ul style="list-style-type: none"> • Understanding human being as a co-existence of the sentient ‘I’ and the material ‘Body’ • Understanding the needs of Self (‘I’) and ‘Body’ - happiness and physical facility • Understanding the Body as an instrument of ‘I’ (I being the doer, seer and enjoyer) • Understanding the characteristics and activities of ‘I’ and harmony in ‘I’ • Understanding the harmony of I with the Body: Sanyam and Health; correct appraisal of Physical needs, meaning of Prosperity in detail • Programs to ensure Sanyam and Health. <p>Include practice sessions to discuss the role others have played in making material goods available to me. Identifying from one’s own life. Differentiate between prosperity and accumulation. Discuss program for ensuring health vs dealing with disease</p>						
UNIT - III						8 Hrs



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Understanding Harmony in the Family and Society- Harmony in Human- Human Relationship

- Understanding values in human-human relationship; meaning of Justice (nine universal values in relationships) and program for its fulfilment to ensure mutual happiness; Trust and Respect as the foundational values of relationship
- Understanding the meaning of Trust; Difference between intention and competence
- Understanding the meaning of Respect, Difference between respect and differentiation; the other salient values in relationship
- Understanding the harmony in the society (society being an extension of family): Resolution, Prosperity, fearlessness (trust) and co-existence as comprehensive Human Goals
- Visualizing a universal harmonious order in society- Undivided Society, Universal Order- from family to world family.

Include practice sessions to reflect on relationships in family, hostel and institute as extended family, real life examples, teacher-student relationship, goal of education etc. Gratitude as a universal value in relationships. Discuss with scenarios. Elicit examples from students' lives

UNIT - IV

8 Hrs

Understanding Harmony in the Nature and Existence - Whole existence as Coexistence

- Understanding the harmony in the Nature
- Interconnectedness and mutual fulfilment among the four orders of nature- recyclability and self-regulation in nature
- Understanding Existence as Co-existence of mutually interacting units in all- pervasive space
- Holistic perception of harmony at all levels of existence.

Include practice sessions to discuss human being as cause of imbalance in nature (film "Home" can be used), pollution, depletion of resources and role of technology etc.

UNIT - V

10 Hrs

Implications of the above Holistic Understanding of Harmony on Professional Ethics

- Natural acceptance of human values
- Definitiveness of Ethical Human Conduct
- Basis for Humanistic Education, Humanistic Constitution and Humanistic Universal Order
- Competence in professional ethics: a. Ability to utilize the professional competence for augmenting universal human order b. Ability to identify the scope and characteristics of people friendly and eco-friendly production systems, c. Ability to identify and develop appropriate technologies and management patterns for above production systems.
- Case studies of typical holistic technologies, management models and production systems
- Strategy for transition from the present state to Universal Human Order: a. At the level of individual: as socially and ecologically responsible engineers, technologists and managers b. At the level of society: as mutually enriching institutions and organizations
- Sum up.

Include practice Exercises and Case Studies will be taken up in Practice (tutorial) Sessions eg. To discuss the conduct as an engineer or scientist etc.

Textbooks:

1. R R Gaur, R Asthana, G P Bagaria, "A Foundation Course in Human Values and Professional Ethics", 2nd Revised Edition, Excel Books, New Delhi, 2019. ISBN 978-93-87034-47-1
2. R R Gaur, R Asthana, G P Bagaria, "Teachers' Manual for A Foundation Course in Human Values and Professional Ethics", 2nd Revised Edition, Excel Books, New Delhi, 2019. ISBN 978-93-87034-53-2

Reference Books:



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1. Jeevan Vidya: EkParichaya, A Nagaraj, Jeevan Vidya Prakashan, Amar kantik, 1999.
2. A. N. Tripathi, "Human Values", New Age Intl. Publishers, New Delhi, 2004.
3. The Story of Stuff (Book).
4. Mohandas Karamchand Gandhi "The Story of My Experiments with Truth"
5. E. F.Schumacher. "Small is Beautiful"
6. Slow is Beautiful –Cecile Andrews
7. J C Kumarappa "Economy of Permanence"
8. Pandit Sunderlal "Bharat Mein Angreji Raj"
9. Dharampal, "Rediscovering India"
10. Mohandas K. Gandhi, "Hind Swaraj or Indian Home Rule"
11. India Wins Freedom - Maulana Abdul Kalam Azad
12. Vivekananda - Romain Rolland(English)
13. Gandhi - Romain Rolland (English)

MOE OF CONDUCT

Lecture hours are to be used for interactive discussion, placing the proposals about the topics at hand and motivating students to reflect, explore and verify them. Tutorial hours are to be used for practice sessions.

While analyzing and discussing the topic, the faculty mentor's role is in pointing to essential elements to help in sorting them out from the surface elements. In other words, help the students explore the important or critical elements.

In the discussions, particularly during practice sessions (tutorials), the mentor encourages the student to connect with one's own self and do self-observation, self-reflection and self-exploration.

Scenarios may be used to initiate discussion. The student is encouraged to take up "ordinary" situations rather than "extra-ordinary" situations. Such observations and their analyses are shared and discussed with other students and faculty mentor, in a group sitting.

Tutorials (experiments or practical) are important for the course. The difference is that the laboratory is everyday life, and practicals are how you behave and work in real life. Depending on the nature of topics, worksheets, home assignments and/or activities are included. The practice sessions (tutorials) would also provide support to a student in performing actions commensurate to his/her beliefs. It is intended that this would lead to development of commitment, namely behaving and working based on basic human values.